



Shenzhen Heyixun Technology Co., LTD

SPECIFICATION FOR APPROVAL

customer Name	Guangzhou Youwo Technology Co., Ltd		
Customer project Name	BO648Z3E	Heyixun project Name	BO648Z3E
customer P/N		Heyixun P/N	HYX008-BO648Z3E-L-LX-V2
Band	2400-2500MHz		
vers ion	A1		
Designer Information			
RF Engineer	Xu Liang	EE Engineer	Shi Zhenhao
ME Engineer	Zhu Zengyuan		

Heyixun Approval				customer Approval	
	prepared	checked BY	Approval BY	checked BY	Approval BY
signature	Zhu Zengyuan				
Date	2024-7-26				

change Log				
vers ion	change Description	person in charge	Approval BY	Date

catalogue

No.	Item	Page No.
1	Drawing or Product Image	3
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3	RF Performance Test Report	5-9
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6	Environmental requirements	12
7	Install Wizard or Other	12

Drawing or Product Image

A																									
Silk screen white, antenna black																									
Hand tearing position Goldfinger Shape 10.55±0.2 10.80±0.2 circuit silk-screen 10.19±0.15 (including adhesive thickness) (material bending) This line is the cutting line of adhesive-backed centrifugal paper. This surface is bonded with double-sided adhesive in the network cable area.																									
B																									
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, single-sided version of the material, one-to-one base material, good flexibility; 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;																									
C																									
4. The surface of the gold finger is plated with gold 0.5 ² μ, 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.																									
D																									
<table><tr><td>No.</td><td>Layer</td><td>Description(Thickness)</td><td>Manufacturer RP/N</td></tr><tr><td>1</td><td>Adhesive backing</td><td>3M9471LM</td><td>3M</td></tr><tr><td>2</td><td>Substrate</td><td>KUM-800P NHR3(10 μm)</td><td>CAI Lungetti</td></tr><tr><td>3</td><td>Ink</td><td>PSM-800F3JM-ASM-80</td><td>unital</td></tr></table> shenzhen heyixun technology co., ltd 0~10 ±0.10 ○ 0.02 10~20 ±0.12 ◎ 0.03 20~40 ±0.15 ⊥ 0.02 40~ ±0.20 ⌒ 0.04 Models B0648 date 2024-7-02 drawing zhuzengyuan page number 1 of 1 Product name BIANT Part number HVX008-B0648-1-LA-V2 Material FPC-3M9471 structure RF Device zhuzengyuan Device Xuliang Approved Do not measure the drawing Location Appearance treatment unit mm proportion 1:1 version REV:A										No.	Layer	Description(Thickness)	Manufacturer RP/N	1	Adhesive backing	3M9471LM	3M	2	Substrate	KUM-800P NHR3(10 μm)	CAI Lungetti	3	Ink	PSM-800F3JM-ASM-80	unital
No.	Layer	Description(Thickness)	Manufacturer RP/N																						
1	Adhesive backing	3M9471LM	3M																						
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1																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									

Shenzhen Heyixun Technology Co., LTD

sample Dimensions Test Report

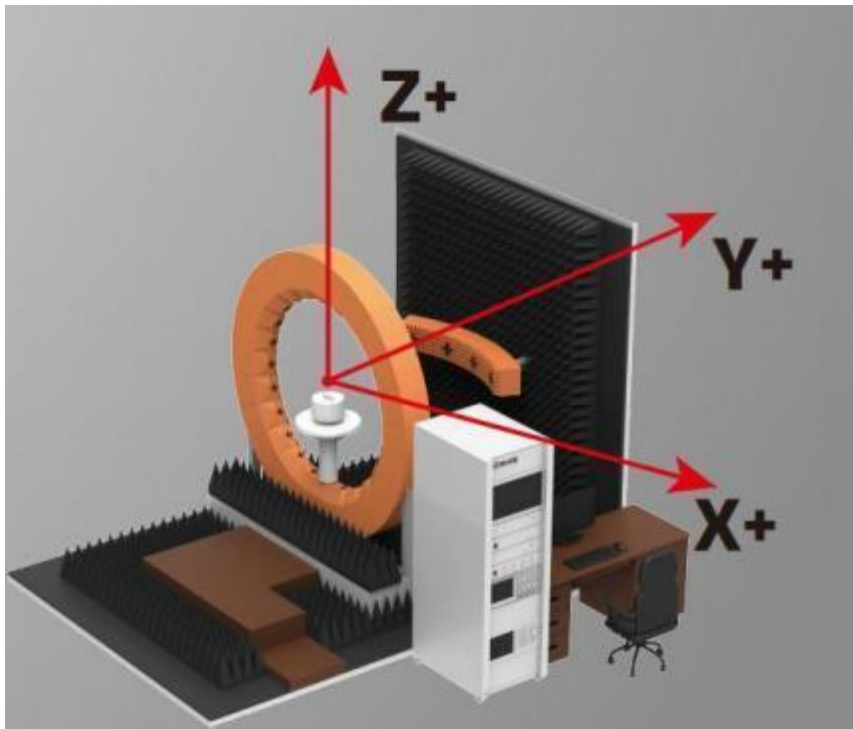
customer Name	Guangzhou Youwe Technology Co., Ltd	customer P/N		Heyixun P/N	HYX008-BO648Z3E-L-LX-V2
Test Date	2024-7-26	samp le Qty.	3	Inspector	Zhu Zengyuan
Dimens ion NO.	standard	samp le 1	samp le 2	samp le 3	pass/NG
①length	10.80mm±0.2mm	10.78mm	10.80mm	10.81mm	Pass
②width	10.55mm±0.2mm	10.52mm	10.55mm	10.56mm	Pass
③thickness	0.2±0.05mm	0.19mm	0.2mm	0.2mm	Pass
Conclusion					PASS
Inspector & Date	Zhu Zengyuan 2024-7-26		Approval &Date		

RF Performance Test Report

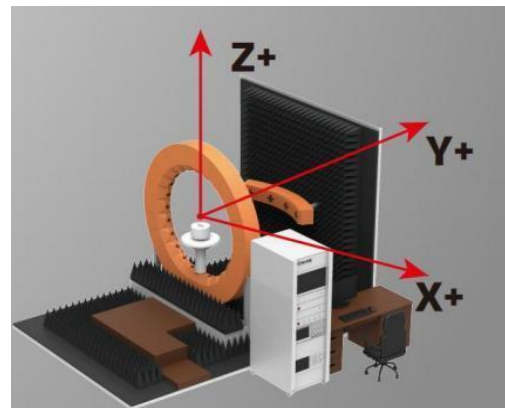
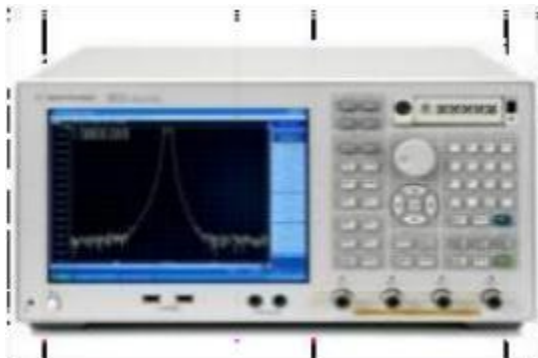
customer Name	Guangzhou Youwo Technology Co., Ltd	project Name	BO648Z3E	Heyixun P/N	HYX008-BO648Z3E-L-LX-V2
Band	2400-2500MHZ	Test Date	2024-7-26	Inspector	Zhu Zengyuan

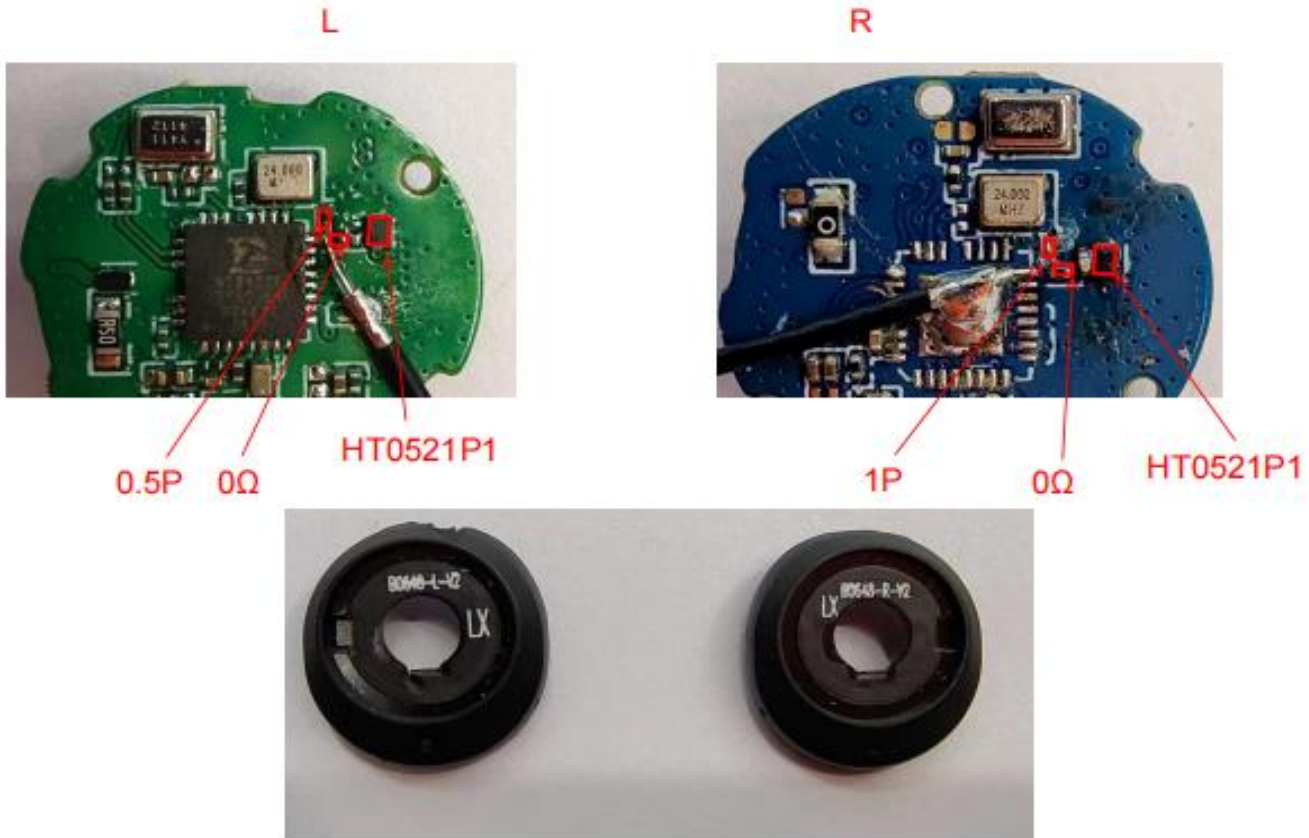
Antenna Test Equipment Introduction

Test of antenna input characteristics using Agilent E5071c andAgilent5071c 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:

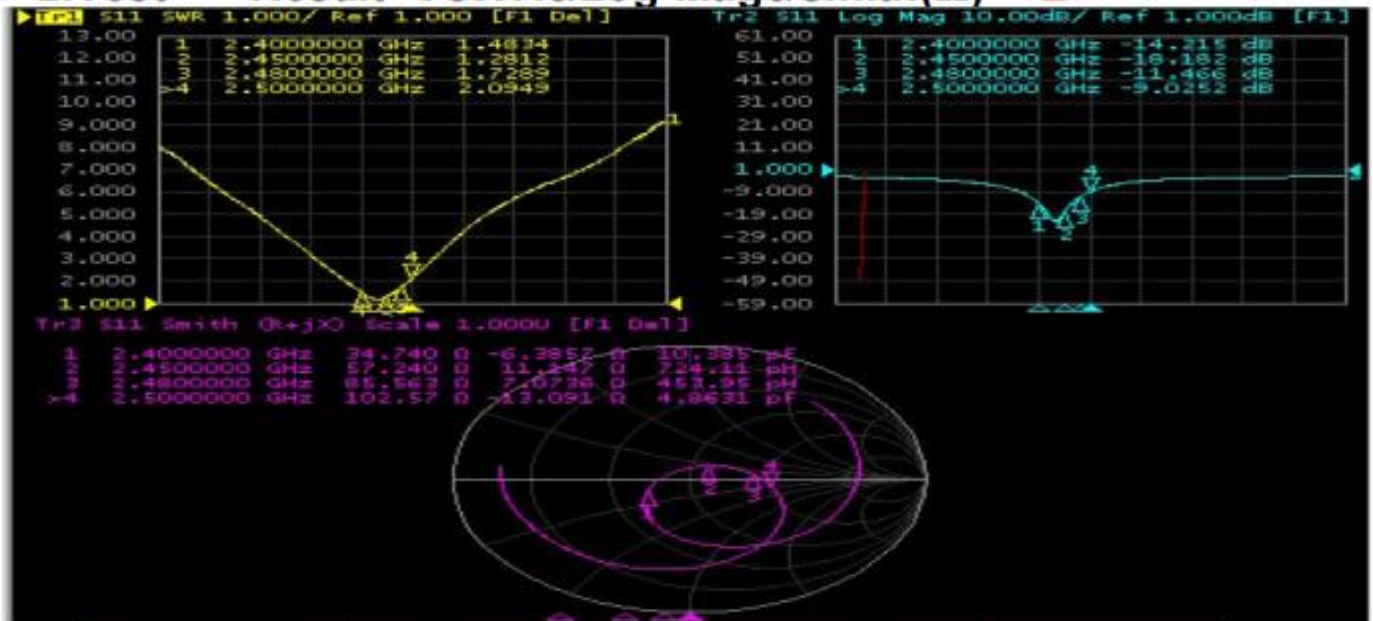


Sequence Number	Test Item	equipment
S parameter	VSWR	Agilent 5071C & Agilent 5062A
OTA Test	TRP&TIS	Agilent 8960 E5515C & Agilent 4438C&CMW500 ETS&SATIMO
Gain & Efficiency	Gain & Efficiency	ETS&SATIMO Agilent 5071C





2. Test Result VSWR&Log Mag&Smith(Ω) L



Frequency (MHz)	2400	2450	2480	2500
VSWR	1.48	1.28	1.72	2.09
Log Mag	-14.21	-18.18	-11.46	-9.02
Smith(Ω)	34.74	57.24	85.56	102.57

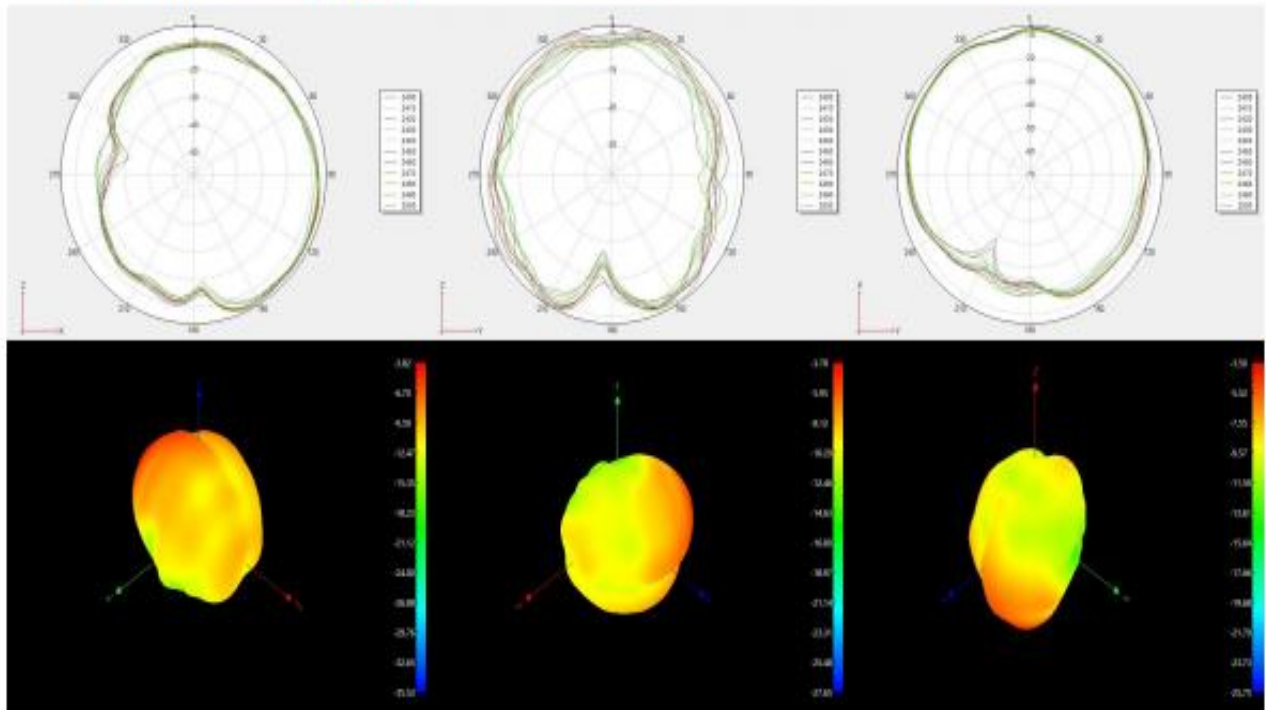
3. Test Result

L

Frequency (MHz)	Efficiency (%)	Max GAIN (dBi)
2400	16.49	-3.82
2410	15.83	-4.28
2420	16.18	-3.84
2430	16.38	-4.09
2440	15.85	-3.78
2450	16.08	-3.64
2460	15.47	-2.94
2470	15.96	-4.15
2480	15.03	-3.50
2490	15.42	-4.89
2500	14.22	-4.98

3. Test Result

3.1 2D Pattern—BTANT



3.OTA Data

OTA		L			R		
1#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-7.37	-7.08	-6.52	-5.21	-7.19	-7.29
	TIS (dBm)	-80.42	-81.16	-81.06	-79.4	-79.54	-78.18
2#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-5.18	-3.48	-3.87	-6.73	-7.22	-7.82
	TIS (dBm)	-80.89	-81.47	-79.81	-79.65	-78.41	-78.92
3#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-5.79	-4.33	-3.92	-5.39	-2.85	-5.09
	TIS (dBm)	-81.60	-82.53	-80.7	-81.7	-82.52	-80.43
4#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-7.7	-7.53	-7.35	-7.20	-6.92	-7.13
	TIS (dBm)	-79.74	-78.9	-79.21	-78.95	-78.64	-78.10
5#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-6.7	-5.08	-4.16	-7.52	-4.12	-3.08
	TIS (dBm)	-80.73	-82.14	-80.25	-81.59	-82.21	-81.86

3.OTA Data

传导数据

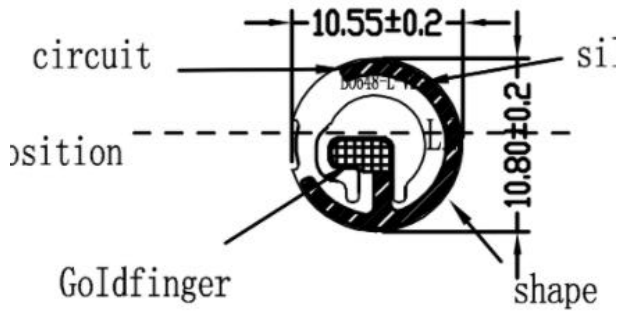
Test Equipment:		R&S CMW500		
Test Condition:		3D chamber		
Band		Channel	TRP(dBm)	TIS(dBm)
BT	L	0	8.87	-92
		39	8.43	-92
		78	8.40	-91
	R	0	8.07	-91
		39	8.57	-92
		78	8.49	-92

Reliability Test Report

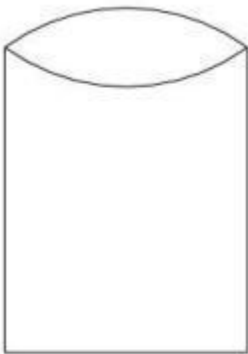
customer Name	Guangzhou Youwo Technology Co., Ltd	customer P/N		Heyixun P/N	HYX008-BO648Z3E-L-LX-V2	
Test Date	2024-7-26	samp le Qty.	3	Inspector	Zhu Zengyuan	
Test Item	Requireme	testing equipment	samp le 1	samp le 2	samp le 3	PASS/NG
High temperature storage	The test was performed after 24 hours of exposure at +85° C and 2 hours of recovery	Constant temperature and humidity chamber	OK	OK	OK	Pass
Cryogenic storage	The test was performed after 24 hours of exposure at -40° C and 2 hours of recovery	Constant temperature and humidity chamber	OK	OK	OK	Pass
High temperature operation	Operates at +60° C for 24 hours	Constant temperature and humidity chamber	OK	OK	OK	Pass
Operates at low temperatures	It works on power for 24H at -20° C	Constant temperature and humidity chamber	OK	OK	OK	Pass
Salt spray test	(5 Shi 0.5)*Sodium chloride, pH value is 6.5~7.2, and the temperature of the experimental chamber is (35 ±2)° C ☒ 24H ☐ 48H	Salt spray testing machine	OK	OK	OK	Pass
Connector riveting pull-out force	1.13 Wire size ≥10N 0.81 Wire size ≥8N RG174 ≥60N RG178 ≥50N	Push-pull force gauge				
Conclusion						Pass
Inspector & Date	Zhu Zengyuan 2024-7-26	Approval & Date				

PACKING CRITERION

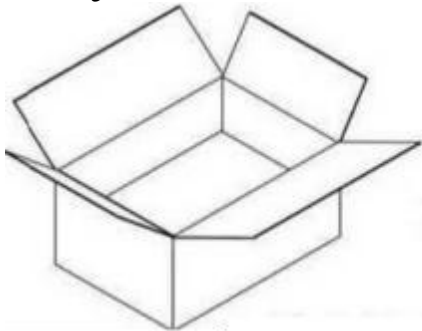
1、Individual products (Subject to the actual packaging)



2、Big PE bag packing (full sheet/single 90pcs) (Subject to the actual packaging)



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



Environmental requirements

MSDS (Material Safety Data Sheet)	☒ offer	☐ Not available	☐ N/A
COC (Environmental Protection Agreement)	☒ offer	☐ Not available	☐ N/A
Technical standards for environmentally friendly hazardous substances	☒ offer	☐ Not available	☐ N/A
Specific environmental requirements	☒ ROHS2.0 COMPLIANT ☒ Halogen-free ☒ Meets California 65		

Install Wizard or Other

Installation Process:

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

Precautions during the installation process:

- ☒After attaching the antenna, ensure that the FPC is fully attached to the housing;
- ☒The positioning hole is aligned with the positioning post position of the housing;
- ☒The edge of the FPC is against the edge of the case;
- ☐Antenna with TerminalsWhen snapping the terminals to the PCBA end of the motherboard, first snap the terminals and then vertically;
- ☐When disassembling the antenna terminals, it is necessary to use a tool (such as a special crowbar) to the terminals vertically, and do not directly pull the wire to disassemble them.



Shenzhen Heyixun Technology Co., LTD

SPECIFICATION FOR APPROVAL

customer Name	Guangzhou Youwo Technology Co., Ltd		
Customer project Name	BO648Z3E	Heyixun project Name	BO648Z3E
customer P/N		Heyixun P/N	HYX008-BO648Z3E-R-LX-V2
Band	2400-2500MHz		
vers ion	A1		
Designer Information			
RF Engineer	Xu Liang	EE Engineer	Shi Zhenhao
ME Engineer	Zhu Zengyuan		

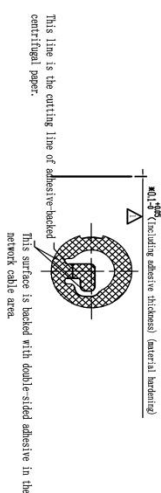
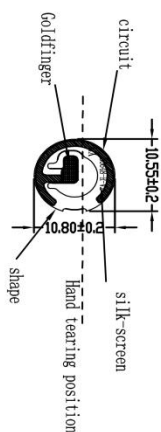
Heyixun Approval				customer Approval	
	prepared	checked BY	Approval BY	checked BY	Approval BY
signature	Zhu Zengyuan				
Date	2024-7-26				

change Log				
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8		

Silk screen white, antenna black



Concentrate:

1, 1. The adhesive is made of 3M 9471 300MLSE, 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, single-sided version of the material, one-to-one base material, good flexibility;

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 $0.5\text{ }\mu\text{m}$, 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: $\pm 0.03\text{mm}$, 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.

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.

No.	Layer	Description (Thickness)	Manufacturer &P/N
1	Adhesive backing	3M9471LM	3M
2	Substrate	KIM-800F NMC<10 μm>	CMI Linetetti
3	Ink	PEN-800FSUM-NMH-80	unitai

1	2	3	4
Do not measure the drawing			
</			

sample Dimensions Test Report

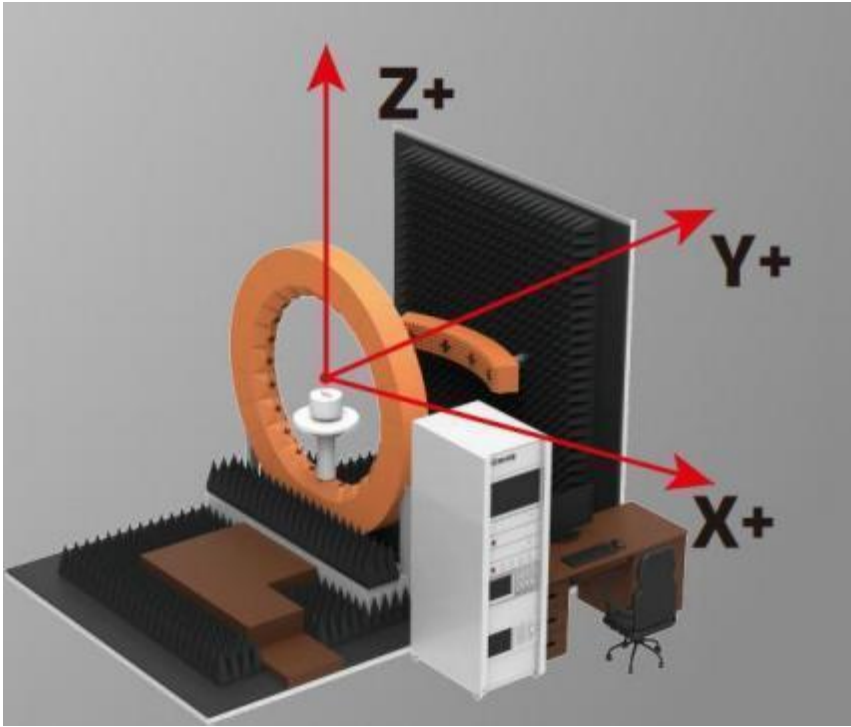
customer Name	Guangzhou Youwo Technology Co., Ltd	customer P/N		Heyixun P/N	HYX008-BO648Z3E-R-LX-V2
Test Date	2024-7-26	samp le Qty.	3	Inspector	Zhu Zengyuan
Dimens ion NO.	standard	samp le 1	samp le 2	samp le 3	pass/NG
①length	10.80mm±0.2mm	10.79mm	10.80mm	10.82mm	Pass
②width	10.55mm±0.2mm	10.54mm	10.55mm	10.57mm	Pass
③thickness	0.2±0.05mm	0.18mm	0.2mm	0.21mm	Pass
Conclusion					PASS
Inspector & Date	Zhu Zengyuan 2024-7-26		Approval &Date		

RF Performance Test Report

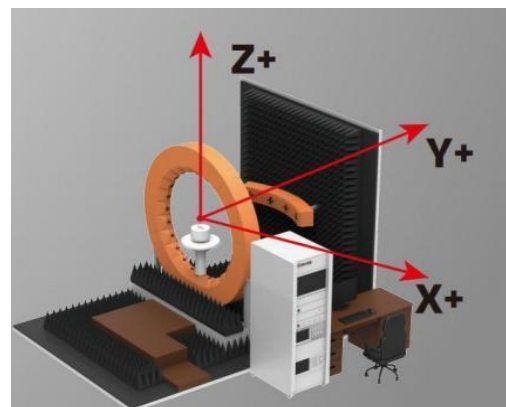
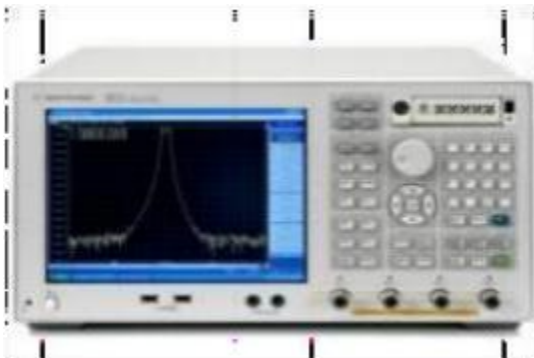
customer Name	Guangzhou Youwo Technology Co., Ltd	project Name	BO648Z3E	Heyixun P/N	HYX008-BO648Z3E-R-LX-V2
Band	2400-2500MHZ	Test Date	2024-7-26	Inspector	Zhu Zengyuan

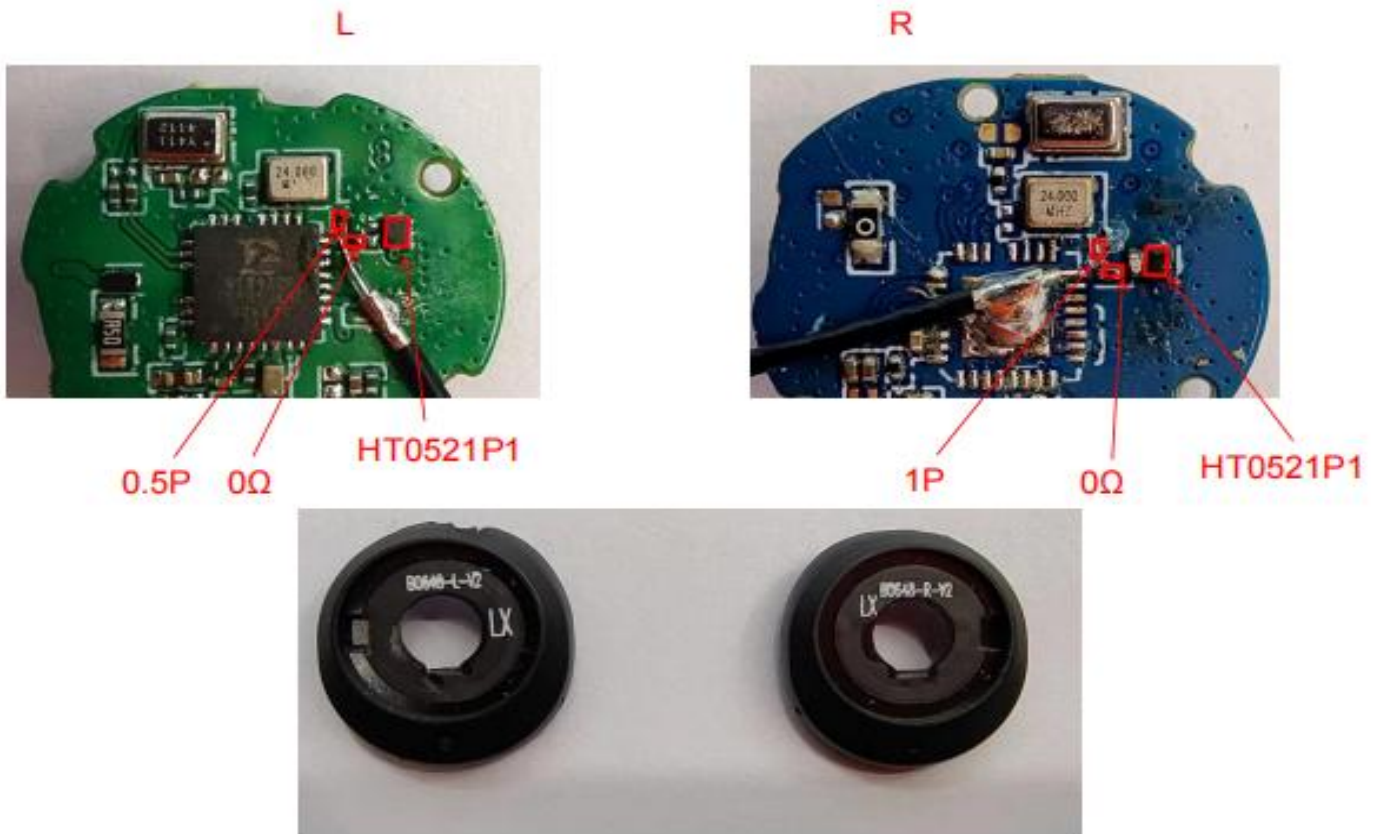
Antenna Test Equipment Introduction

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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





2. Test Result VSWR&Log Mag&Smith(Ω) R



Frequency (MHz)	2400	2450	2480	2500
VSWR	1.96	1.20	1.24	1.52
Log Mag	-9.77	-20.56	-19.40	-13.69
Smith(Ω)	29.54	41.50	59.09	75.80

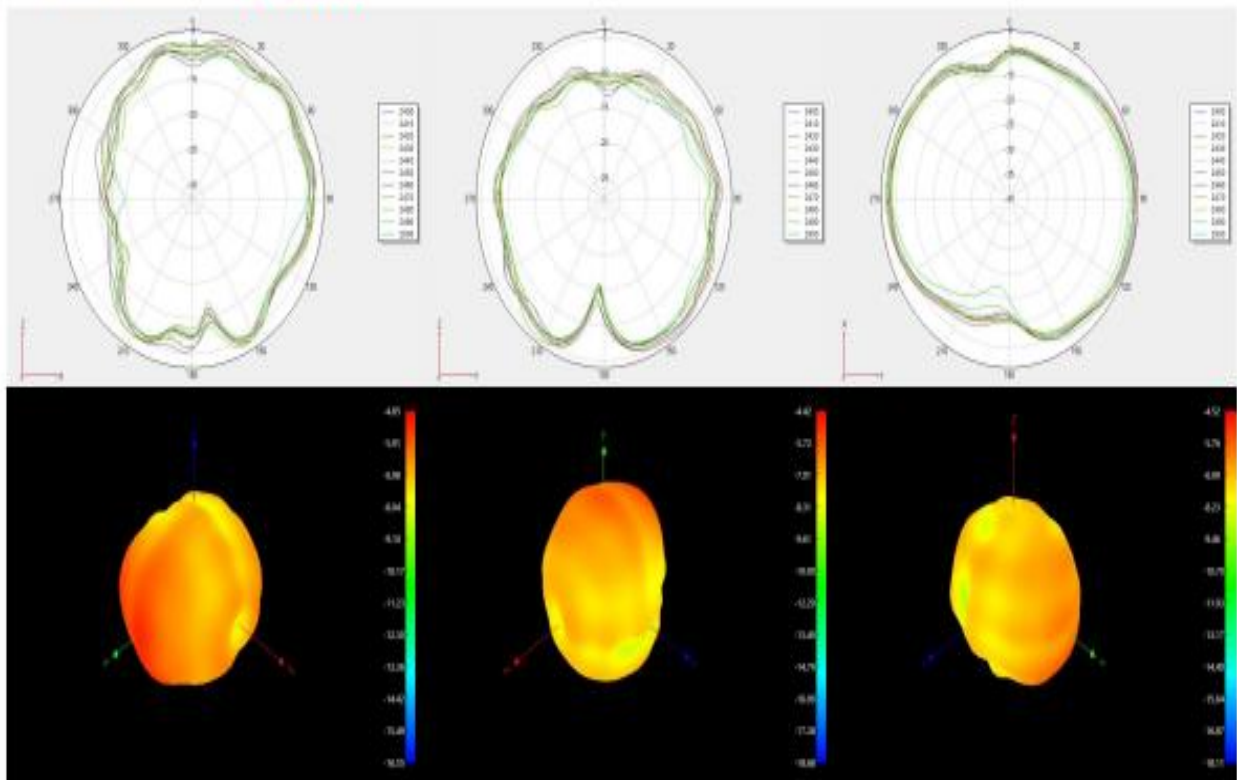
3. Test Result

R

Frequency (MHz)	Efficiency (%)	Max GAIN (dBi)
2400	15.41	-4.85
2410	15.32	-5.32
2420	16.09	-4.50
2430	16.35	-5.06
2440	15.89	-4.42
2450	16.79	-4.47
2460	16.78	-3.86
2470	15.99	-5.12
2480	14.73	-4.52
2490	15.62	-5.24
2500	14.99	-4.85

3. Test Result

3.1 2D Pattern—BTANT



3.OTA Data

OTA		L			R		
1#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-7.37	-7.08	-6.52	-5.21	-7.19	-7.29
	TIS (dBm)	-80.42	-81.16	-81.06	-79.4	-79.54	-78.18
2#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-5.18	-3.48	-3.87	-6.73	-7.22	-7.82
	TIS (dBm)	-80.89	-81.47	-79.81	-79.65	-78.41	-78.92
3#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-5.79	-4.33	-3.92	-5.39	-2.85	-5.09
	TIS (dBm)	-81.60	-82.53	-80.7	-81.7	-82.52	-80.43
4#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-7.7	-7.53	-7.35	-7.20	-6.92	-7.13
	TIS (dBm)	-79.74	-78.9	-79.21	-78.95	-78.64	-78.10
5#	信道	0	39	78	0	39	78
	Frequency (MHz)	2402	2441	2480	2402	2441	2480
	TRP (dBm)	-6.7	-5.08	-4.16	-7.52	-4.12	-3.08
	TIS (dBm)	-80.73	-82.14	-80.25	-81.59	-82.21	-81.86

传导数据

3.OTA Data

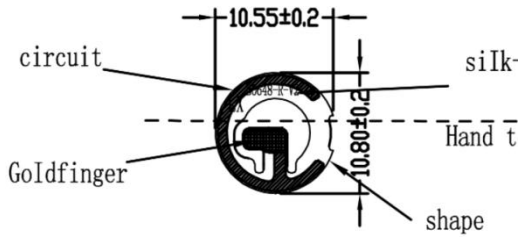
Test Equipment:		R&S CMW500		
Test Condition:		3D chamber		
Band		Channel	TRP(dBm)	TIS(dBm)
BT	L	0	8.87	-92
		39	8.43	-92
		78	8.40	-91
	R	0	8.07	-91
		39	8.57	-92
		78	8.49	-92

Reliability Test Report

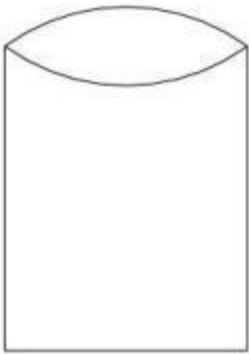
customer Name	Guangzhou Youwo Technology Co., Ltd	customer P/N		Heyixun P/N	HYX008-BO648Z3E-R-LX-V2	
Test Date	2024-7-26	samp le Qty.	3	Inspector	Zhu Zengyuan	
Test Item	Requireme	testing equipment	samp le 1	samp le 2	samp le 3	PASS/NG
High temperature storage	The test was performed after 24 hours of exposure at +85° C and 2 hours of recovery	Constant temperature and humidity chamber	OK	OK	OK	Pass
Cryogenic storage	The test was performed after 24 hours of exposure at -40° C and 2 hours of recovery	Constant temperature and humidity chamber	OK	OK	OK	Pass
High temperature operation	Operates at +60° C for 24 hours	Constant temperature and humidity chamber	OK	OK	OK	Pass
Operates at low temperatures	It works on power for 24H at -20° C	Constant temperature and humidity chamber	OK	OK	OK	Pass
Salt spray test	(5 Shi 0.5)*Sodium chloride, pH value is 6.5~7.2, and the temperature of the experimental chamber is (35 ±2)° C ☒ 24H ☐ 48H	Salt spray testing machine	OK	OK	OK	Pass
Connector riveting pull-out force	1.13 Wire size ≥10N 0.81 Wire size ≥8N RG174 ≥60N RG178 ≥50N	Push-pull force gauge				
Conclusion						Pass
Inspector & Date	Zhu Zengyuan 2024-7-26	Approval & Date				

PACKING CRITERION

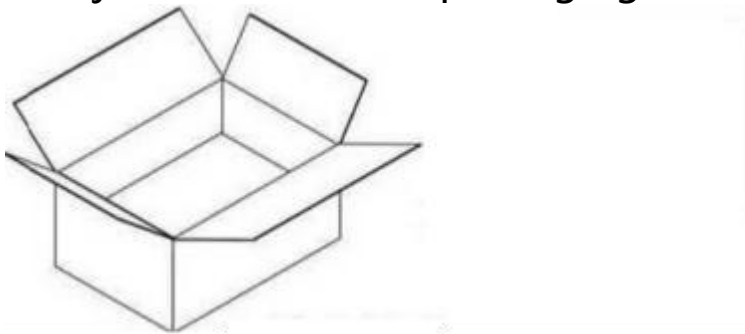
1、Individual products (Subject to the actual packaging)



2、Big PE bag packing (full sheet/single 90pcs) (Subject to the actual packaging)



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



Environmental requirements

MSDS (Material Safety Data Sheet)	☒ offer	☐ Not available	☐ N/A
COC (Environmental Protection Agreement)	☒ offer	☐ Not available	☐ N/A
Technical standards for environmentally friendly hazardous substances	☒ offer	☐ Not available	☐ N/A
Specific environmental requirements	☒ ROHS2.0 COMPLIANT ☒ Halogen-free ☒ Meets California 65		

Install Wizard or Other

Installation Process:

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

Precautions during the installation process:

- ☒After attaching the antenna, ensure that the FPC is fully attached to the housing;
- ☒The positioning hole is aligned with the positioning post position of the housing;
- ☒The edge of the FPC is against the edge of the case;
- ☐Antenna with TerminalsWhen snapping the terminals to the PCBA end of the motherboard, first snap the terminals and then vertically;
- ☐When disassembling the antenna terminals, it is necessary to use a tool (such as a special crowbar) to the terminals vertically, and do not directly pull the wire to disassemble them.