

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

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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: ☐ qualified ☐ unqualified			
Development & Design Engineer / Date	SQE Engineer / Date	Purchasing Leader / Date	Development Manager approval / date

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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.

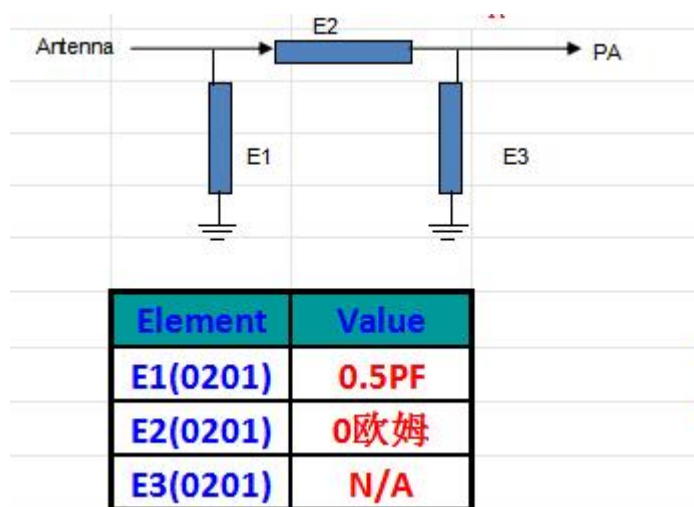
2.2.2, electrical performance parameters

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

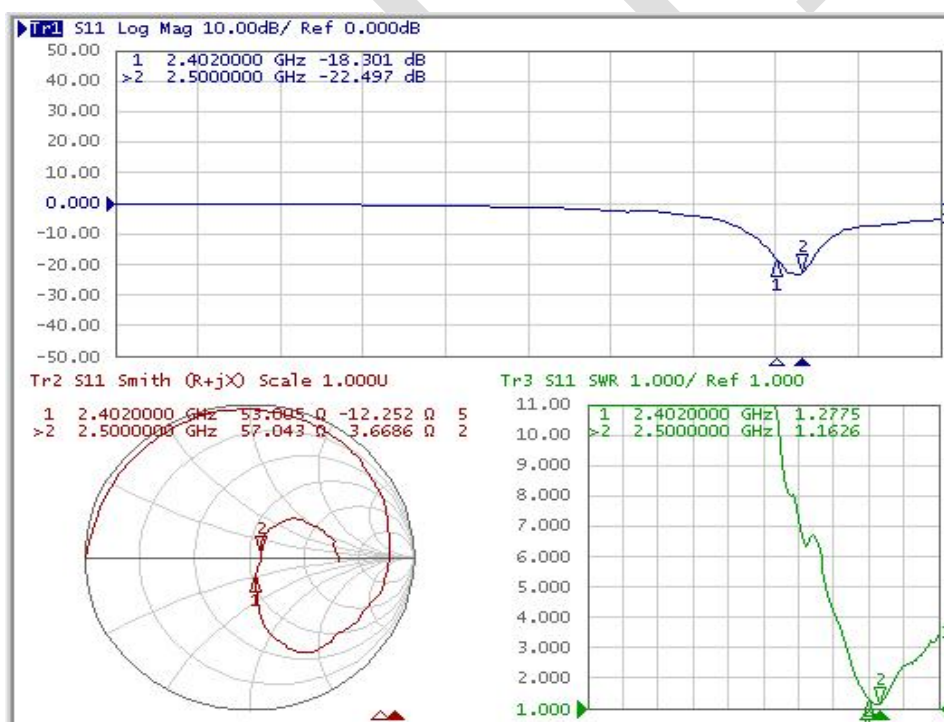
2.2.3 Conduction data

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

3. 1 Right headphone antenna drawing

1	2	3	4	5	6	7	8
A				B			
技术要求:				技术要求:			
1. PFC基材规格:				P1基材:			
电铸铜:				0.5mil			
双面胶:				0.5oz (ED)			
2. 电镀规格:				镀镍: 3~8um			
镀金: 0.025um				其它要求			
3. 表面油墨要求:				表面油墨颜色: 亮黑			
印刷字体颜色: 亮黑				其它要求			
印刷字体厚度: 按图纸要求				其它要求			
4. 可靠性要求:				1. 可靠性测试: 盐雾腐蚀试验(中性盐雾试验) 1000h			
2. 正面油墨, 油墨表面要求对折不开裂, 不可划伤等.				其它要求			
5. 公差要求:				1. 外形公差±0.15;			
2. 铜箔线路公差±0.05;				其它要求			
3. 铜箔到外形的位置±0.15;				其它要求			
4. 孔到孔位置公差±0.15;				其它要求			
5. 金手指尺寸公差±0.30				其它要求			
6. 其它未标注尺寸参照图纸				其它要求			
6. 重点管控尺寸:				标注尺寸公差为通尺寸, 其它参照图纸			
7. 环保要求:				零部件符合RoHS2.0/REACH/CP环保要求			
8. 包装要求:				半切出货			
D				D			
日期				修改内容			
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18.75±0.15

12.37±0.15

断开线

深圳市昱晟通讯设备有限公司

Shenzhen Yu Sheng Communication Equipment Co., Ltd.

机种

RACE2

品名

R天线

料号

336040-1B-TA

材质

电解铜(半对半)

表面处理

模面处理

外观处理

日期

20240122

设计

BYZ

审核

FJW

结构

射频

CKH

单位

mm

比例

FIT

版本

R/A

4. Bill Of Material

336040 (RACE2) BOM

edition: T:A

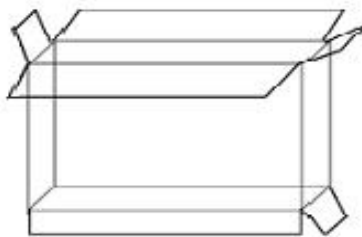
client: 336

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)