

# W110 project antenna material requirements specification

customer name: Shenzhen Dunsh Electronics Co., Ltd

Customer name: W110

product name: Antenna components


Supplier Model: Left headphone antenna: 336026-IA; right headphone antenna: 336026-IB

Supplier Address: 407-411, Floor 4, Building 2, Nantaiyun Chuanggu Park, southeast of the intersection of Guangming Avenue and Dongchang Road, Guangming District, Shenzhen City

**Change the content of the resume:**

order number	edition	state	availability date	person liable	page number	remarks
1	R:A	R:A	2023-04-26	Yuan Shujun	16	
2						

**The Supplier acknowledges the signature of the following documents:**

Responsible person / date		IQC/ date	Review / Date	Approval / Date
MD	<i>Feng Jiwu</i>	<i>Zhong Qihong</i>	<i>Zeng Xiang</i>	
RF	<i>He lei</i>			

**The Demander acknowledges the signature (please send it back after the confirmation):**

The demander's judgment result: <input type="checkbox"/> qualified <input type="checkbox"/> unqualified			
Development & Design Engineer / Date	SQE Engineer / Date	Purchasing Leader / Date	Development Manager approval / date

# catalogue

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## 1. Overview

### 1.1 Scope of application

This requirement specifies the antenna technical requirements and material requirements specifications for W110 products.

This requirement is applicable to the antenna selection, testing and acceptance of the W110 product.

### 1.2 Basic Project information

Antenna name:	W110
Antenna frequency:	BT: 2400MHz-2500MHz
Antenna material:	FPC antenna
Antenna version:	V1.0

## 2. Technical index requirements

### 2.1 Introduction of test items and equipment

inventory	test item	equipment
S11 parameter	Standing wave ratio, echo loss	network analyzer
Active test	TRP, TIS	Integrated tester, microwave darkroom
Passive test	Gain, efficiency	network analyzer

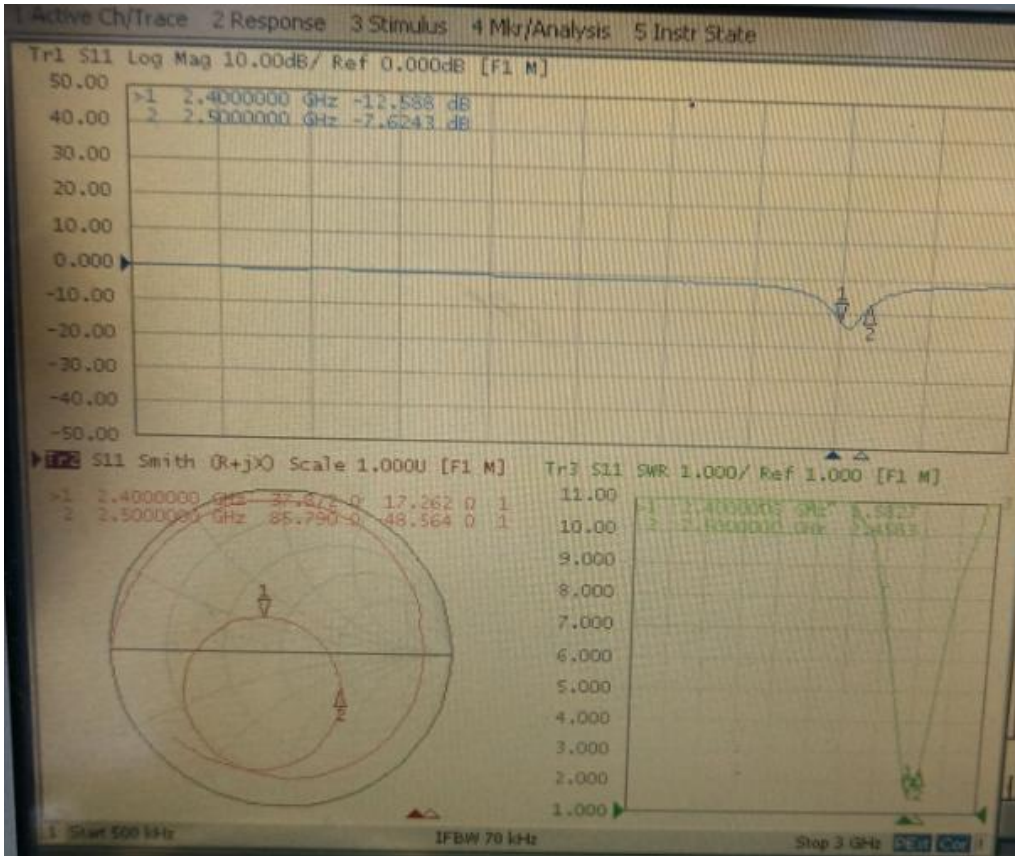
2.2 Main board conduction data

左耳 L		
0	11.18	-91
39	11.61	-91
78	11.65	-91

右耳 R		
0	11.51	-91
39	11.68	-91
78	11.65	-91

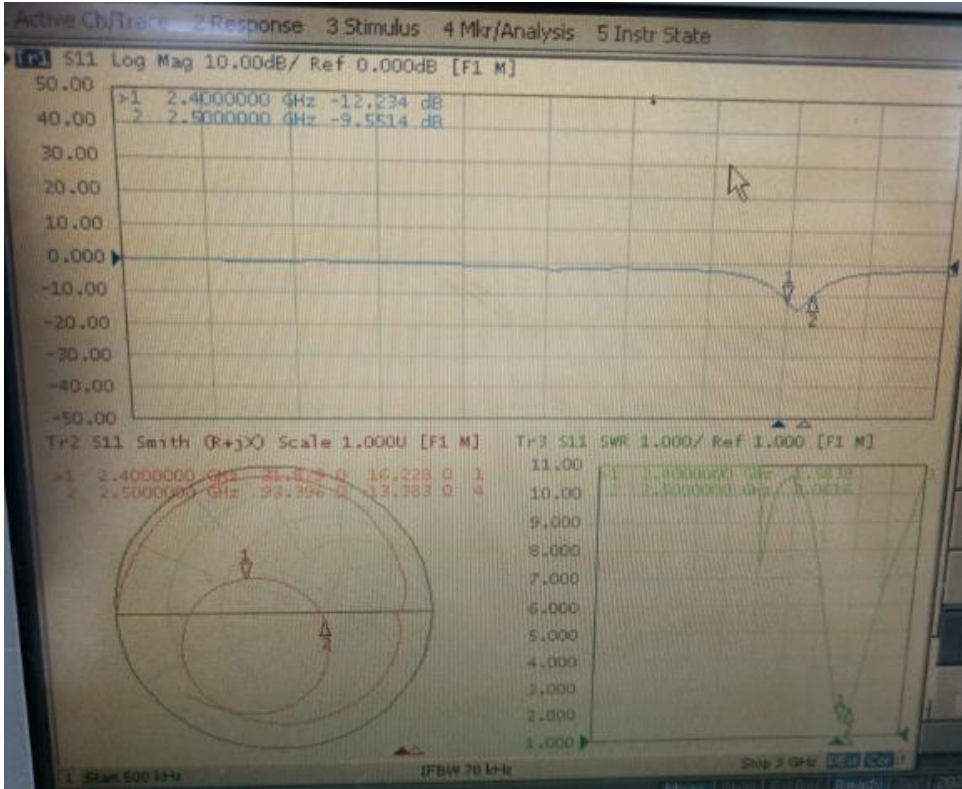
### 2.3 The antenna has no passive parameters

#### 2.3.1 Antenna passive parameters / L



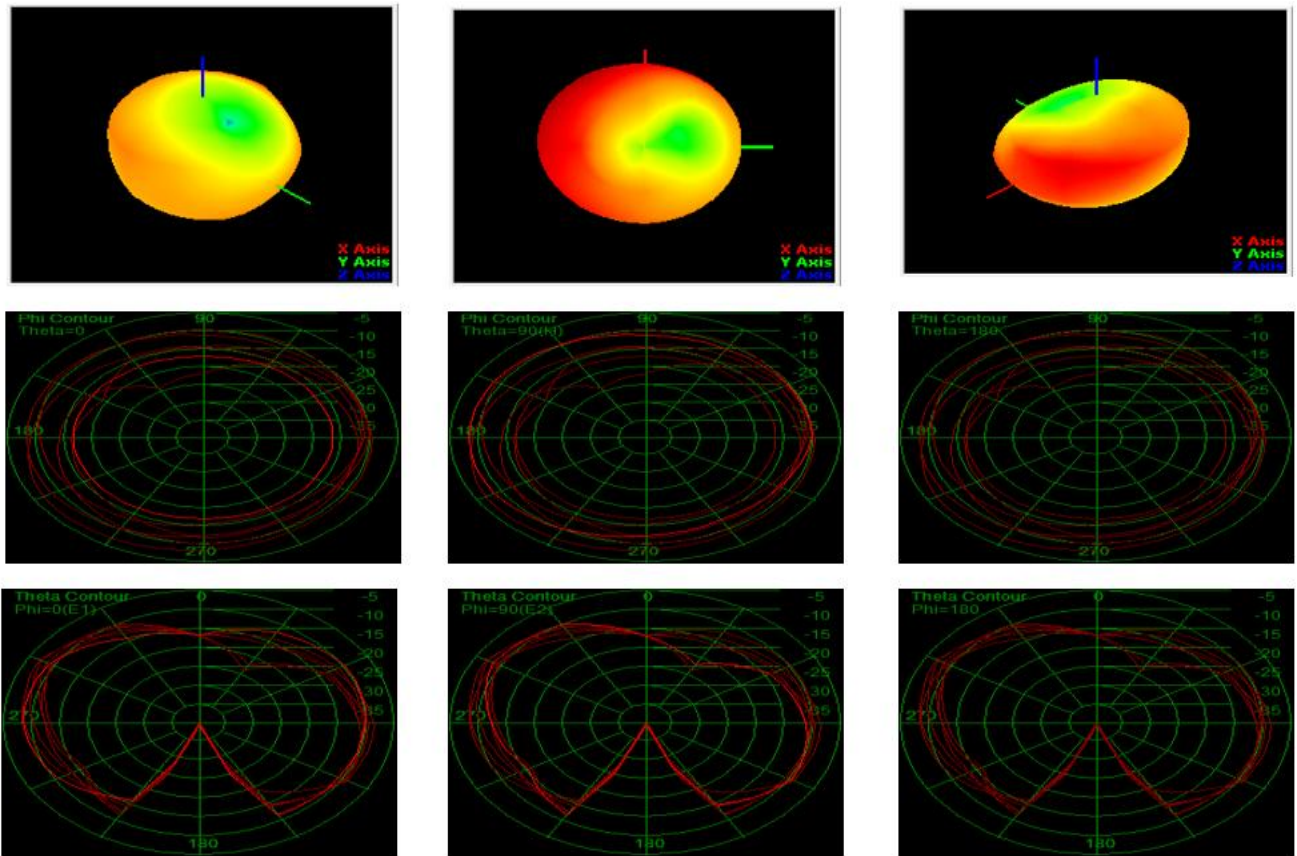
Test	L								
Test Point ID	1	2	3	4	5	6	7	8	9
Freq. (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	23%	24%	25%	26%	27%	27%	26%	25%	24%
增益(dBi)	-2.1	-1.7	-1.8	-1.8	-1.7	-1.6	-1.9	-2.1	-2.2

2.3.2 Antenna passive parameters / R

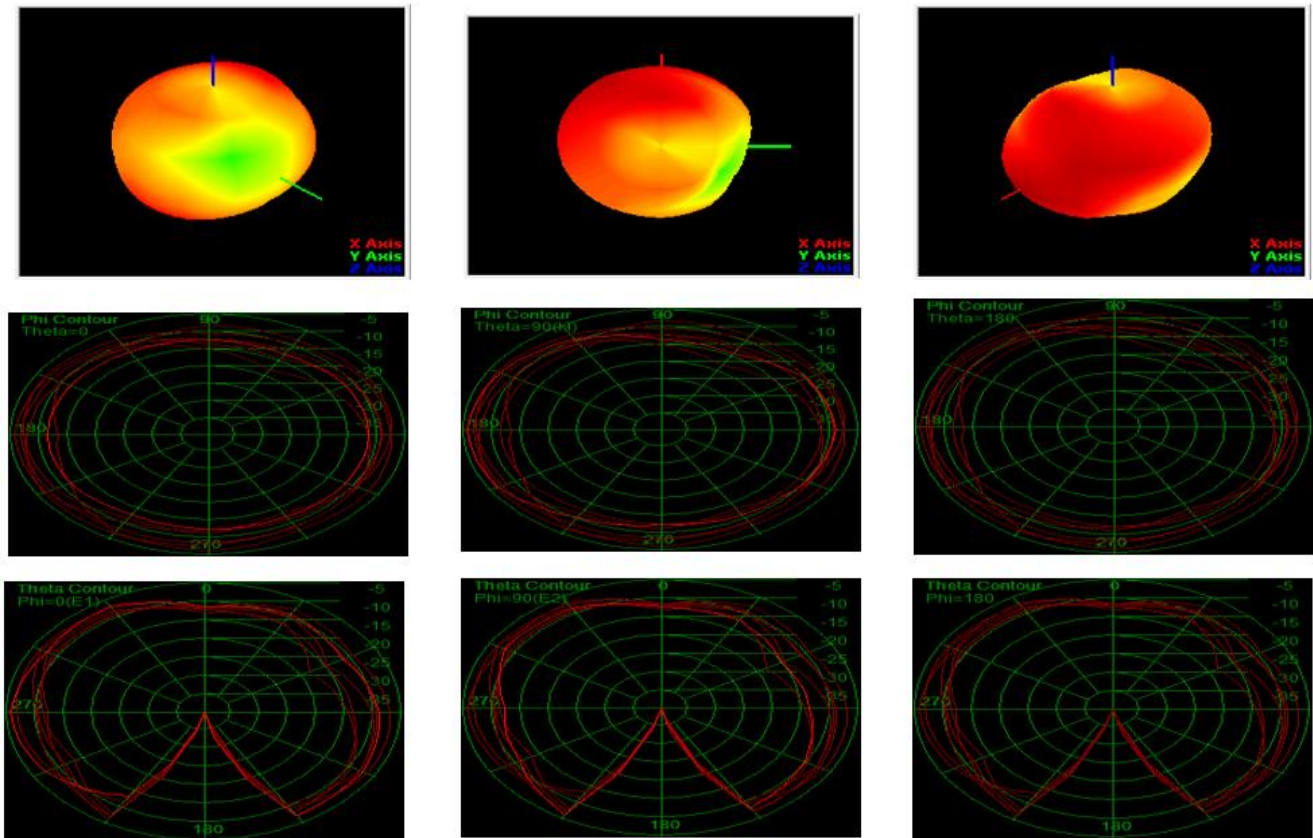


Test	R								
	1	2	3	4	5	6	7	8	9
Test Point ID	2400	2410	2420	2430	2440	2450	2460	2470	2480
Freq. (MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Efficiency (%)	24%	25%	26%	27%	28%	27%	26%	25%	24%
增益(dBi)	-2.3	-2.2	-2.0	-1.8	-1.7	-1.6	-1.8	-2.0	-2.1

2.3.3 Left ear antenna passive parameters-flat plan / orientation diagram



2.3.4 Right ear antenna passive parameters-flat plan / orientation diagram



2.4 Active parameters of the antenna

2.4.1 Antenna active parameters / free space

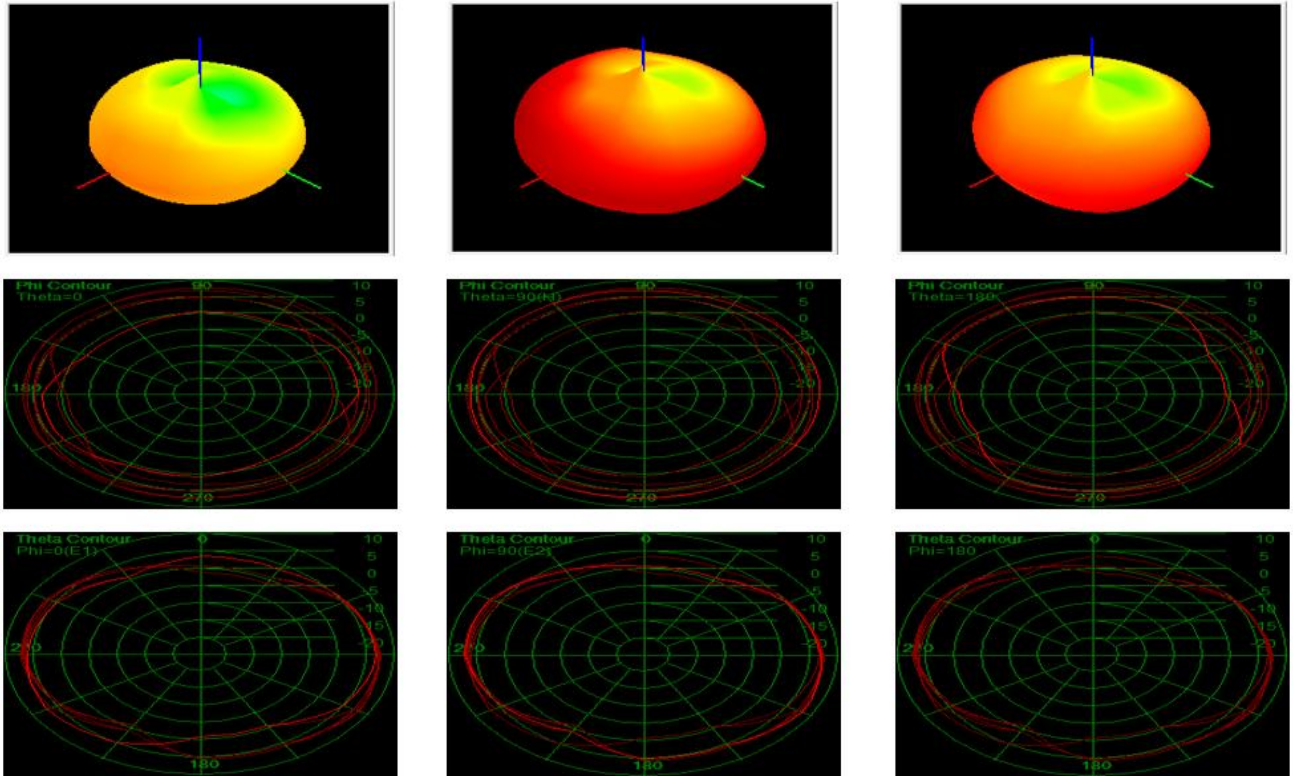
Channel No.	Free space test data/L	
	TRP (dBm)	TIS (dBm)
0	5.22	-88.24
39	5.31	-88.36
78	5.16	-88.48

Channel No.	Free space test data/R	
	TRP (dBm)	TIS (dBm)
0	5.50	-88.26
39	5.47	-88.20
78	5.39	-88.38

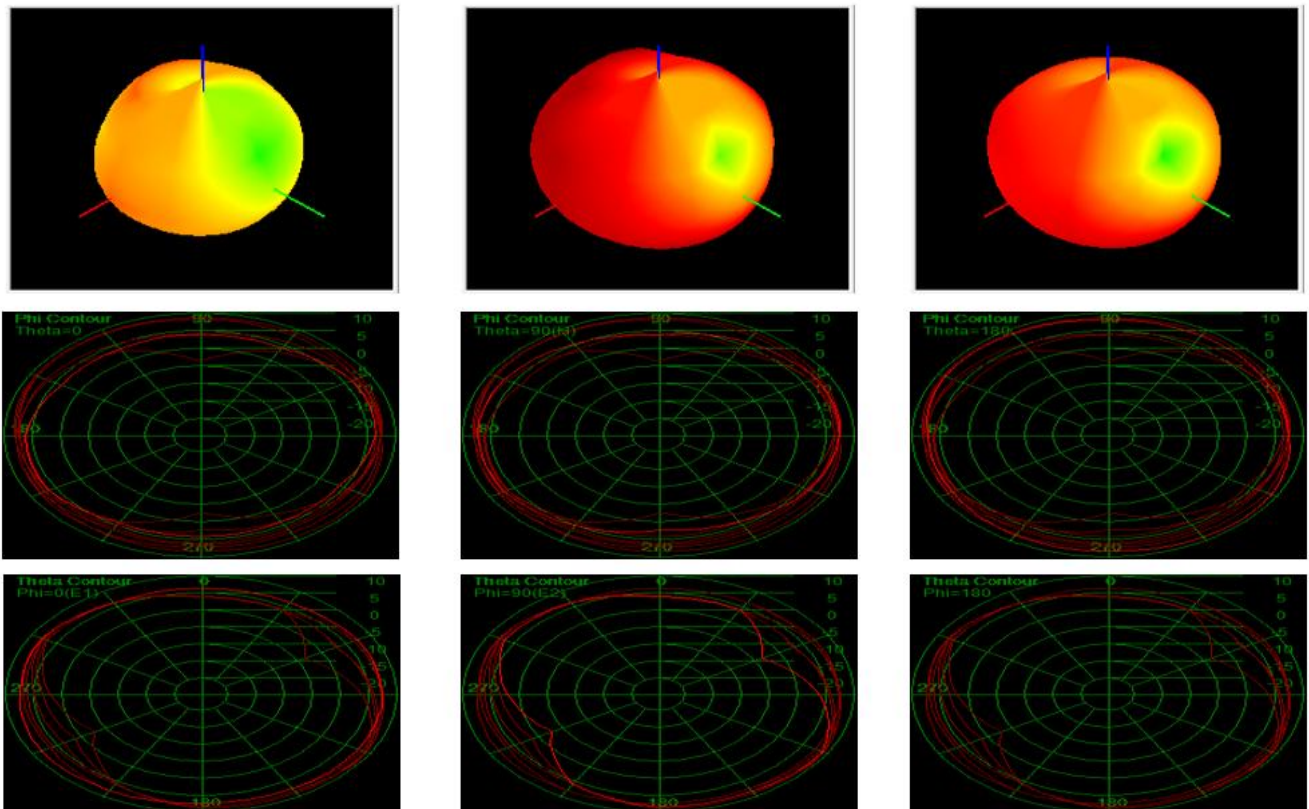


2.4.2 Floor plan / direction map-free space

Active parameters of left ear antenna-plan / orientation diagram



Active parameters of right ear antenna-plan / orientation diagram



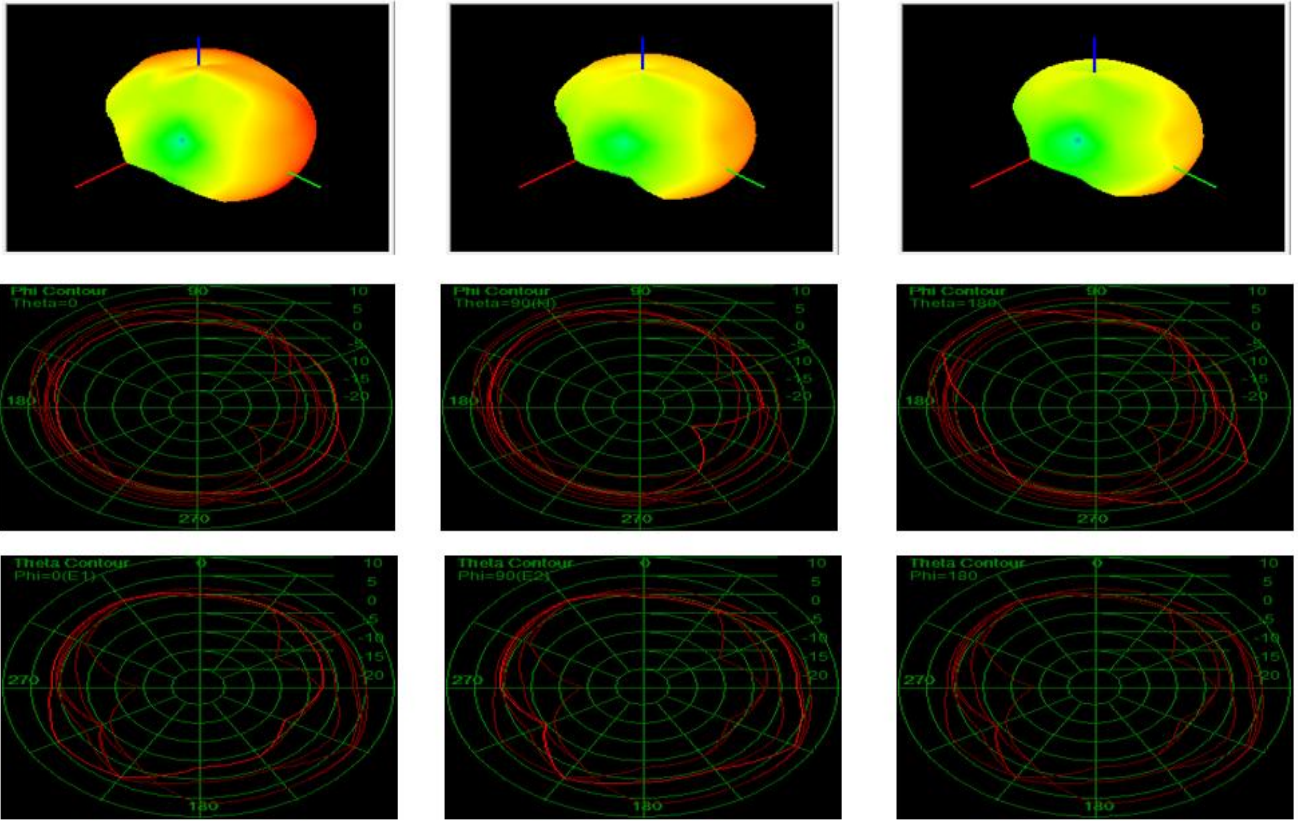
2.4.3 Antenna active parameters / head ear

Channel No.	Head and ear test data/L	
	TRP (dBm)	TIS (dBm)
0	1.28	-83.22
39	0.56	-83.87
78	0.35	-83.82

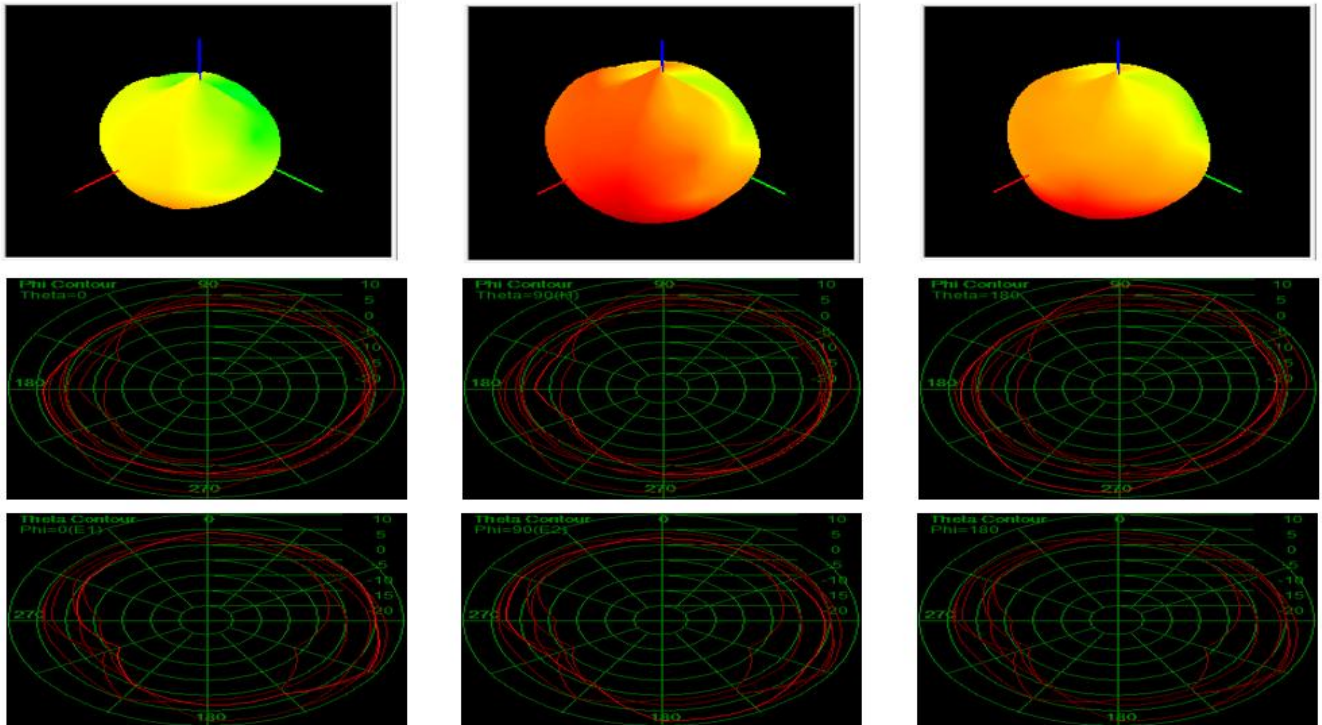
Channel No.	Head and ear test data/R	
	TRP (dBm)	TIS (dBm)
0	1.24	-84.17
39	0.67	-83.38
78	0.58	-83.33

2.4.4 Plan drawing / direction drawing-head and ear

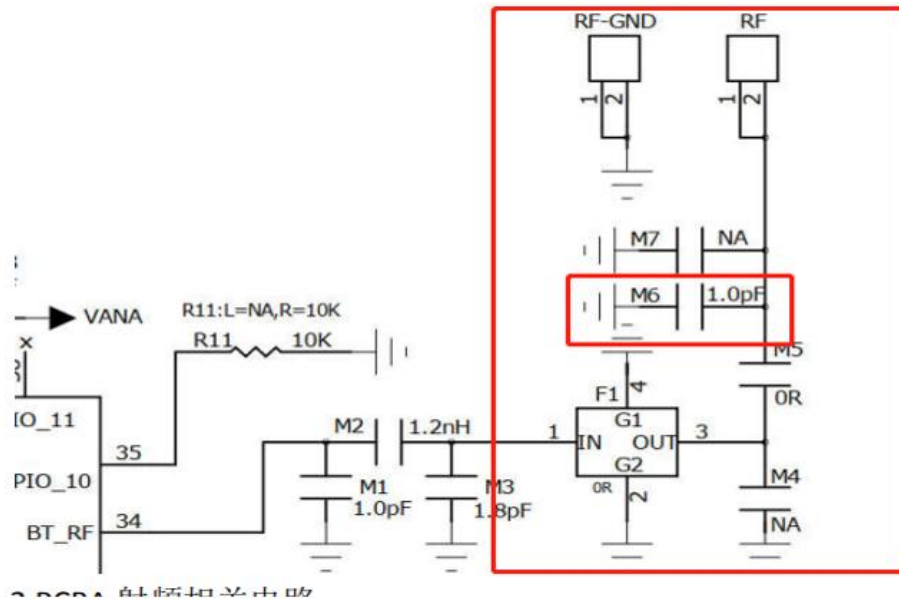
Active parameters of left ear antenna-flat plan / direction map-head ear



Active parameters of the right ear antenna-plane plan / direction map-head ear



### 2.5 Antenna matching

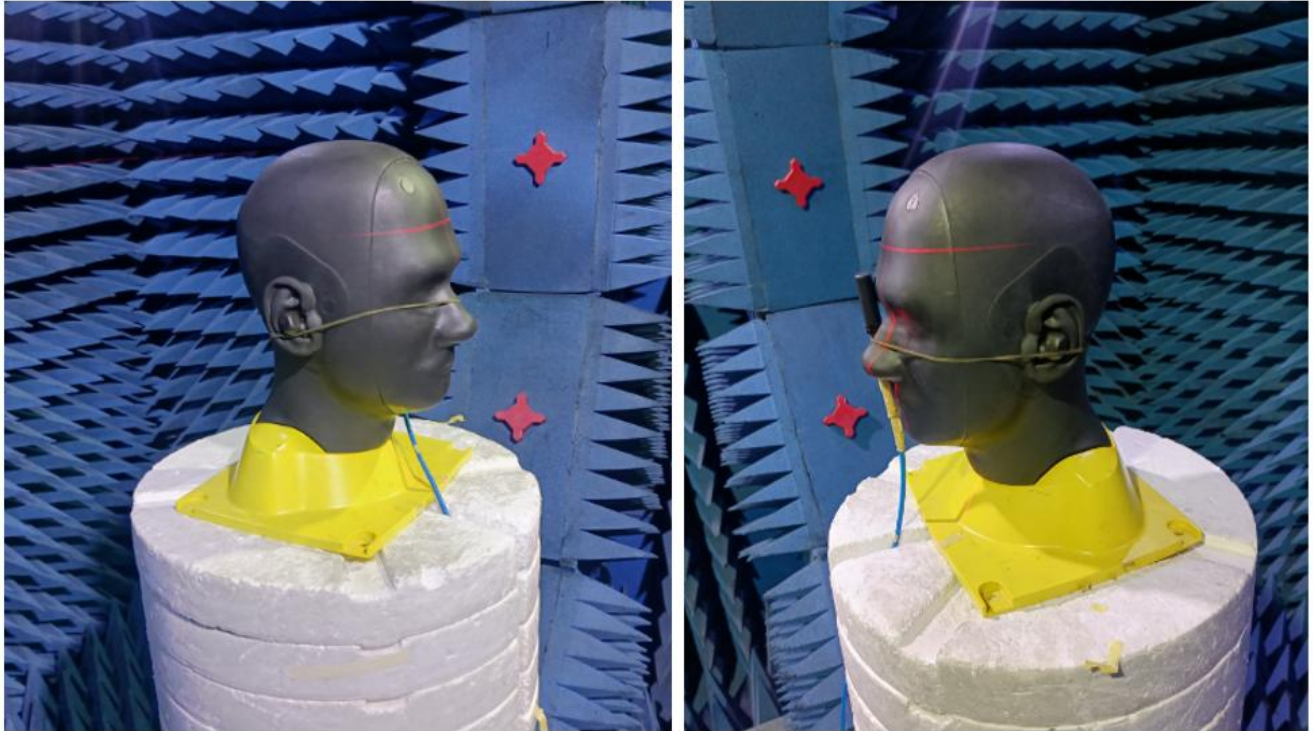


**Note: Antenna  $\pi$ -shaped matching is not changed (as shown)**

### 2.6 Antenna field measurement data

test method:	1. Distance test: Connect the Bluetooth headset with the mobile phone, and place the mobile phone on the 60cm high non-metal bracket. The tester wears the headset to walk to the distance, and the tester rotates 360 degrees. Measure the limit distance between the call sound and music sound in the headset, measure the distance.	
	2. Close body test: the tester carries the mobile phone (preferably the back pocket of the pants opposite the main ear of the Bluetooth headset) for the human rotation test whether there is no card.	
	3, hands cover test: tester wear headphones, and connect with the mobile phone to play music, test two states: 1) fingertip up test, test whether the music is broken; 2) fingertip back test, test whether the music is broken.	
Test location:	In the outdoor open space of our building (see the test environment)	
testing facility:	Apple 6	
test result:	listen to music	1. The left and right ears are the main ear test 12M.
		2. The close proximity has not been tested yet.
		3. The hands covering the ears have not been tested yet.

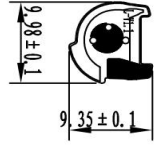
2.7 The antenna test environment



### 3. structural drawings

#### Left headphone antenna drawing

<p>skills requirements:</p> <table border="1"> <tr> <td>1.PPC substrate specifications:</td> <td>Electrolytic copper (half to half)</td> </tr> <tr> <td>2.Electroplating specifications:</td> <td>Double-sided tape: 3M-9471IE Nickel plated: 3µm Surface ink color: Matt black Printing font color: Yellow Printing font height: According to drawings</td> </tr> </table>		1.PPC substrate specifications:	Electrolytic copper (half to half)	2.Electroplating specifications:	Double-sided tape: 3M-9471IE Nickel plated: 3µm Surface ink color: Matt black Printing font color: Yellow Printing font height: According to drawings	<p>6.Key control size:</p> <p>The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings</p>		<p>Shenzhen Yu Sheng Communication Equipment Co., Ltd.</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>			
		1.PPC substrate specifications:	Electrolytic copper (half to half)																		
2.Electroplating specifications:	Double-sided tape: 3M-9471IE Nickel plated: 3µm Surface ink color: Matt black Printing font color: Yellow Printing font height: According to drawings																				
<p>7.Environmental requirements:</p> <p>Parts meet MIL-STD-883C/2009/2003 environmental protection requirements</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>									
<p>8.Packaging requirements:</p> <p>Packed in PE bags, the quantity of each bag is 100PCS, there is a mark on the outside of the bag</p>		<p>1. Shape tolerance <math>\pm 0.10</math>; 2. Copper foil circuit tolerance <math>\pm 0.05</math>; 3. The position of the copper foil to the shape is <math>\pm 0.15</math>; 4. Hole-to-hole position tolerance <math>\pm 0.10</math>; hole-to-shape position tolerance <math>\pm 0.15</math>; 5. The size tolerance of gold finger is <math>\pm 0.20</math>. 6. For other unmarked dimensions, refer to 2D drawings.</p>		<p>1. Reliability test: salt spray test\rubber friction test\alcohol resistance test\100 grid test. 2. The front ink, the surface of the ink is required to be folded in half without cracking, scratching, etc.</p>		<p>1. <math>9.98 \pm 0.1</math></p> <p>2. <math>9.35 \pm 0.1</math></p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>			
<p>DATE: 1</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 2</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 3</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 4</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 5</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 6</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 7</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	
<p>DATE: 8</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>位置</p>		<p>Model: W110</p>		<p>DATE: 20230629</p>		<p>Design: JFB</p>		<p>MD: JFB</p>		<p>RF: CHH</p>		<p>Revised: R: A</p>	



Gold plated Area

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Right headphone antenna drawing

<p>由 Autodesk 教育版产品制作</p>		A																																									
		<p>Skills requirement:</p> <table border="1"> <tr> <td>1.PPC substrate specifications:</td> <td>PI substrate:</td> <td>Electrolytic copper (half to half)</td> </tr> <tr> <td>2.Electroplating specifications:</td> <td>Electrolytic copper:</td> <td>0.5oz(ED)</td> </tr> <tr> <td>3.Surface ink requirements:</td> <td>Double-sided tape:</td> <td>3M-9471LE</td> </tr> <tr> <td></td> <td>Nickel plated:</td> <td>3*8mm</td> </tr> <tr> <td></td> <td>Surface ink color:</td> <td>Gilded: 0.025mm</td> </tr> <tr> <td></td> <td>Printing font color:</td> <td>Mat black</td> </tr> <tr> <td></td> <td>Printing font height:</td> <td>Yellow</td> </tr> <tr> <td></td> <td></td> <td>According to drawings</td> </tr> </table>		1.PPC substrate specifications:	PI substrate:	Electrolytic copper (half to half)	2.Electroplating specifications:	Electrolytic copper:	0.5oz(ED)	3.Surface ink requirements:	Double-sided tape:	3M-9471LE		Nickel plated:	3*8mm		Surface ink color:	Gilded: 0.025mm		Printing font color:	Mat black		Printing font height:	Yellow			According to drawings	<p>4.Reliability requirements:</p> <p>1. Reliability test: salt spray test\rubber friction test\alcohol resistance test\100 grid test; 2. The front ink, the surface of the ink is required to be folded in half without cracking, scratching, etc.</p>		<p>5.Tolerance requirements:</p> <p>1. Shape tolerance ±0.10; 2. Copper foil circuit tolerance ±0.05; 3. The position of the copper foil to the shape is ±0.15; 4. Hole-to-hole position tolerance ±0.10; hole-to-shape position tolerance ±0.15; 5. The size tolerance of gold finger is ±0.20. 6. For other unmarked dimensions, refer to 2D drawings.</p>		<p>6.Key control size:</p> <p>The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings</p>		<p>7.Environmental requirements:</p> <p>Parts meet RoHS2.0/REACH/GR environmental protection requirements</p>		<p>8.Packaging requirements:</p> <p>Packed in PP bags, the quantity of each bag is 100PCS, there is a mark on the outside of the bag</p>		<p>1</p>		<p>2</p>		<p>3</p>	
1.PPC substrate specifications:	PI substrate:	Electrolytic copper (half to half)																																									
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<p>DATE</p>		<p>Modify the content</p>		<p>Version</p>		<p>Revise</p>		<p>5</p>		<p>6</p>		<p>7</p>		<p>8</p>		<p>9</p>																											
								<p>位置</p>		<p>Model</p>		<p>DATE</p>		<p>mm</p>		<p>preparation</p>		<p>FIT</p>		<p>Revise</p>																							
								<p>0.10 ±0.10</p>		<p>W110</p>		<p>20230629</p>		<p>JFB</p>		<p>JFB</p>		<p>R.A</p>																									
								<p>10.20 ±0.12</p>		<p>R-BT-PPC</p>		<p>Design</p>		<p>JFB</p>		<p>JFB</p>		<p></p>																									
								<p>20.40 ±0.15</p>		<p>Part NO</p>		<p>Review</p>		<p>RF</p>		<p>CXH</p>		<p></p>																									
								<p>40.50 ±0.20</p>		<p>Material quality</p>		<p>confirm</p>		<p></p>		<p></p>		<p></p>																									
								<p>0.02</p>		<p>Electrolytic copper (half to half)</p>		<p></p>		<p></p>		<p></p>		<p></p>																									
								<p>0.02</p>		<p>Mold surface treatment:</p>		<p></p>		<p></p>		<p></p>		<p></p>																									
								<p>位置</p>		<p>Appearance treatment:</p>		<p></p>		<p></p>		<p></p>		<p></p>																									

Gold plated Area

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Shenzhen Yu Sheng Communication Equipment Co., Ltd.

## 4. List of materials

### YUSHENG COMMUNICATION TECHNOLOGY CO.,LTD.

### W110(336026)-BOM

Edition/版本: R:A

client/機種:336

Model/项目: 336026

date/日期: 20230629

Item	Part No项次	Name名称	Types of类型	version版本	specification规格	Material quality材质	colour颜色	Craft表面处理	unit单位	Quantity数量
1	336026-IA	ET-L-FPC	Z	R:A	9.98*9.35*0.12MM	Electrolytic copper (half to half) 电解铜半对半	black黑色	Gold plated镀金	PCS	1
1.1	336026-IA-01	ET-L-FPC	Z	R:A	9.98*9.35*0.12MM	Electrolytic copper (half to half) 电解铜半对半	black黑色	Gold plated镀金	PCS	1
2	336026-IB	ET-R-FPC	Z	R:A	11.94*10.52*0.12MM	Electrolytic copper (half to half) 电解铜半对半	black黑色	Gold plated镀金	PCS	1
2.1	336026-IB-01	ET-R-FPC	Z	R:A	11.94*10.52*0.12MM	Electrolytic copper (half to half) 电解铜半对半	black黑色	Gold plated镀金	PCS	1

The above parts meet the environmental requirements of ROHS2.0 HF Reach GP

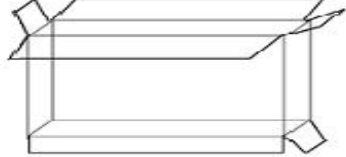
Type: W. Outsourcing B. Semi-finished products Z. Finished products C. Customer supply

Confirmation:

Review:

Production: FJW

## 5. Package schematic diagram

Packaging method diagram	
product name	Antenna components
P / N	antenna
project name	W110
File details	Carton Size 1: 35 * 25 * 24.5 cm Carton Size 2: Depends on order quantity / quantity
	
	Boating method: Packaging by order quantity Total number of binning: Packaging by order quantity
Things need to be noticed	
1. Due to the limitation of the order quantity, the packing method of each material selects the box size according to the total quantity of the order or the physical volume	
2. Storage temperature: room temperature	
3. Storage conditions: store them in a cool and dry place	