



宁波立捷电子有限公司

Ningbo LiJie Electronics Co., Ltd

承 认 书

APPROVAL SHEET

客户名称Customer Name SHINING 3D Tech Co., Ltd.

产品型号Product Model WIFI Antenna 2:Frequece2400-2500MHz;5150-5850MHz;FPC Black coated oil with adhesive backing+ RF1.13MM Black coaxial line+MHF I 110mm

客户料号Customer P/N /

立捷料号Lijie P/N LJ89SAWF005R

制作日期Date Prepared 2022.12.09

制作版本Revision A0

Lijie Electronics Co.,LTD (LJICT)		
Prepare	Checked	R&D
Customer		
Responsible	Checked	APPROVED

Company: Ningbo LJICT Electronics.,LTD

Add: No .599 Qiming Road Yin zhou District , Ning bo

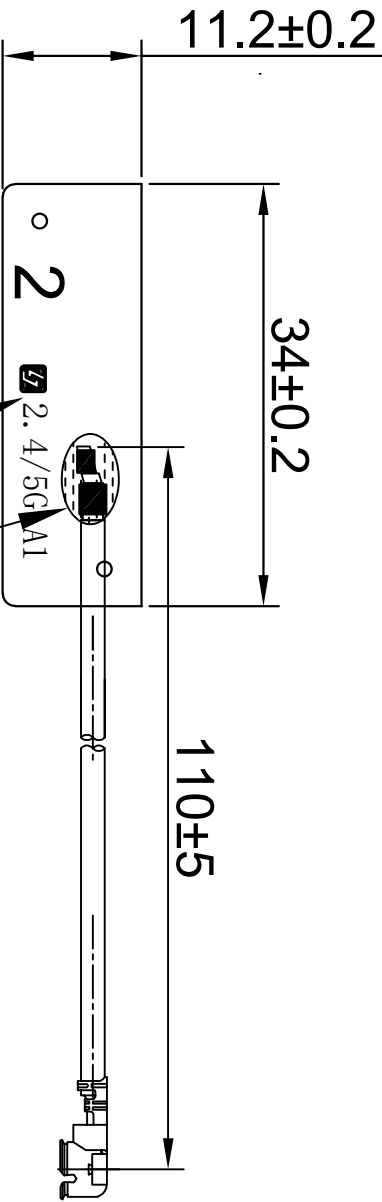
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REV.	DATE	DESCRIPTION	OWNER
A0	2023.01.06	NEW	ZHANG



NOTES:

1. Electrical:
 - 1.1 Impedance: 50 OHM;
 - 1.2 Frequency: 2400-2500MHz; 5150-5850MHz;
 - 1.3 VSWR: <3.0
 - 1.4 Gain: 2400-2500MHz<1dbi;5150-5850MHz<2.5dbi;
 - 1.5 Max Power:50W.
 - 1.6 Polarization: Linear polarization.
 - 1.7 Azimuth:Omni-directional
2. Environmental:
 - 2.1 Storage Temperature Range: -40 TO +85.
 - 2.2 Operating Temperature Range: -40 TO +85.
3. All Materials Must Meet & Shall RoHS Request.

TITLE	2.4G/5GAntenna-1.13Black Cable L=110MM	UNIT	m/m	TOLERANCES UNLESS OTHERWISE SPECIFIED			APPROVE	CHECKED	DRAWN	Ningbo Lijie Electronics Co., Ltd	
ORD. NO.	LJ89SAWF006R	MODEL NO.	/	ONE PLACE DECIMAL	.XX	±0.2				CUSTOMER SHINING 3D Tech Co., Ltd.	
BOM NO.	LJ89SAWF006R	SCALE	FREE	TWO PLACE DECIMAL	.XXX	±0.1					
CUSTOMER PART NO.	/	DWG. NO.	/	THREE PLACE DECIMAL	.XXX	±0.05					
				HOLE DIA. VARIATION	.XX	N/A					
				ANGULAR DIMENSION (ENG)	N/A	N/A					

ITEM	SPEC	QTY
3	MHF I	1
2	FPC	1
1	Cable	1
	50000 1.13mm Cable Black L=110MM.	
	SPEC	

2.4G/5G Antenna Test Report

Customer	SHINNING 3D
Project	AOS4
Antenna Revision	A1
Product Description	FPC+Cable+MHF I
Product No	

Purpose

This report is to measure the performance of **LJ 2.4G/5G WIFI antenna** for **SHINING 3D -AOS4**. All test date are showed as below.

Content

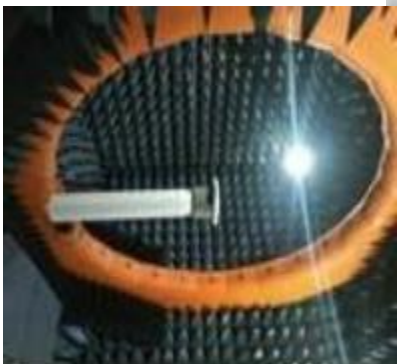
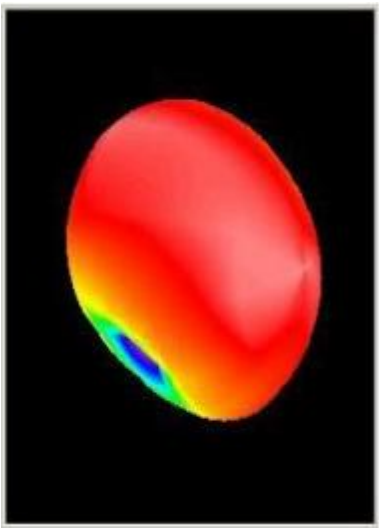
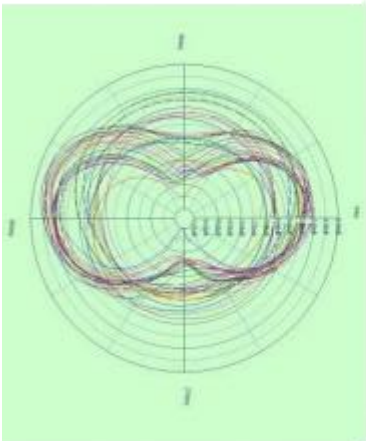
- 1: Product Overview & Dimension
- 2: Test Result
 - 2.1 Antenna Matching Network
 - 2.2 VSWR
 - 2.3 Gain & Efficiency
 - 2.4 Radiation Pattern
 - 2.5 OTA
- 3: Antenna Assembly Method

1. Product Overview & Dimension

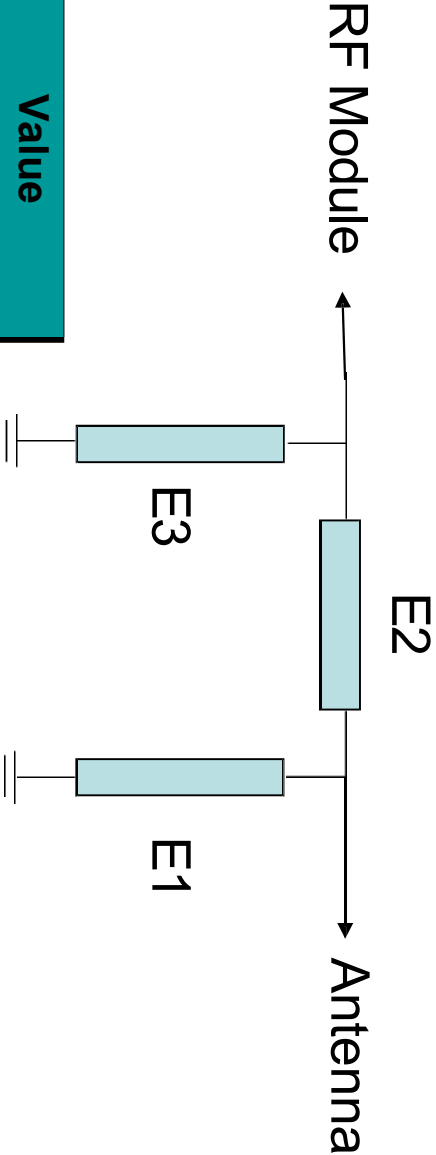


2. Test System

Sequence Number	Test Item	equipment
1. S parameter	VSWR	Agilent 5071C
2. OTA Test	TRP& TIS	Agilent 8960 E5515C& Agilent 4438C&CMW500 &CMW270 GTS
3. Gain & Efficiency	Gain & Efficiency	GTS Agilent 5071C



2.1 Antenna Matching Network



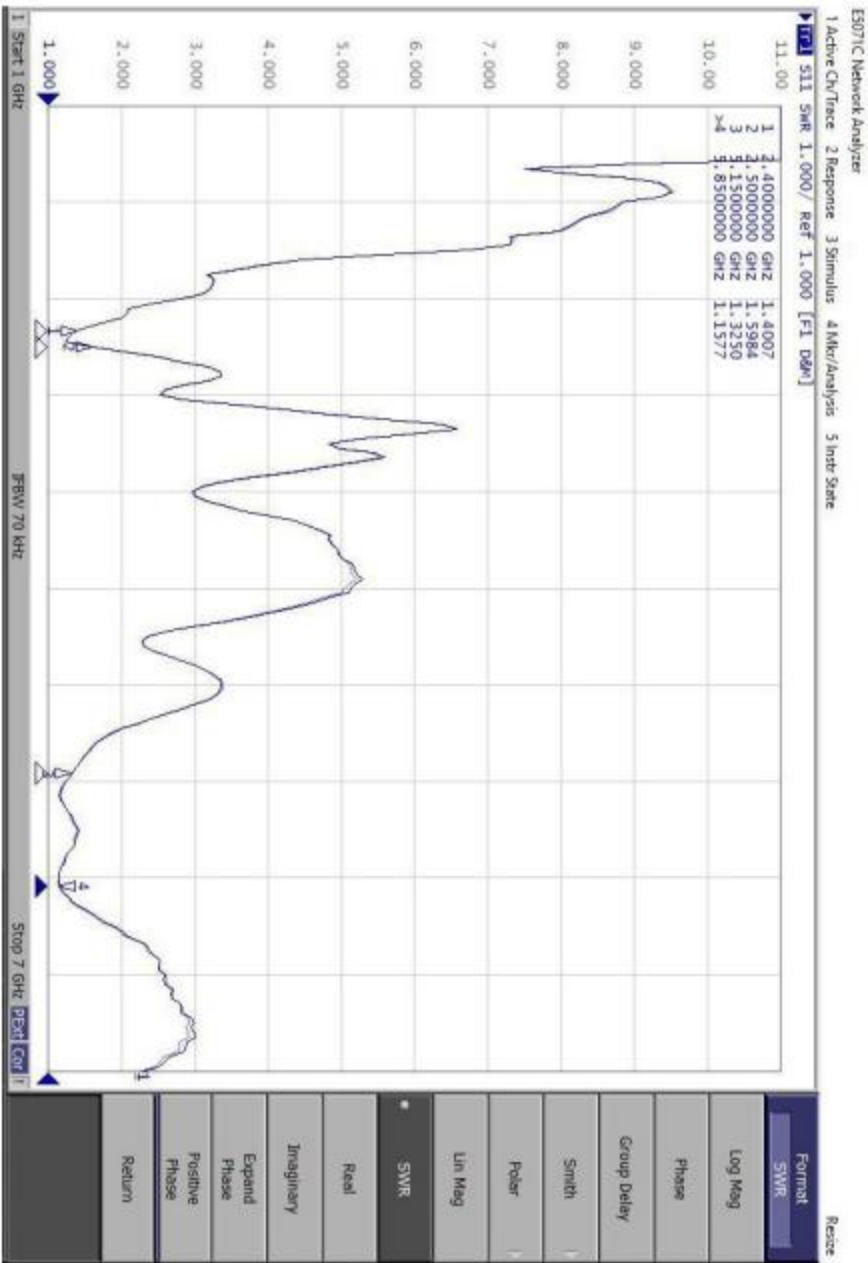
ant2:Fan Side

Element	Value
E1(0402)	NC
E2(0402)	0Ω
E3(0402)	NC

Antenna matching not changed

2.2 VSWR

ant2:Fan Side



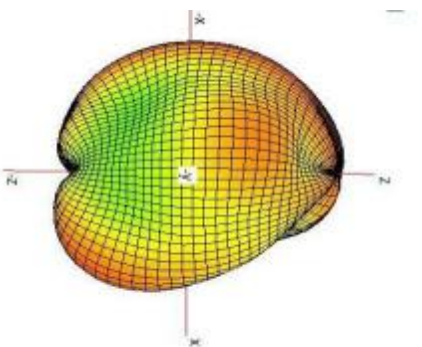
Freq. (MHz)	2400	2500	5150	5850
VSWR	1.40	1.60	1.33	1.16

2.3 GAIN & Efficiency

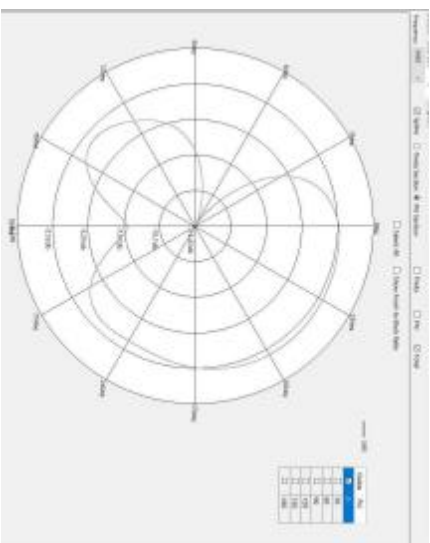
ant2:Fan side

Freq. (MHz)	Effi. (dB)	Effi. (%)	Gain (dBi)
2400	-3.57	44	0.49
2420	-3.58	43.89	0.78
2440	-3.66	43.06	0.61
2460	-3.91	40.69	0.16
2480	-4.09	39	0.11
2500	-4.10	38.89	0.03
5150	-4.13	38.61	0.16
5200	-4.09	38.96	-0.02
5250	-4.22	37.83	-0.8
5300	-4.24	37.71	0.57
5350	-4.18	38.16	0.88
5400	-4.07	39.2	1.12
5450	-4.36	36.67	0.72
5500	-4.33	36.89	0.54
5550	-4.09	39.02	1.23
5600	-3.96	40.18	1.33
5650	-3.92	40.53	1.32
5700	-3.88	40.96	1.42
5750	-3.73	42.37	1.46
5800	-3.91	40.63	1.26
5850	-4.01	39.71	0.85

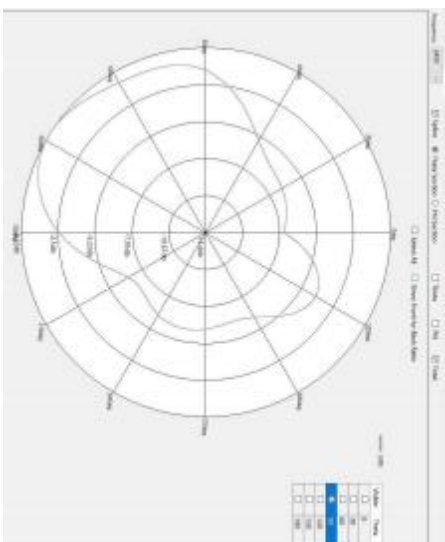
2.4 Radiation Pattern



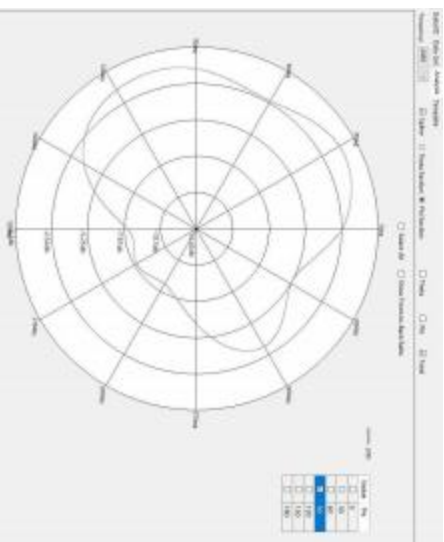
2450MHz



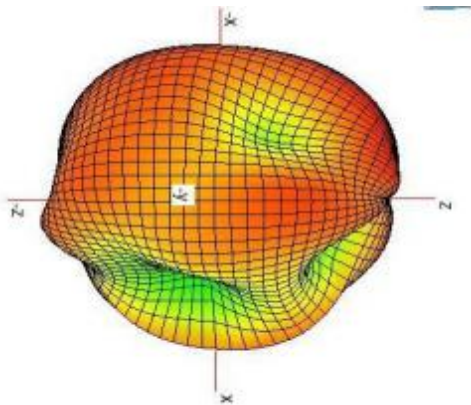
2450MHz(XOZ)



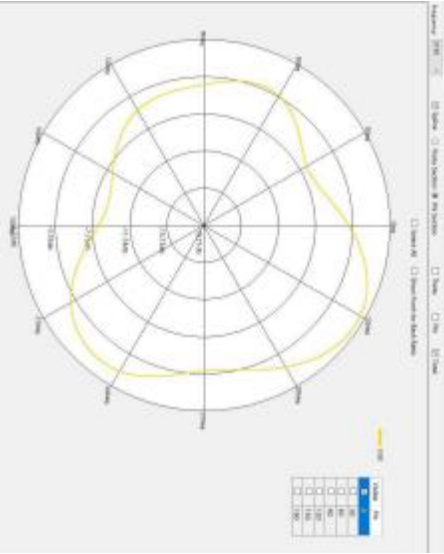
2450MHz(XOY)



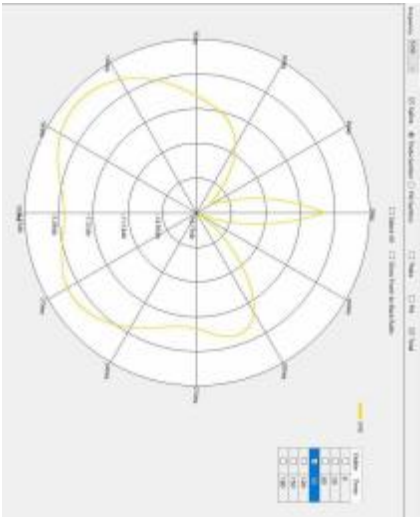
2450MHz(YOZ)



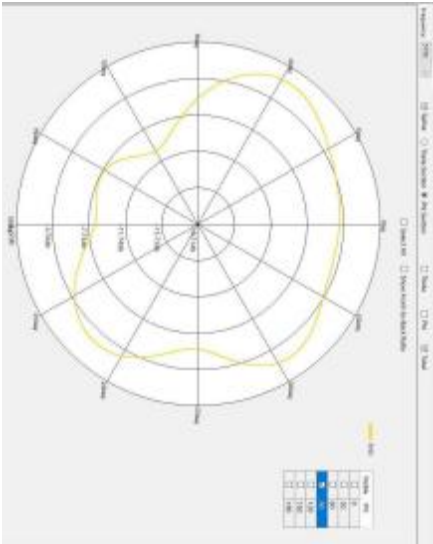
5150MHz



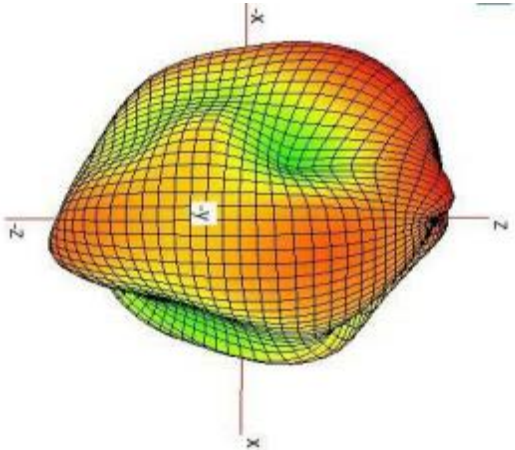
5150MHz(XOZ)



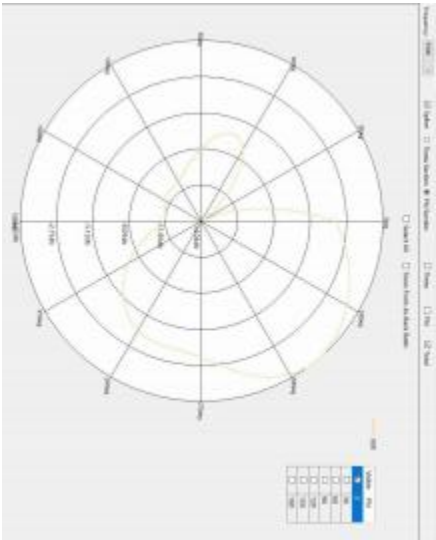
5150MHz(XOY)



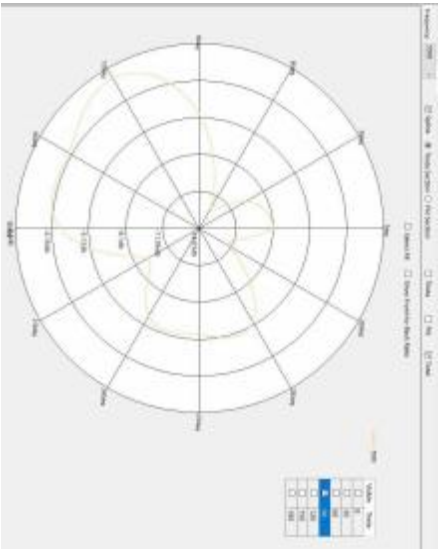
5150MHz(YOZ)



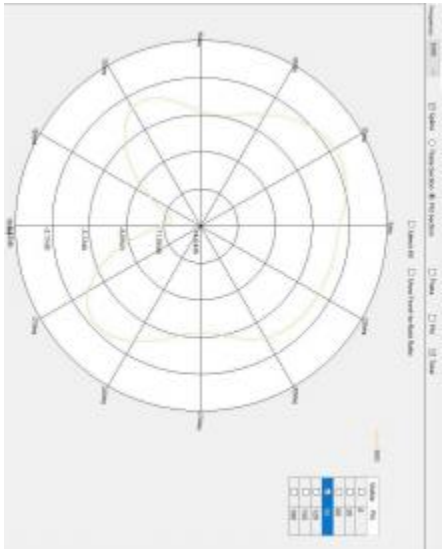
5500MHz



5500MHz(XOZ)



5500MHz(XOY)



5500MHz(YOZ)

2.5 OTA

ant1 : Battery Side

Band	Channel	TRP	Channel	TIS
11A	36	11. 86	36	-63. 32
	149	10. 82	149	-68. 22
	157	10. 42	157	-68. 12
	165	10. 96	165	-66. 13
11B	1	9. 13	1	-60. 44
	7	9. 56	7	-60
	13	9. 94	13	-60. 37

ant2 : Fan Side

Band	Channel	TRP	Channel	TIS
11A	36	11. 15	36	-56. 28
	149	12. 21	149	-60. 31
	157	11. 54	157	-59. 61
	165	12. 02	165	-61. 02
11B	1			
	7	测不了		
	13			

Confluence

Band	Channel	TRP	Channel	TIS
11A	36	14. 69	36	-65. 32
	149	14. 87	149	-70. 76
	157	14. 41	157	-71. 31
	165	14. 82	165	-69. 25
11B	1	8. 13	1	-61. 43
	7	8. 37	7	-59. 02
	13	8. 93	13	-58. 59



PULLING FORCE TEST REPORT

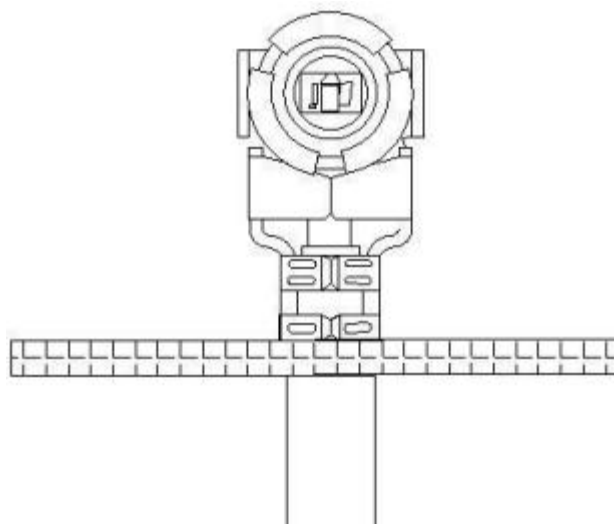
Customer: SHINNING 3D

Part Number: LJ89SAWF006R

Order: Sample

Date : 2022.12.09

Test conditions	Snap force	Pull force	1Kg
		Time	1 minute
		Equipment	Pulling Tester



Test position

SMA CONNECTOR

Test results.

	Sample No	Test Standard		Decided
		Cable Appearance	Electric Test	
	1	No damaged	No open and no short circuit	Pass
	2	No damaged	No open and no short circuit	Pass
	3	No damaged	No open and no short circuit	Pass
	4	No damaged	No open and no short circuit	Pass
	5	No damaged	No open and no short circuit	Pass
Remarks: The Pulling Force Test Weight Load 1Kg/min.				

Approved By: WEI HONG HOU

Checked By: JIU LONG ZHENG

Date : 2022.12.09

Date : 2022.12.09

Sample Inspection Report

CUSTOMER: SHINNING 3D

DATE: 2022.12.09

CONCLUSION

PART NO.: LJ89SAWF006R

QTY: 5 PCS

PASS ☒

FAIL ☐

—Appearance Inspection:

	Result	PASS	FAIL
1Appearance	GOOD	✓	
2.onstruction	WIFI Antenna 2:Frequece2400-2500MHz;5150-5850MHz;FPC Black coated oil with adhesive backing+ RF1.13MM Black coaxial line+MHF I 110mm	✓	

二.Electric Charactreistic Inspection:

Test Item	Test Condition	PASS	FAIL
1.Continuity Test	0.5Ω	✓	
2. Withstand Voltage	DC 500V/ AC300 V	✓	
3. Insulation Resistance	20MΩ	✓	
Conductive Resistance	0.5Ω	✓	
5. VSWR:	≤3.0	✓	

三.(Mechanical Characteristic Inspection) YES ☒ NO ☐

(Test Item)	(Test Condition)	RESULT	PASS	FAIL
Lifting Tension	1Kg/min	OK	✓	

四.(Dimension Inspection):

Spec(Unit:mm)		Actual Range (Unit:mm)					PASS	FAIL
		1	2	3	4	5		
1	110± 5	110.10	110.25	110.00	110.05	110.85	✓	
2	34±0.2	34.05	34.13	34.06	34.00	34.07	✓	
3	11.2±0.2	11.20	11.25	11.20	11.18	11.26	✓	
4								
5								
6								
7								
8								
9								
10								

Authorizer :

Auditor:

Lister: