

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


Material code: 100-RACE502A2

Supplier model: 336040-IA (L) left headphone 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):

The demander the 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 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.

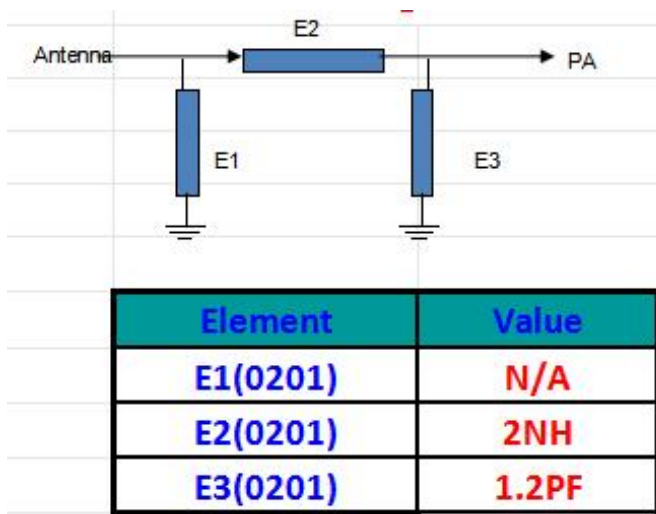
2.2.2, electrical performance parameters

Product electrical performance index	
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
Product material description	
FPC	
Product environment description	
working temperature	- 40 °C ~ + 80 °C
Storage temperature	- 40 °C ~ + 80 °C

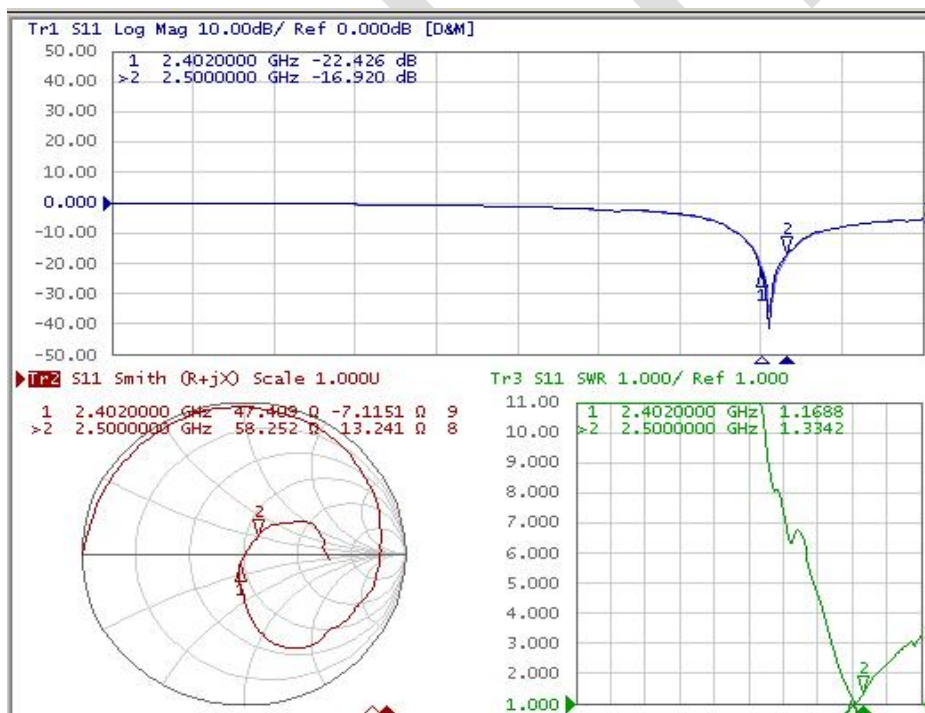
2.2.3 Conduction data

L	Channel	power	sensitivity
	0	8.9	-94.0
	39	8.9	-94.0
	78	9.1	-94.0

2.2.4 Circuit matching diagram



2.2.5 S11



Freq (MHz)	Effi (%)	Gain (dBi)
2410	17	-1.2
2420	19	-1.02
2430	23	-1.33
2440	24	-1.4
2450	26	-1.35
2460	27	-1.4
2470	25	-1.32
2480	23	-1.4
2490	21	-1.52
2500	18	-1.36

2.2.6 Antenna OTA

L	TRP (dBm)	TIS (dBm)	
0	3.12	-88.25	
39	3.45	-88.49	freedom
78	3.26	-88.62	

Channel	TRP (dBm)	TIS (dBm)	
0	-1.52	-83.5	
39	-1.62	-83.41	headform
78	-1.47	-83.25	

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 Left headphone antenna drawing

<p>A</p> <p>skills requirements:</p> <p>1. PCB substrate specifications:</p> <p>2. Electroplating specifications:</p> <p>3. Surface ink requirements:</p> <p>4. Reliability requirements:</p> <p>5. Tolerance requirements:</p> <p>6. Key control size:</p> <p>7. Environmental requirements:</p> <p>8. Packaging requirements:</p> <p>DATE</p>	<p>B</p> <p>PI substrate: 0.5 mm</p> <p>Electrolytic copper: 0.5oz(20)</p> <p>Double-sided tape: 3M 947135</p> <p>Nickel plated: 3µm</p> <p>Surface ink color: Matt black</p> <p>Printing font color: Bright black</p> <p>Printing font height: According to drawings</p> <p>C</p> <p>1. Reliability test: salt spray test/pressure friction test/thermal resistance test/100 grid test.</p> <p>2. The front ink, the surface of the ink is required to be folded in half without cracking, scratching, etc.</p> <p>D</p> <p>1. Shape tolerance ±0.10;</p> <p>2. Copper foil circuit tolerance ±0.05;</p> <p>3. The position of the copper foil to the shape is ±0.15;</p> <p>4. Hole-to-hole position tolerance ±0.10; hole-to-shape position tolerance ±0.15;</p> <p>5. The size tolerance of gold finger is ±0.20;</p> <p>6. For other unmarked dimensions, refer to 2D drawings.</p> <p>The dimensions marked with numbers are regarded as important dimensions, and the others refer to 2D drawings</p> <p>Parts meet MIL-STD-883C environmental protection requirements</p> <p>Fill page without release paper packaging</p> <p>Modify the content</p> <p>Version</p> <p>Revise</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p>	<p>5</p> <p>6</p> <p>7</p> <p>8</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>	<p>12.41±0.15</p> <p>18.75±0.15</p> <p>EN03</p> <p>Gold plated Area</p>																																
<p>Shenzhen Yu Sheng Communication Equipment Co., Ltd</p> <table border="1"> <tr> <td>Model</td> <td>RACE2</td> <td>DATE</td> <td>20240321</td> </tr> <tr> <td>Name</td> <td>L antenna</td> <td>Design</td> <td>BYZ</td> </tr> <tr> <td>Part NO</td> <td>336040-1A-TA</td> <td>Reviewer</td> <td>MD</td> </tr> <tr> <td>Material quality</td> <td>Electrolytic copper</td> <td>RF</td> <td>BYZ</td> </tr> <tr> <td>Gold surface treatment</td> <td></td> <td>confirm</td> <td>CXH</td> </tr> <tr> <td>Inspection treatment</td> <td></td> <td>UNIT</td> <td>mm</td> </tr> <tr> <td>position</td> <td></td> <td>proportion</td> <td>FIT</td> </tr> <tr> <td></td> <td></td> <td>Revise</td> <td>R:A</td> </tr> </table>		Model	RACE2	DATE	20240321	Name	L antenna	Design	BYZ	Part NO	336040-1A-TA	Reviewer	MD	Material quality	Electrolytic copper	RF	BYZ	Gold surface treatment		confirm	CXH	Inspection treatment		UNIT	mm	position		proportion	FIT			Revise	R:A	<p>位置</p>	<p>0~10</p> <p>±0.10</p> <p>10~20</p> <p>±0.12</p> <p>20~40</p> <p>±0.15</p> <p>40~50</p> <p>±0.20</p>	<p>0.02</p> <p>0.03</p> <p>0.02</p> <p>0.04</p> <p>0.02</p>	<p>Model</p>
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4. Bill Of Material



Shenzhen Yusheng Communication Equipment Co., LTD

336040 (RACE2) BOM

edition: T:A

client: 336

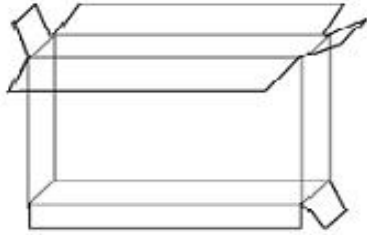
Type of aircraft: 336040

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)