

## 2 RACE Project antenna material Requirements Specification

Customer name: Guoheng Intelligent Technology (Huizhou) Co., LTD

Customer product name: RACE 2

Product name: left headphone antenna

Product specification: 1 LAYER TOUCH + ANT FPCB / R FOR JBL ENDURANCE RACE ,With 3M Glue NA


Material code: 100-RACE503A2

Supplier model: 336040-IB (R) left headset antenna

### Change Content CV:

order number	edition	state	availability date	person liable	page number	remarks
1	R:A	editio princeps	2024-03-20	Li Jieyi	10	

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

Responsible person / date		IQC / Date-	Review / Date	Approval / Date
MD	<i>Close industry wisdom</i>	<i>Su Guanfeng</i>	<i>Zeng Xiang good</i>	
RF	<i>Chen Kehong</i>			

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

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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 RACE 2 products.

This requirement applies to the selection, testing, and acceptance of the RACE 2 antenna.

## 1.2 Project basic information

Antenna name:	RACE2
Antenna frequency:	BT : 2400-2500MHZ
Antenna material:	FPC antenna
Antenna version:	R:A

# 2. Technical index requirements

## 2.1 Introduction of test items and equipment

inventory	test item	equipment
Active test	TRP,TIS	Integrated tester, microwave darkroom

## 2.2 Active Reporting

### 2.2.1 Test instructions

Test tools: Agilent8960 instrument, R & S CMW500, full wave far field ETS dark room, high precision positioning system and its controller and computer with automatic test program

Test environment: temperature  $22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , humidity  $50\% \pm 15\%$

Test method: DUT is fixed in the center of the turntable with the H plane, on the same horizontal line as the center of the horn antenna.

The positioning system enables the DUT to rotate in the whole sphere to satisfy the high-precision 3 D positioning. Each RF instrument and turntable controller communicate with the PC with automatic test software through the GPIB interface.

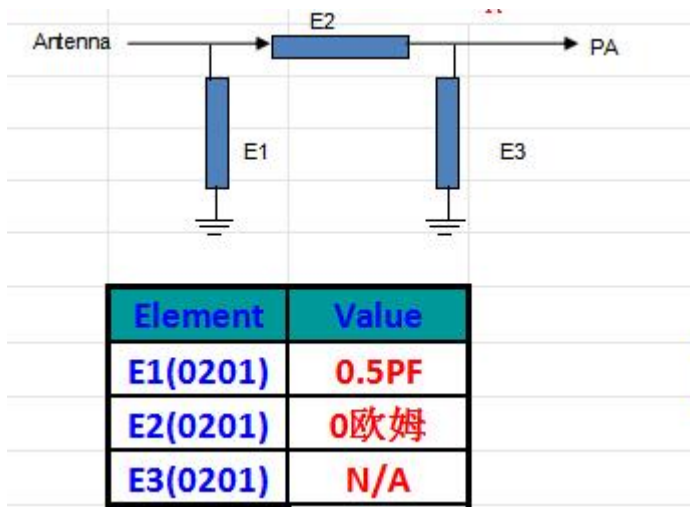
**2.2.2, electrical performance parameters**

<b>Product electrical performance index</b>	
Operating frequency range	2400MHz-2500MHz:
standing-wave ratio	2400MHz-2500MHz: < 2.0
antenna gain	.02400MHz-2500MHz: - 2 dBi ± 1dBi
radiation efficiency	2400MHz-2500MHz: > 20 %
impedance	50 ohm
<b>Product material description</b>	
<b>FPC</b>	
<b>Product environment description</b>	
working temperature	- 40 °C ~ + 80 °C
Storage temperature	- 40 °C ~ + 80 °C

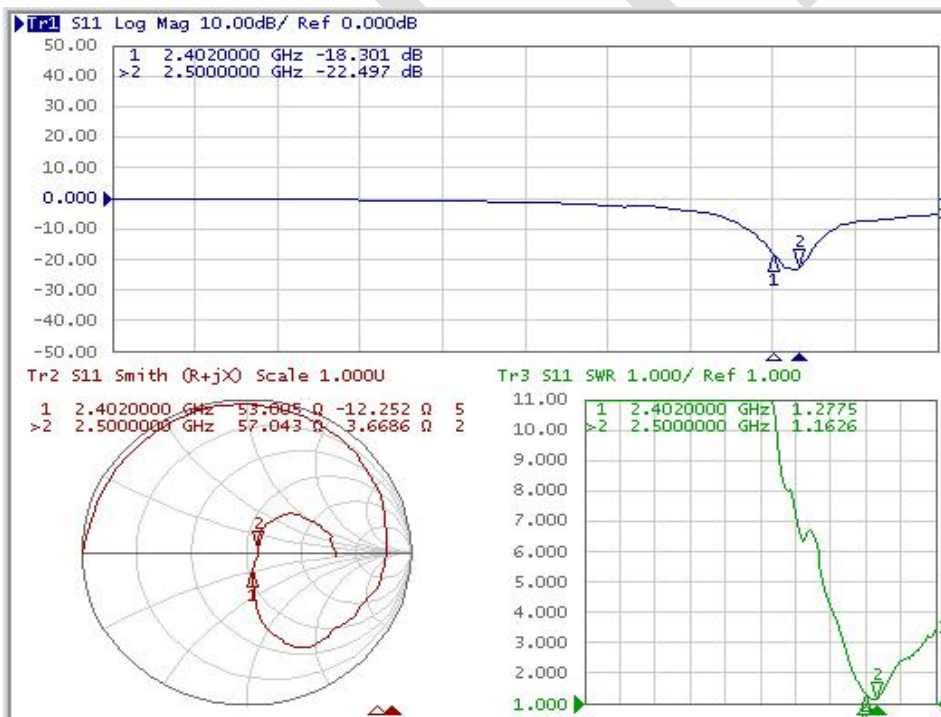
### 2.2.3 Conduction data

R	Channel	power	sensitivity
	0	9.0	-94.0
	39	9.0	-94.0
	78	9.0	-94.0

### 2.2.4 Circuit matching diagram



### 2.2.5 S11



Freq (MHz)	Effi (%)	Gain (dBi)
2410	16	-0.85
2420	18	-1.01
2430	22	-0.95
2440	23	-1.01
2450	25	-0.88
2460	27	-0.98
2470	28	-1.20
2480	26	-1.30
2490	23	-1.21
2500	19	-1.12

### 2.2.6 Antenna OTA

	R	TRP (dBm)	TIS (dBm)
	0	3.32	-88.6
freedom	39	3.56	-88.74
	78	3.35	-88.6

	Channel	TRP (dBm)	TIS (dBm)
	0	-1.65	-83.25
headform	39	-1.57	-83.28
	78	-1.47	-83.05

### 2.2.7 Pull distance test

model machine	test controler	BMI	time	Host side	testing facility	Test location	distance	sum up
1#	Li Guan	33	14:00-17:00	AUTO	iphone6	THOT balcony	14m	The race2 is comparable to the contrast prototype
Contrast the prototype	Li Guan	33	14:00-17:00	AUTO	iphone6	THOT balcony	13m	

2.2.8 Field test data



**Test Result:**

test result:

Test Condition						Audio Drop Description				
test condition						Audio downtime description				
model machine	test controller	BMI	time	Host side	testing facility	Location	From Ato B	From B-to C	From C-to D	Remark
1#	Li	33	14:30:00-18:00	L	PCO3	Shekou	1	1	0	
	Guan			R	PCO3	Shekou	1	0	0	
w100	Li	33	14:30:00-18:00	L	PCO3	Shekou	2	2	1	
	Guan			R	PCO3	Shekou	3	1	2	
3#	Li	33	14:30:00-18:00	L	PCO3	Shekou	4	3	3	
	Guan			R	PCO3	Shekou	3	3	2	

### 3. structural drawings

#### 3.1 Right headphone antenna drawing

1	2	3	4	5	6	7	8																																																				
<p><b>技术要求:</b></p> <p>1. PCB基材规格:          P1基材: 0.5mm1          电解铜: 0.5oz (ED)          双面胶: 3M-9471LSE</p> <p>2. 电镀规格:          镀镍: 3.8um; 镀金: 0.025um</p> <p>3. 表面油墨要求:          表面油墨颜色: 亚光黑色          印刷字体颜色: 亮黑          印刷字体高度: 按图纸要求</p> <p>4. 可靠性要求:          1. 可溶性测试, 盐雾测试, 机械冲击测试, 高低温测试, 百格测试          2. 正面油墨, 油墨表面要求对折不开裂, 不可划伤等.</p> <p>5. 公差要求:          1. 外形公差±0.15;          2. 铜箔线路公差±0.05;          3. 铜箔到外形的位置±0.15;          4. 孔对孔位置公差±0.15; 孔到外形位置公差±0.15;          5. 金手指尺寸公差±0.30          6. 其它未标注尺寸参照2D图纸</p> <p>6. 重点管控尺寸:          标注尺寸的尺寸公差, 其它参照2D图</p> <p>7. 环保要求:          零部件符合RoHS2.0/RE/Reach/GB环保要求</p> <p>8. 包装要求:          半切出货</p>				<p style="text-align: center;">断开线</p>				<p style="text-align: center;">深圳市昱晟通讯设备有限公司</p> <p style="text-align: center;">ShenZhen Yu Sheng Communication Equipment Co., Ltd.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>0~10</td> <td>±0.10</td> <td>⊙</td> <td>0.02</td> <td>机种</td> <td>RACE2</td> <td>日期</td> <td>20240122</td> </tr> <tr> <td>10~20</td> <td>±0.12</td> <td>◎</td> <td>0.03</td> <td>品名</td> <td>R天线</td> <td>设计</td> <td>BYZ</td> </tr> <tr> <td>20~40</td> <td>±0.15</td> <td>⊥</td> <td>0.02</td> <td>料号</td> <td>336040-1B-TA</td> <td>审核</td> <td>FJW</td> </tr> <tr> <td>40~50</td> <td>±0.20</td> <td>∇</td> <td>0.04</td> <td>材质</td> <td>电解铜(半对半)</td> <td>射频</td> <td>CKH</td> </tr> <tr> <td></td> <td></td> <td>∇</td> <td>0.02</td> <td>表面处理</td> <td></td> <td>确认</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>外观处理</td> <td></td> <td>单位</td> <td>mm</td> </tr> </table>				0~10	±0.10	⊙	0.02	机种	RACE2	日期	20240122	10~20	±0.12	◎	0.03	品名	R天线	设计	BYZ	20~40	±0.15	⊥	0.02	料号	336040-1B-TA	审核	FJW	40~50	±0.20	∇	0.04	材质	电解铜(半对半)	射频	CKH			∇	0.02	表面处理		确认						外观处理		单位	mm
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### 4. Bill Of Material

#### 336040 (RACE2) BOM

edition: T:A

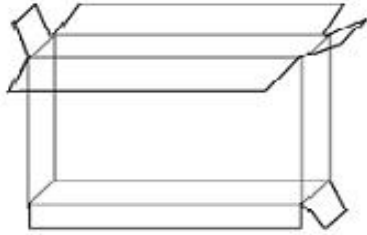
client: 336

Type of aircraft: 336040

Set a date: 2024/03/21

Item	*Material code	*Material name	name	*Machine type	Specification and model	colour	*UNIT.	dosage	remark
1	336040-IA-TA	L ANTENNA		RACE2	BLACK L-FPC Electrolytic copper 12.41*18.75*0.11 mm	black	PCS	1	
1.1	336040-IA-01-TA	L ANTENNA-FPC		RACE2	BLACK L-FPC Electrolytic copper 12.41*18.75*0.11 mm	black	PCS	1	
2	336040-IB-TA	R ANTENNA		RACE2	BLACK R-FPC Electrolytic copper 12.37*18.75*0.11 mm	black	PCS	1	
2.1	336040-IB-01-TA	R ANTENNA-FPC		RACE2	BLACK R-FPC Electrolytic copper 12.37*18.75*0.11 mm	black	PCS	1	
verify:			examine:			manufacture: BYZ			

## 5. Packaging diagram

Packaging method diagram	
product name	FPC antenna
P / N	336040
Project model	<u>RACE 2</u>
File details	Carton Size 1: 270*260*200MM Carton Size 2: 260*200*200MM Carton Size 3: Depending on the order quantity / volume
	
	Boating method      Packaging by order quantity
	Total number of binning                      Packaging by order quantity
labeling requirement	Tag Size 1: Universal use 100 * 100mm  Tag Size 2: According to customer requirements
matters need attention	
1. Due to the limitation of order quantity, the packing method of each material is the size of the box according to the total quantity of the order or the physical volume	
2. Storage temperature: room temperature	
3. Preservation conditions: store them in a cool and dry place	

(This figure is only a packaging diagram, subject to the actual mass production)