

Environmental protection:
RoHS2.0/REACH
Version: A / 0

SPECIFICATION FOR APPROVAL

Customer : Jiahe Intelligent Technology Co., LTD

- Product : antenna-R

Part No.: 300116190183C00

Customer (business) confirmation and reply:

Signature :

PASSED

REJECTED

PRODUCT INFORMATION

product name

Product : FPC antenna

product model

Part No.: CE-2177N

Sample number

Samples No.:

drawing number

Drawing No.:

date

Date: 2024-2-22

Prepared By	Proofed By	Checked By
DATE:	DATE:	DATE:

Innovation INNOVATION Trust RELIABILITY satisfaction SATISFACTION



Shenzhen Yusheng Communication Equipment Co., LTD

SHENZHEN YUSHENG COMMUNICATION EQUIPMENT CO., LTD

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Form Number: CO-ENG-031B

CE-2177N Project

Customer name: Jiahe Intelligent Technology Co., LTD

Customer name: CE-2177N

Product name: antenna-R

Size of product: Please see the BOM table list for more details

Material code: 300116190182C00

Change Content CV:

order number	edition	state	availability date	person liable	page number	remarks
1	R:A	editio princeps	2024.02.22	Li Jieyi	13	

The Supplier acknowledges the signature of the following part:

Responsible person / date		IQC/ date	Review / Date	Approval / Date
MD	<i>Feng Jiwu</i>	<i>Su Guanfeng</i>	<i>Zeng Xiang good</i>	
RF	Chen Kehong			

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

The demander the result: ☐ qualified ☐ 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 applies to CE-2177N Antenna type selection, test, and acceptance.

1.2 Project basic information

Antenna name:	<u>CE-2177N</u>
Antenna frequency:	BT: 2402-2484MHZ
Antenna material:	FPC antenna
Antenna version:	V8

2. Technical index requirements

2.1 Introduction of test items and equipment

inventor y	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 $50\% \pm 15\%$

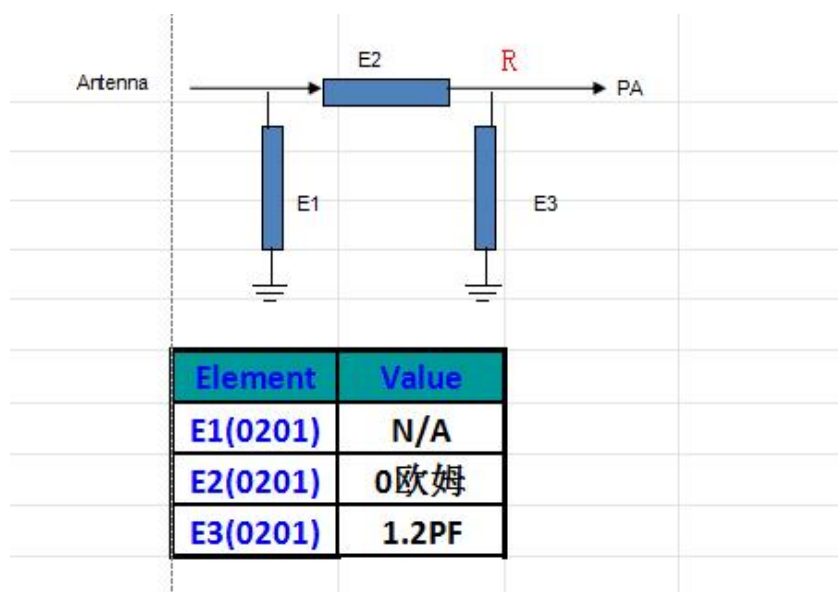
Test method: DUT is fixed in the center of the turntable with H plane, on the same horizontal line as the center of the horn antenna.

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

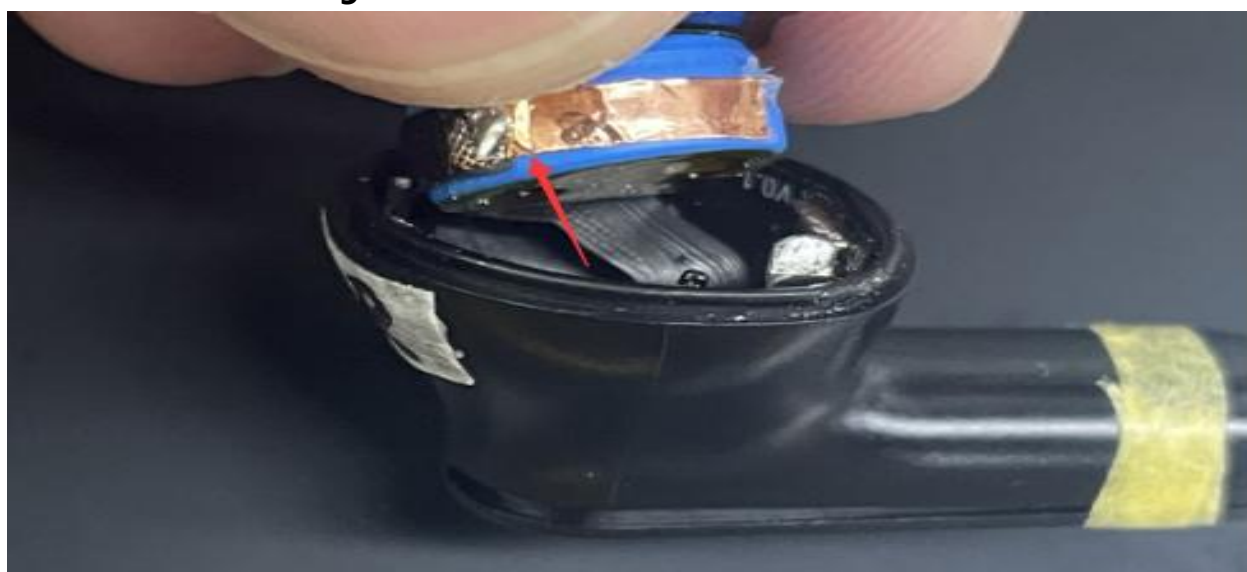
2.2.2 Conduction data

	Channel	power	sensitivity
R	0	9.8	-94.0
	39	9.9	-94.0
	78	9.9	-94.0

2.2.3 The matching circuit is shown below (the pilot machine is not changed)



2.2.4 Matters needing attention for installation



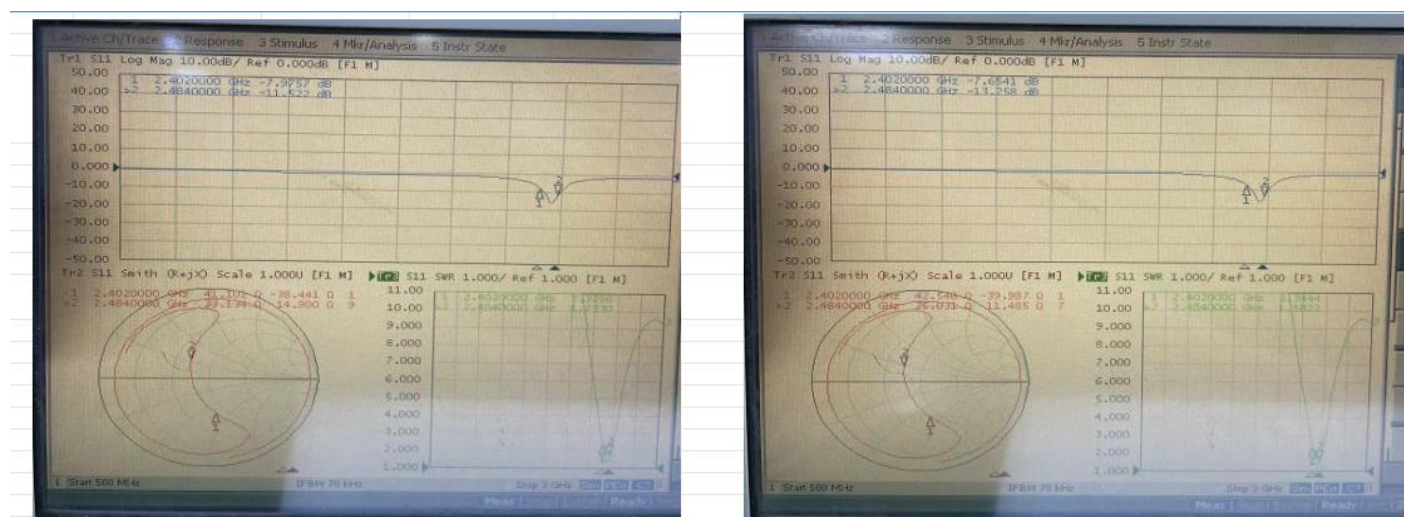
The left and right ears are lengthened, and the specific size will be modified and released in the form of CAD drawings

2.2.5 antenna ota

free space	R	Channel	TRP (dBm)	TIS (dBm)
		0	5.54	-89.68
		39	5.68	-89.74
		78	5.74	-89.08

Head module data		Channel	TRP (dBm)	TIS (dBm)
	R	0	-0.48	-83.44
		39	-0.5	-83.52
		78	-0.36	-83.36

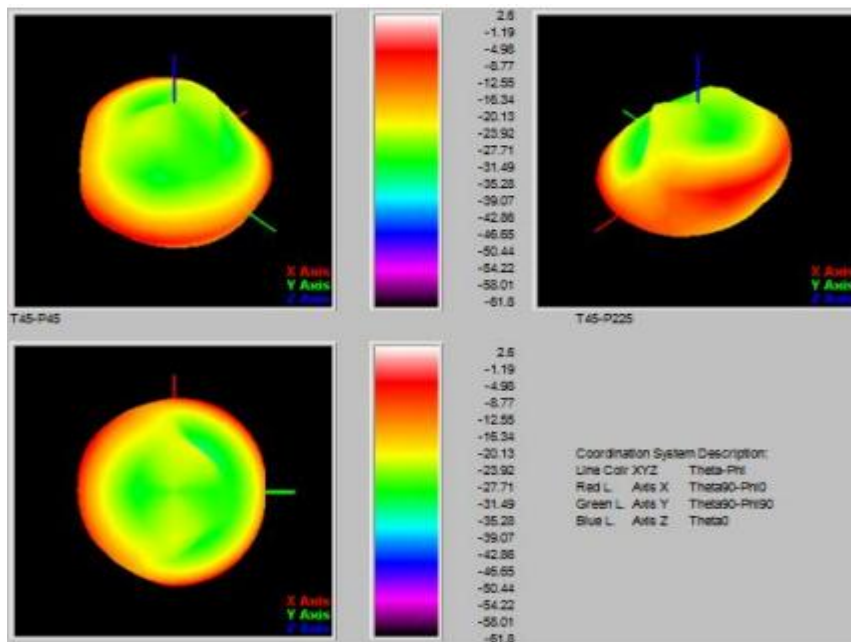
2.2.6 The passive parameters



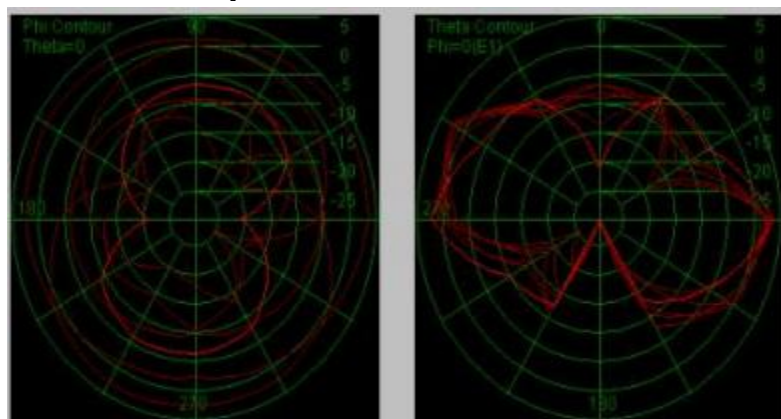
2.2.7 Pull distance test

model machine	test controler	BMI	time	testing facility	Test location	distance
2177N	Chen Kehong	29	14:00-17:00	Apple 6	Company balcony	9 Meters

2.2.8 3DField pattern diagram



2.2.9 Gain Map



2.2.10 maximum gain

Frequency (Mhz)	Peak Gain (dbi)	Efficiency (%)
2400	0.41	21.0
2410	0.65	22.3
2420	0.73	24.5
2430	0.85	24.9
2440	0.67	25.3
2450	0.58	27.4
2460	0.49	28.8
2470	0.55	27.5
2480	0.28	26.1
2490	0.32	25.3
2500	0.41	22.4

3. Structural drawings

R antenna

[illegible]

4. List of materials

095016 (CE-2177N) -BOM

edition: R:A

client: 095

Type of aircraft: 095016

et a date: 2024/04/02

Item	*Material code	*Material name	name	*Machine type	Specification and model	colour	*UNIT.	dosage	remark
1	095016-IA-RA	BT-L-FPC		CE-2177N	BLACK BT-L-FPC Electrolytic copper weld 23.68*5.28*0.12mm	black	PCS	1	
1.1	095016-IA-01-RA	BT-L-FPC		CE-2177N	BLACK BT-L-FPC Electrolytic copper weld 23.68*5.28*0.12mm	black	PCS	1	
2	095016-IB-RA	BT-R-FPC		CE-2177N	BLACK BT-R-FPC Electrolytic copper weld 23.68*5.28*0.12mm	black	PCS	1	
2.1	095016-IB-01-RA	BT-R-FPC		CE-2177N	BLACK BT-R-FPC Electrolytic copper weld 23.68*5.28*0.12mm	black	PCS	1	
verify: examine: manufacture: FJW									

5. Reliability report

5.1 Salt Fog Test Report

Shenzhen Yusheng Communication Equipment Co., LTD

customer name	Cosonic®			production order direct labor cost summary	sample		
product name	FPC antenna			Test the number	3PCS		
Product material number	CE-2177N			testing standard	48 Hours		
examination date	2023. 11. 16			Goods material	FPC		
Test time: from 2023.11.10 to 2023.11.12							
test item	Requirements for standards	actual numera l value	judge	test item	Requirements for standards	actual numerical value	ju dg e
Test instrument specifications	KD-60	KD-60	OK	testing time	48H	48H	OK
Salt mist test type	NSS neutral	NSS neutral	OK	Salt fog box temperature	35° C	35° C	OK
Saline PH	6.5-7.2	7	OK	Salt spray settlement amount (H. 80C)	1-2ml	1.7ml	OK
Spray way	Continuous spray	Continuo us spray	OK	Material of goods	FPC	FPC	OK
Saline ingredients	5%/NaCL	5%/NaCL	OK	Compressed air joint pressure	1±0.1KG/CM²	1	OK
saturation temperature	47° C	47℃	OK	Place the Angle of the sample	90°	90°	OK
Test observation time	Observe the phenomenon						
4H	NA						
12H	NA						
24H	NA						
36H	NA						
48H	NA						
Judgment standard: according to the national standard 5944-86 rating method judgment, 9 level above is qualified							
Final judgment result	qualified ✓						
tester	Chen Wenjing	examin e and verify		Mo dongyuan	examine and approve	Feng Jiwu	
Note: The commonly used salt spray test methods are: caring salt spray test in NSS, AASS acetate salt spray test, CASS copper acetic acid accelerated test.							

edition:A.0



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5.2 High temperature and high humidity experiment report

Shenzhen Yusheng Communication Equipment Co., LTD

High and low temperature cycle test report

client	Cosonic®		date	2023.11.16		Factory number	095016	
Customer material number	CE-2177N		quantity	3PCS		testing time	48H	
material specification	FPC antenna		supplier	Renesola		reference standard	MIL-STD-202Method017IEC60749-25 JEDEC JESD22-A104-B IEC68-2-1MIL-STD-2168-85	
Test purpose: To test the reliability of products and coating binding force, coating and oxidation resistance and corrosion resistance.								
Equipment name: high and low temperature test box								
laboratory environment								
temperature	20℃		relative humidity	55%		atmos	/	
test parameter								
temperature	constant temperature			low temperature		Temperature tolerance		
time	High Low temperature	high temperature	55±2° C	High temperature time	24H	remarks	1. High temperature warming rises from normal temperature to set high temperature. 2	
		High wet	95%RH	Low temperature time	24H			
cycle index	12 Times		else	relative humidity	95%	/	/	
visual inspection	lamination	not have	oxidize	not have	blister	not have	The ink fell off	not have
test	antistripping	OK	spot welding	No abnormality seen	Bige test	No abnormality seen	Antenna paste force	No abnormality seen
Test pictures:								
identification of product		Product test results					judge	
CE-2177N		OK					qualified	
Tester: Wen Jianwen					Review: Zhong Wenbiao			



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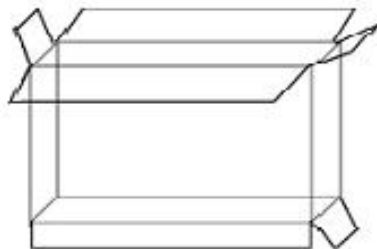
5.3 Hot and cold shock test report

Shenzhen Yusheng Communication Equipment Co., LTD

Hot and cold shock test report

client	Cosonic®		date	2023. 11. 16		Factory number	095016	
Customer material number	CE-2177N		quantity	3PCS		testing time	48H	
material specification	FPC antenna		supplier	Renesola		reference standard	MIL-SDT-202Method017IEC60749-25 JEDEC JESD22-A104-B IEC68-2-1MIL-STD-2168-85	
Test purpose: To test the reliability of products and coating binding force, coating and oxidation resistance and corrosion resistance.								
Equipment name: high and low temperature test box								
laboratory environment								
temperature	20℃		relative humidity	55%		atmos	/	
test parameter								
temperature	constant temperature			low temperature		Temperature tolerance		
time	High low temperature	high temperature	85±2℃	High temperature time	12	remarks	1. High temperature warming rises from normal temperature to set high temperature. 2	
		low temperature	- 40±2℃	Low temperature time	12			
cycle index	24		else	relative humidity	/		/	/
visual inspection	lamination	not have	oxidize	not have	blister	not have	The ink fell off	not have
test	antistripping	OK	spot welding	No abnormality seen	Bige test	No abnormality seen	Antenna paste force	No abnormality seen
Test pictures:								
identification of product		Product test results					judge	
CE-2177N		OK					qualified	
Tester: Wen Jianwen					Review: Zhong Wenbiao			

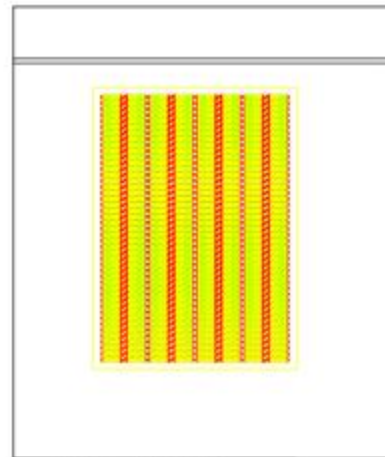
6. Package schematic diagram

Packaging method diagram		
product name	antenna	
Project model	CE-2177N	
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	The minimum package of 100 bags, in turn with waterproof bags, a waterproof bag with up to 1000 materials
	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		

1、小包装

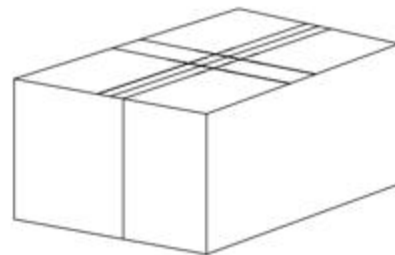
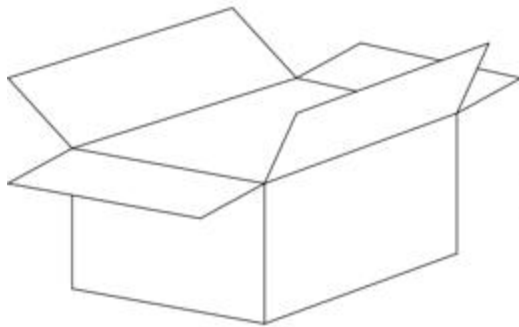


FPC antenna (full plate half cut shipment): 250*198



PE bag 5000PCS antenna

2、大包装



One box of 1-16 bags | 5000-80000pcs antenna |

3. Note :FPC products are manufactured by micromucous membrane.

Quantity of small package :5000PCS/ bag;

Large package quantity :5000-80000PCS/ box.

4. Precautions

4.1 The storage of products should ensure that the ambient temperature is $-10^{\circ}\text{C}\sim+24^{\circ}\text{C}$, the humidity is less than 90%, there is no rain leakage in the warehouse, the ground should be moisture-proof, and the acid fog and salt spray around the warehouse should be avoided Corrosion. The shelf life of the product is 180 days;

4.2 The product can be transported by land, water or air, and should be rainproof during transportation;

4.3 Stacking requirements :XXX;

(Other examples: It is strictly prohibited to throw, throw, etc... Require)