APPROVAL SHEET

PROVIDER Shenzhen Yu Sheng communication equipment Co., LTD

BRAND(P/N) :

DESCRIPTION: **LDS**

PART NO: **540008**

PART NO:

Sample properties :

Accredited items **W112-ATT**

- □ **正式样：**
- □ **外观样：** **补充描述：**
- □ **试做临时样：** **限量** **Pcs**
- □ **限量样：** **限量** **Pcs 采购**
- □ **限度样：** **补充描述：**

生成日期： **保存期：** ☐ 1 年 □ **2 年** □ **5 年** □ **10 年** □ **长期**

Attachments	■ Sample	■ Drawing	■ Spec	■ Cpk Report
	■ FAI Report	■ QC Flow Chart	■ Reliability Report	■ RoHS Report
	■ Packing Content	☐ MaterialVerification Sheet	☐ Safety Report	☐ RoHS Questionnaire

PROVIDER Check Design Check Approval:

Add: 4A, Building 2, South Taiyun Chuanggu Park, Guangming Avenue, Guangming District, Shenzhen Phone: 0755-23984257

Sikey Check 结构 硬件 软件 品质 工业设计 项目 其他

Subscriber

Date

Distribute ■ 结构 ☐ 硬件 ☐ 软件 ■ 品质 ☐ 工业设计

■ OQC ☐供应商工程 ■ IQC ☐ 客户 ☐ 其他 _____

Specification for antenna material requirements for W112-ATT Project

Customer name: Siqi

Customer name: W112-ATT

Product name: LDS antenna

Size of product: See the BOM checklist for further details

Material code:

Change Content CV:

order number	edition	state	availability date	person liable	page number	remarks
1	R:a	R:a	2024-5-10	Li Jieyi		

The Supplier acknowledges the signature of the following documents:

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

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

The demander's judgment result: □ qualified □ unqualified			
Development & Design Engineer / Date	SQE Engineer / Date	Purchasing Leader / Date	Development Manager approval / date

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catalogue

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1. Overview

1.1 Scope of application

This requirement applies to the selection, testing and acceptance of W112-ATT antenna.

1.2 Project basic information

Antenna name:	W112-ATT
Antenna band:	4G:LTEB2/4/66/12/7 GWB:1575.42MHz/2.4G WIFI
Antenna material:	FPC antenna

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℃± 3℃, humidity 50% ± 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.

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2.2.2 Antenna active parameters-conduction parameters of the main antenna motherboard

Frequency band	Channel	POWER(dBm)	SENS(dBm)
LTE-B2	LOW	21.7	-95
	MID	21.8	-95
	HIG	21.7	-96
LTE-B4	LOW	21.7	-95
	MID	21.8	-95
	HIG	21.8	-96
LTE-B66	LOW	21.8	-96
	MID	21.8	-96
	HIG	21.8	-96
LTE-B12 (5M)	LOW	21.8	-99
	MID	21.8	-99
	HIG	21.8	-99

No line damage

Frequency band	Channel	POWER(dBm)	SENS(dBm)
LTE-B5	LOW	23.1	-99
	MID	23.2	-99
	HIG	23.1	-99
LTE-B7	LOW	22.7	-96
	MID	22.8	-96
	HIG	22.8	-96
LTE-B12	LOW	23.1	-98
	MID	23.2	-99
	HIG	23.1	-99

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2.2.3 Active parameters of the main antenna-FS

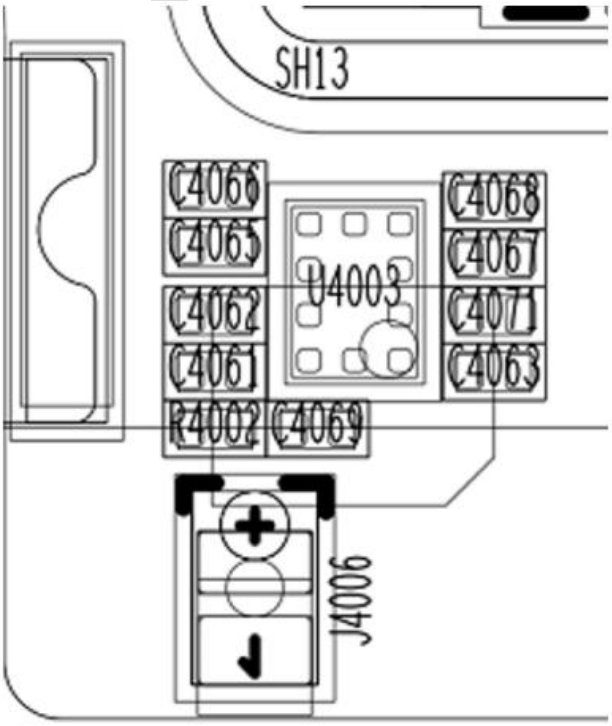
Test	FDD B2			FDD B4		
TRP(dBm)	16.16	15.5	15.1	13.5	15.1	15.4
TIS(dBm)			-87.6			-85.1

Test	FDD B66			FDD B5		
TRP(dBm)	13.5	15.1	16.1	12.5	12.4	12.1
TIS(dBm)			-85.6			-81.2

Test	FDD B7			FDD B12 (5M)		
TRP(dBm)	13.2	14.1	14.2	9.1	9.5	10.2
TIS(dBm)			-86.1			-85.2

2.2.4 Antenna switch logic and matching

RF1:C4063 2.2NH B2/B4/B66
RF2:C4071 0欧姆电阻 B5
RF3:C4061 5.6NH
常驻位: B12
R4002:15NH C4062:22PF



Note: the current antenna logic and your motherboard come with logic one deliver

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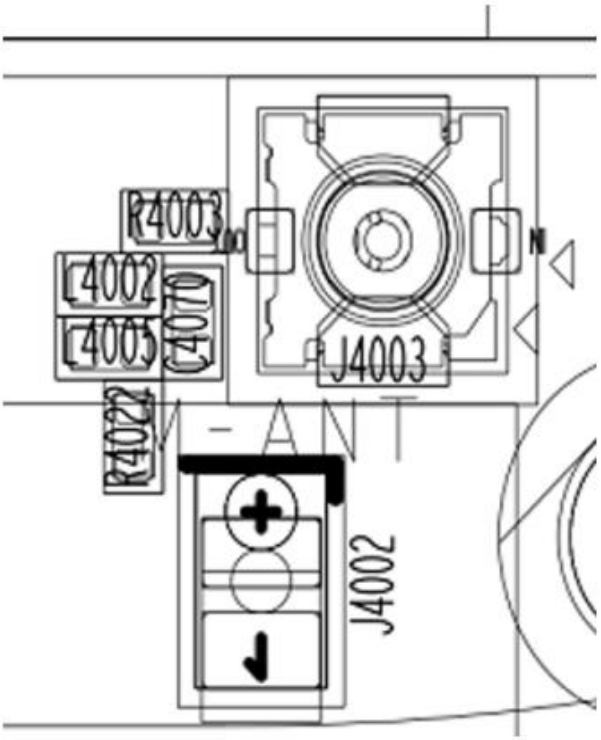
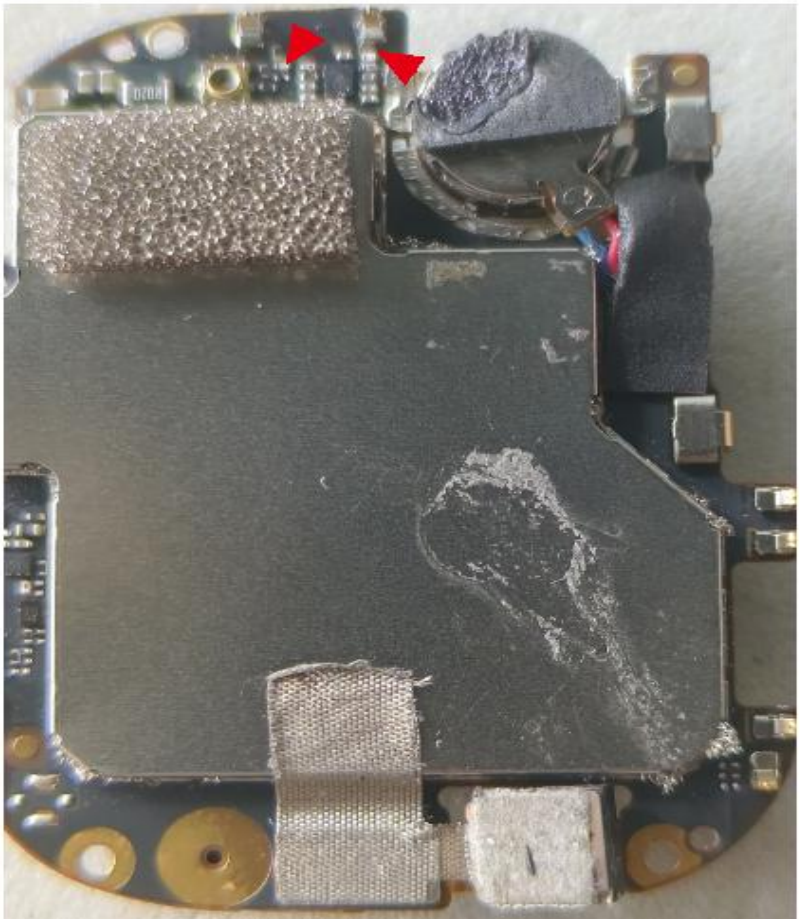
2.2.5 Main Route Matching

R4003:2. 2nH换0欧姆电阻
L4002:NC
C4070:0欧姆
L4005:0. 5PF去掉，空贴
R4022:0欧姆





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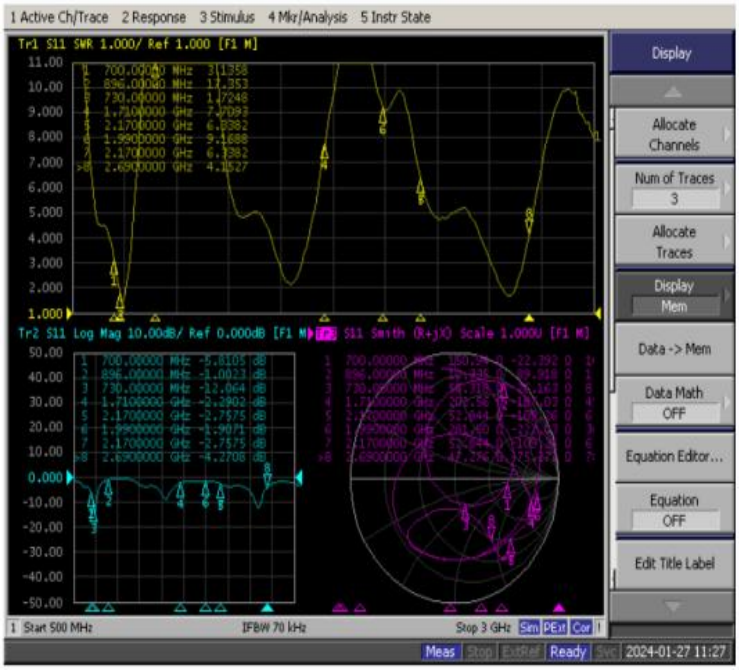
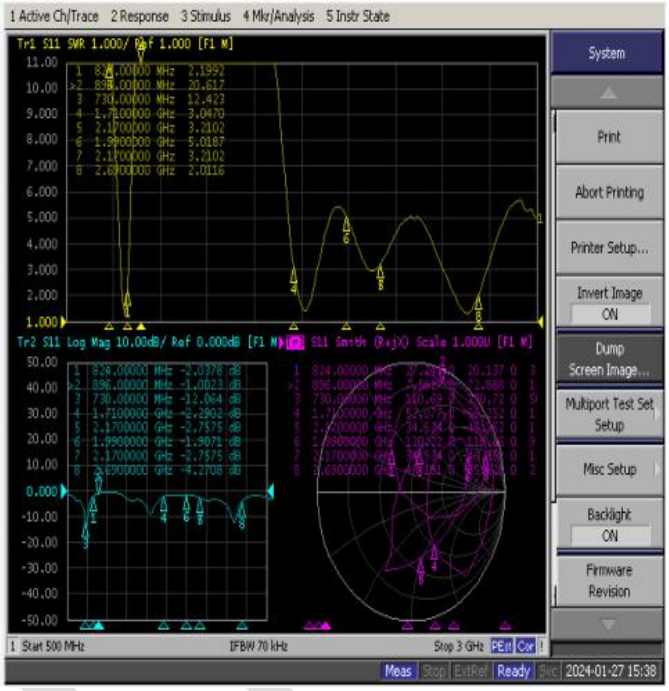
2.2.6 Passive S11 parameter-master set





2.2.8 Antenna passive parameter-Main antenna efficiency <ARM>

Passive Test								
Freq (MHz)	Effi (%%)	Gain (dBi)	Freq (MHz)	Effi (%%)	Gain (dBi)	Freq (MHz)	Effi (%%)	Gain (dBi)
700MHZ	7.0	-6.4	1710MHZ	12.4	-4.9	2070MHZ	13.5	-4.2
720MHZ	7.5	-6.2	1730MHZ	12.5	-4.7	2090MHZ	13.8	-4.3
740MHZ	8.3	-5.6	1750MHZ	12.7	-4.5	2110MHZ	13.9	-4.5
760MHZ	7.5	-6.4	1770MHZ	13.1	-4.3	2130MHZ	13.7	-4.5
780MHZ	7.0	-7.1	1790MHZ	13.4	-3.9	2150MHZ	13.8	-4.3
800MHZ	6.6	-7.4	1810MHZ	13.5	-3.7	2170MHZ	13.5	-4.1
820MHZ	6.3	-7.6	1830MHZ	13.9	-3.7			
840MHZ	6.3	-7.8	1850MHZ	14.1	-3.9			
860MHZ	4.8	-7.9	1870MHZ	13.9	-4.1			
880MHZ	4.5	-8.1	1890MHZ	13.7	-4.2			
900MHZ	4.3	-8.3	1910MHZ	14.1	-3.9			
			1930MHZ	13.7	-4.0			
			1950MHZ	13.5	-4.1			
			1970MHZ	13.6	-4.2			
			1990MHZ	13.7	-3.9			
			2010MHZ	13.9	-4.1			
			2030MHZ	13.5	-4.3			
			2050MHZ	13.3	-4.5			

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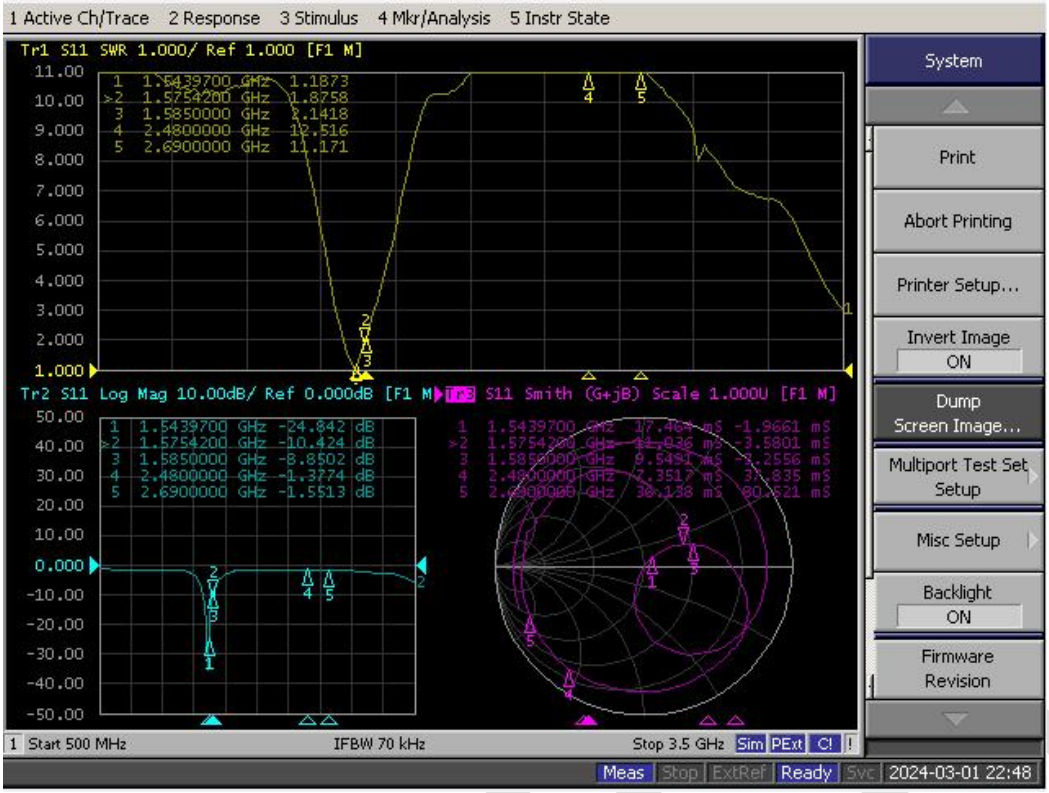
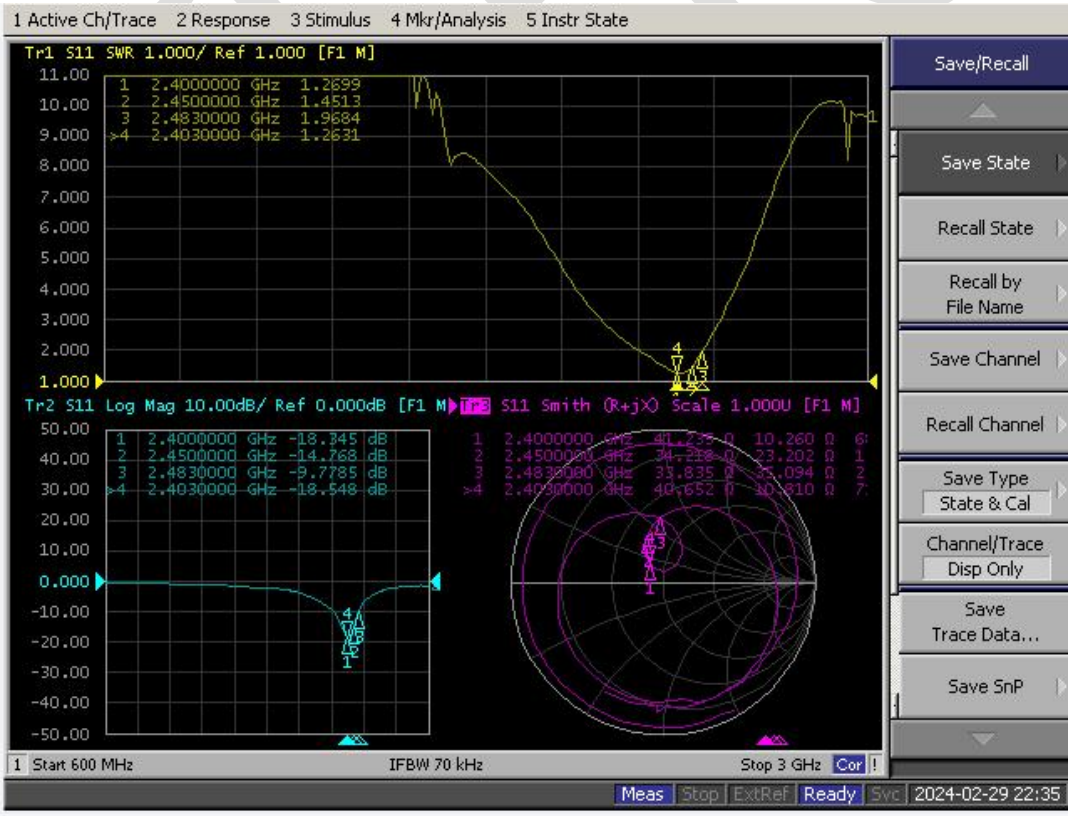
2.2.9 Passive S11 parameter-GPS



2.2.10 passive S11 parameter-WIFI



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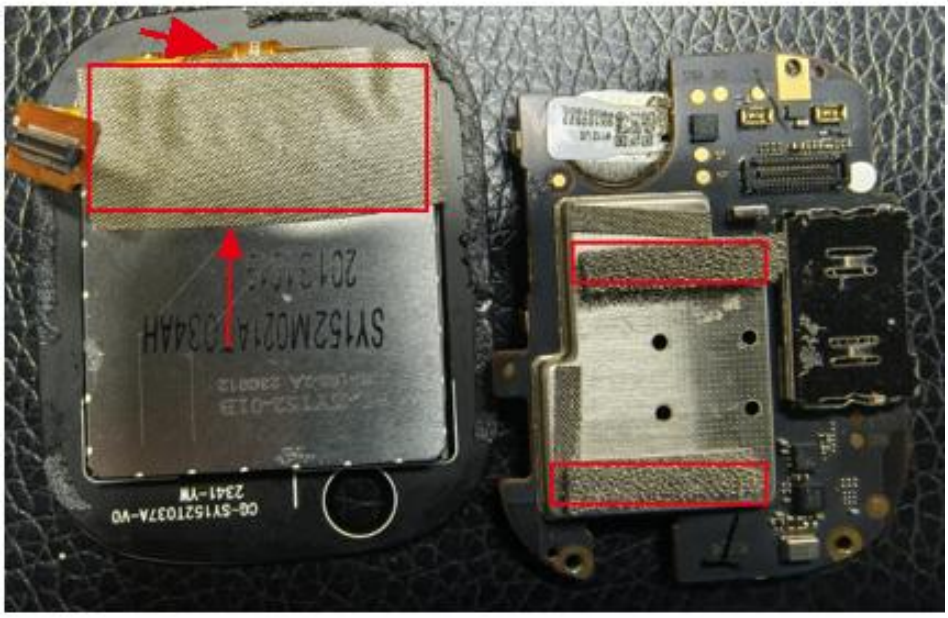
2.2.11 GPS / BT efficiency-ARM

Freq(天线效率)	Effi(%)	EFF(DB)	Gain
1550MHZ	12.4	-9.1	-3.4
1555MHZ	12.3	-8.7	-3.5
1560MHZ	13.4	-8.5	-3.3
1565MHZ	13.8	-8.4	-3.5
1570MHZ	14.6	-8.2	-3.2
1575MHZ	13.8	-8.3	-3.5
1580MHZ	13.2	-8.5	-3.3
1585MHZ	12.5	-8.4	-3.4

Freq(天线效率)	Effi(%)	EFF(DB)	Gain
2400MHZ	11.2	-9.1	-3.3
2410MHZ	12.7	-8.8	-3.4
2420MHZ	14.5	-8.2	-3.5
2430MHZ	15.2	-8.1	-3.2
2440MHZ	14.4	-8.3	-3.1
2450MHZ	13.8	-8.1	-3.3
2460MHZ	13.7	-8.2	-2.8
2470MHZ	12.5	-8.8	-3.4
2480MHZ	11.3	-9.2	-3.1

2.2.12 Environmental treatment

The side needs to bend the shield for the better



As shown in the figure, ground the screen with the conductive cloth, and ground the shield with the conductive sponge

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As shown in the figure, the battery is shielded with a conductive cloth and grounded with a conductive sponge
Before the motor is installed, the top conductive cloth is ground

As shown in the figure, note that the LDS line cannot be touched at the screen row line shield

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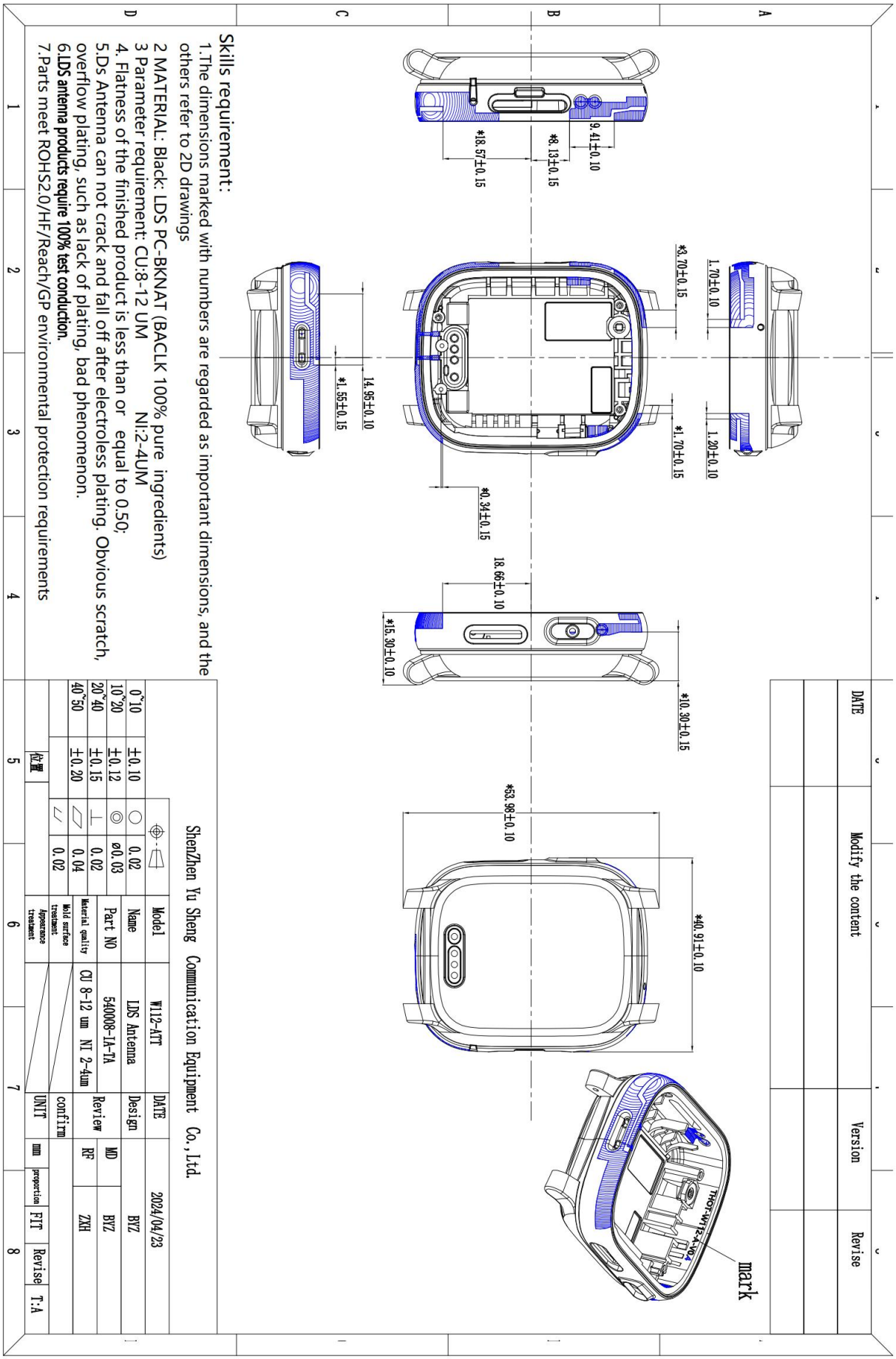
3.engineering drawing



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4. Bill Of Material

Shenzhen Yusheng Communication Equipment Co.,LTD

540008(W112-ATT)-BOM

Edition: T:A client:540 Model: 540008 date: 20240402

Item number	Material code	Name	Types of	Machine type	Specification and model	colour	Unit of measurement	dosage	remark
1	540008-IA-TA	LDS antenna assembly		W112-ATT	LDS technology	Black	PCS	1	
1.1	540008-IA-01-TA	Plastic shell		W112-ATT	Black fine grain LDS special material 53.98*15.31*40.92MM	Black	PCS	1	
1.2	540008-IA-02-TA	Antenna route		W112-ATT	CU:8-12UM、NI:2-4UM	argent	PCS	1	
Confirm:					Review:			Make:BYZ	

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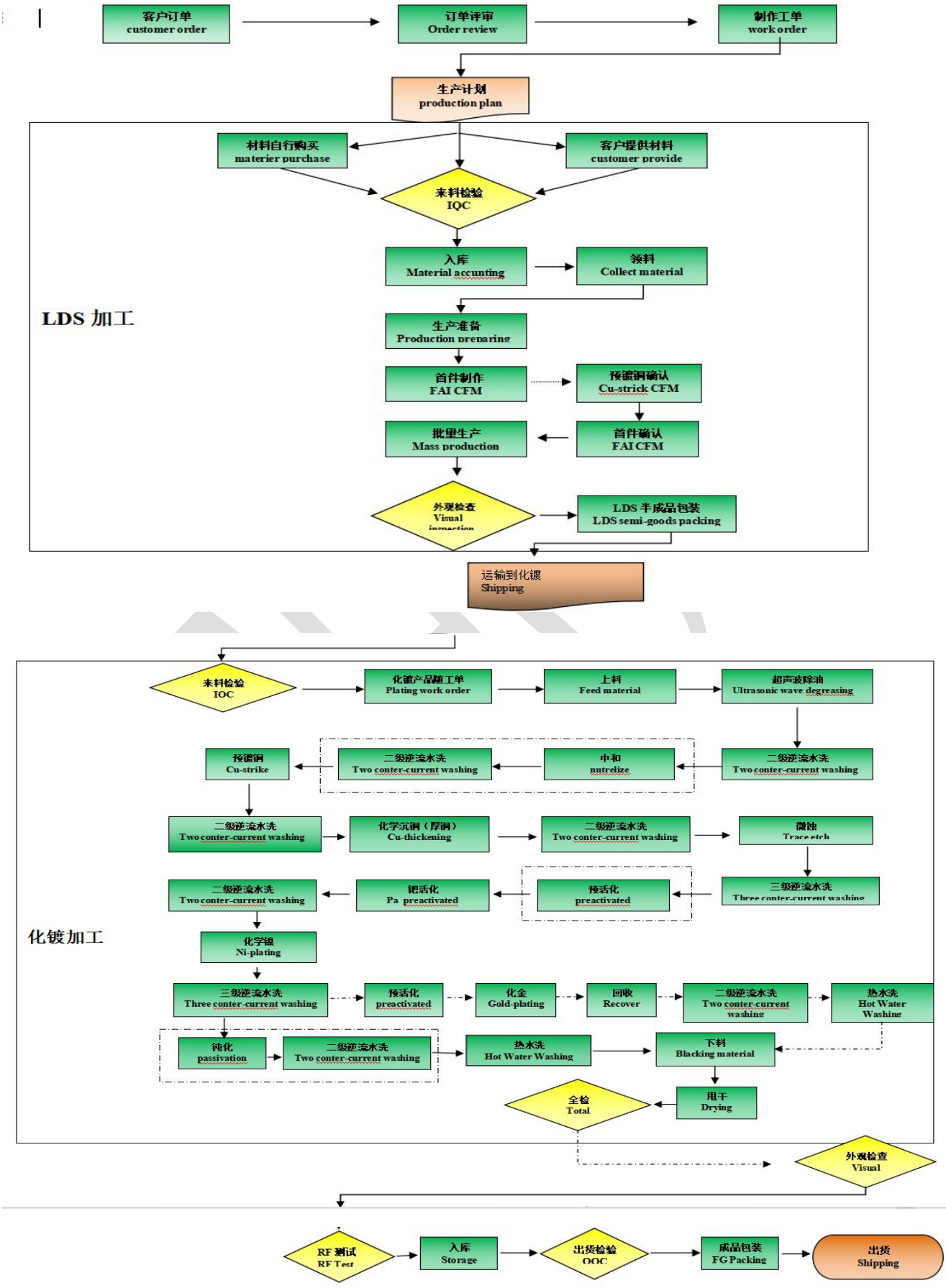
5.Process control diagram



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6. The ROHS material list

bill of material. ROHS report. Material proof				
name of material	Subpart name	ROHS detection report code	Date of detection	supplier
W112-ATT	LDS, the copper-nickel layer	REACE:A2230214684101001E	2023/5/10	Hankono
	LDS, the copper-nickel layer	ROHS：A2230158443101001E	2023/4/10	Hankono

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7. Reliability report

The LDS antenna test report							
client	Si qi	project name	W112-ATT	testing time	2024/4/3	product type	LDS
number	test item	test condition		requirement		test result	Judgment conclusion
1	Appearance test	Distance: 30cm distance from the object Time: confirm defects within 10 seconds Angle: the measured surface is 45 degrees; the measured object rotates up and down within 15 degrees Lighting: equivalent to a 40W fluorescent lamp		Cracking, stripping, oxidative corrosion, bubbles, bumps, heterocolor, deviation are not allowed		No abnormality seen	OK
2	cold test	Temperature-20℃, placed for 48h, no intermediate detection, recovery: recovery at normal temperature for 2h, bent antenna, Angle: 120 degrees, times: 3 times		Structure contrast, appearance contrast Key points: after low temperature test, the antenna has no peeling, cracks, wrinkles, severe allochromatic or chloror green; after bending, the antenna has no block peeling		No abnormality seen	OK
3	steady temperature damp test	Temperature + 60℃, RH 95%, placed at 96H, with no intermediate detection Recovery: recover for 2h at normal temperature		Structure contrast, appearance contrast Key: antenna no peel, cracks, wrinkles, severe hetereuchromatic or brass		No abnormality seen	OK
4	salt spray test	① NaCl and distilled water configuration, concentration 5 ± 0.1%, PH value 6.5~7.2; ② temperature: 35 ± 2℃; ③ spray water pressure: 80 KPa, ④ water flow: collecting container can collect 1.0~2.0ml saline solution per hour, ⑤ time: 48h, no intermediate detection Recovery: After removing the prototype, remove the surface saline with cotton cloth and toilet paper, and place it for 1H at room temperature		Structure contrast, appearance contrast Key points: the antenna has no stripping, cracks, wrinkles, and corrosive substances		No abnormality seen	OK

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5	Bige test	Draw 1001mm 1mm grid on the surface of the test antenna (1mmX1mm grids can be drawn in a small area), deep and paint the bottom; brush the test area with a brush; stick the test area with 3M600 tape and wipe the tape to increase the contact area and the test area. After placing for 1 minute, grab one end of the tape by hand, and tear off the tape at 90 degrees, and conduct the same test in the same position	1, more than 1 / 2 of the top paint or coating fall off as unqualified; 2. After the 1X1mm grid is cut, if there is more than 1 / 4 of the area falling in the small grid, it is unqualified.(Or there are obvious debris in the process of cutting, which is unqualified)		No abnormality seen	OK
experiment conclusion:		qualified	test controler:	Zhong Qiuhong	examine and verify:	Feng Jiwu

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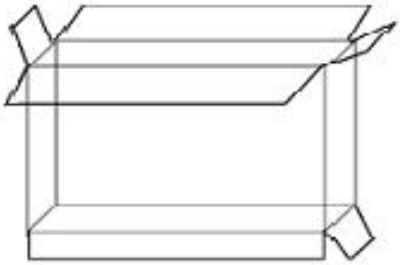
8. Packaging diagram

Packaging method diagram		
product name	LDS antenna	
P / N	540008	
Project model	W112-ATT	
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		

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

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