

KunShan Innowave Communication Technology CO.,Ltd.

【Material acknowledgement】

CUSTOMER NAME: ShenZhen Azroad Technology Incorporated CO LTD

PRODUCT NAME: KD89 (F003D8913910001)

CUSTOMER: L530100082239

Customer material name: MD15

PRODUCT: Antenna: MD15-2.4G antenna 1 Size: 105*13.6*0.6mm
Gray line exposed line length 60mm Innowave

Factory signature:

APPROVED BY	AUDITOR BY	CHECKED BY
Huang Chao	Lin Quan Jun	Huang Lei

Customer acknowledges signature:

Acknowledge the result: ☐ OK ☐ NG

APPROVED BY	APPROVED BY	APPROVED BY

Address: Shenzhen Longhua District Dalang Street Zijing double creation Park 7 building 101

Telephone: 13823308576

Fax: 051257258326

Contact person: zengqiuzhi

Mailbox: zengqiuzhi@innnowave.cn

Website: <https://www.innowave.cn/>

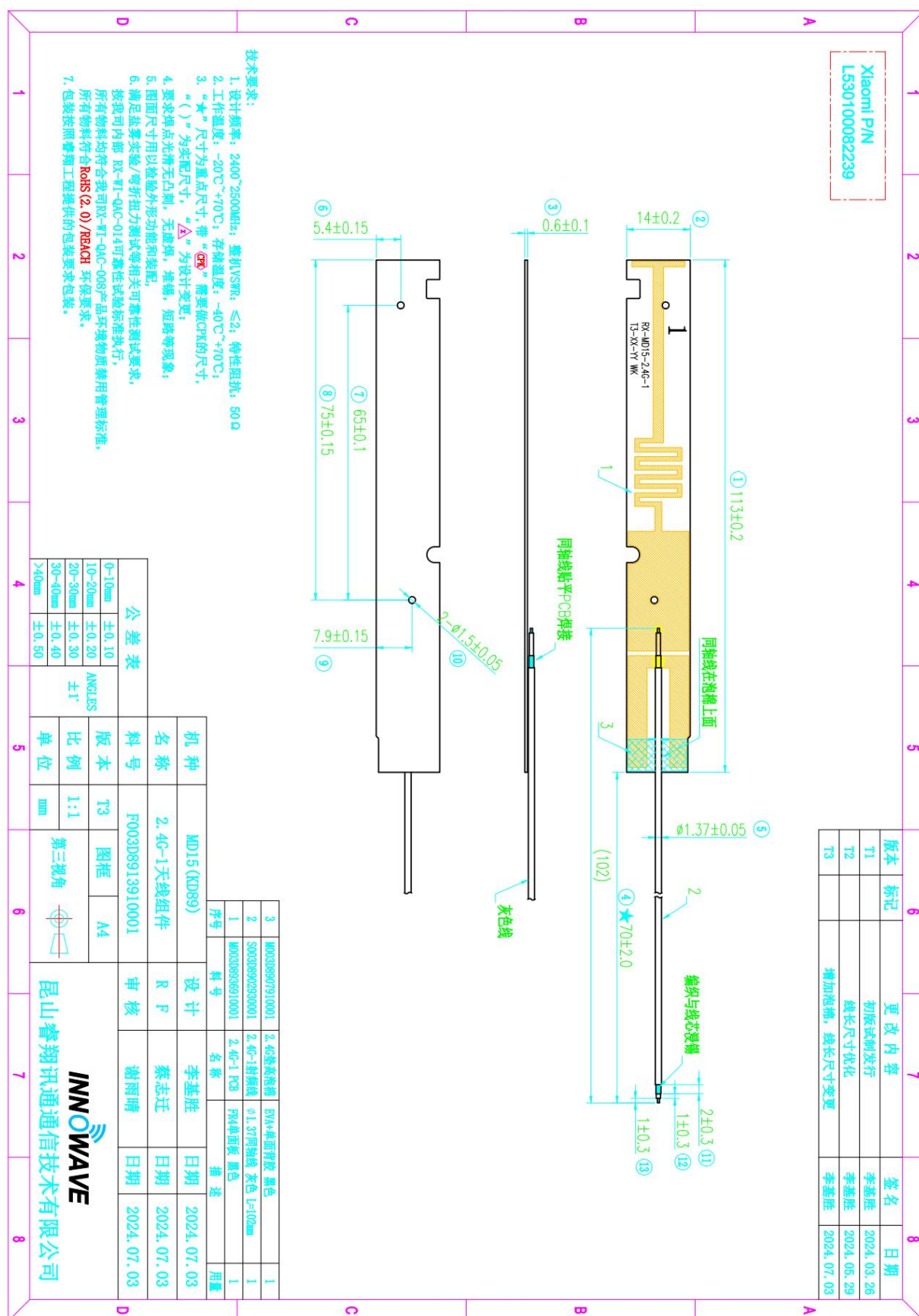
(1) Antenna description

Product main technical parameters

Main technical specificationf

Main technical parameters		Main technical specifications	
Frequency Range (MHz)	2400-2500	Frequency Range (MHz)	2400-2500
Impedance (Ω)	50	Impedance (Ω)	50
Peak Gain(dBi)	5.0	Peak Gain(dBi)	5.0
VSWR	≦2.0	VSWR	≦2.0
Polarization	vertical polarization	Polarization	vertical polarization
Radiation	Omni-directional	Radiation	Omni-directional
Connector Type	Cable	Connector Type	Cable
Physical Properties		Physical Properties	
Antenna Base	FR-4	Antenna Base	FR-4
Operating Temp	-20℃~+70℃	Operating Temp	-20℃~+70℃
Storage Temp	-40℃~+70℃	Storage Temp	-40℃~+70℃

(1) Sample sky chart

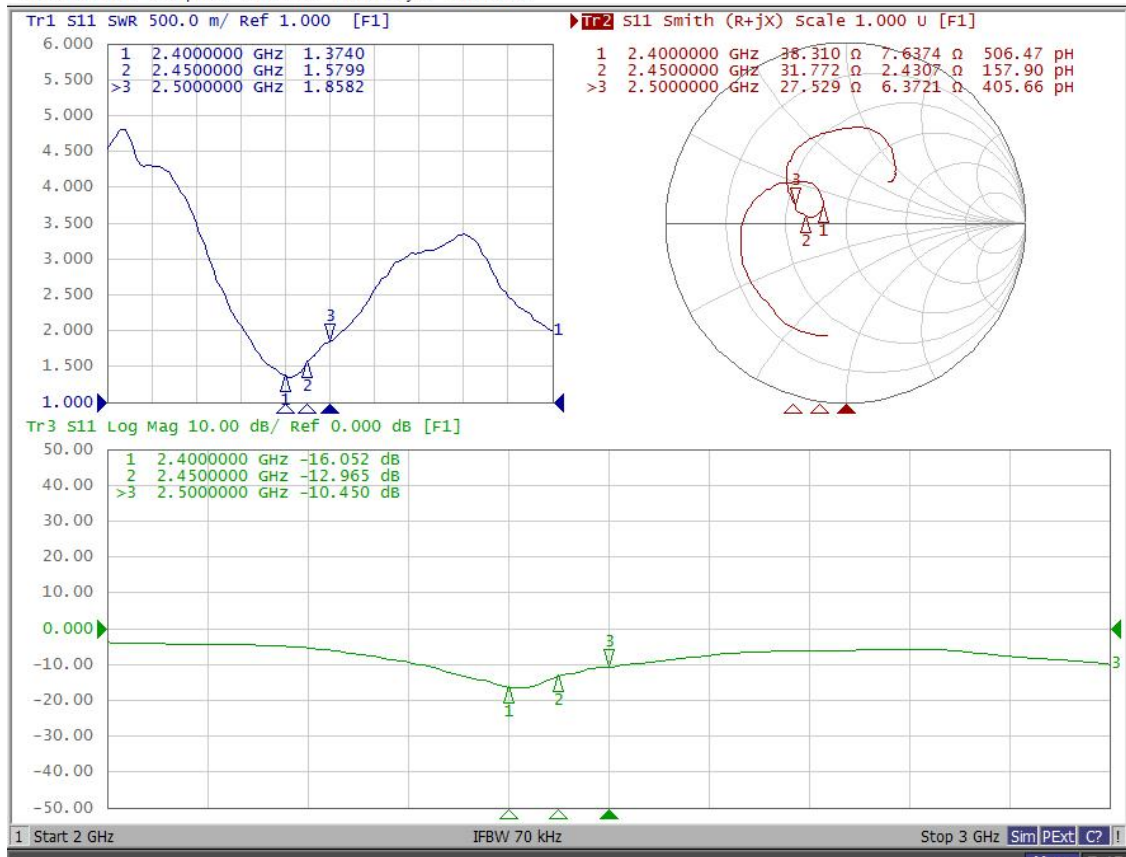


(2) Test report

2.1: Network analysis test report

E5063A Network Analyzer

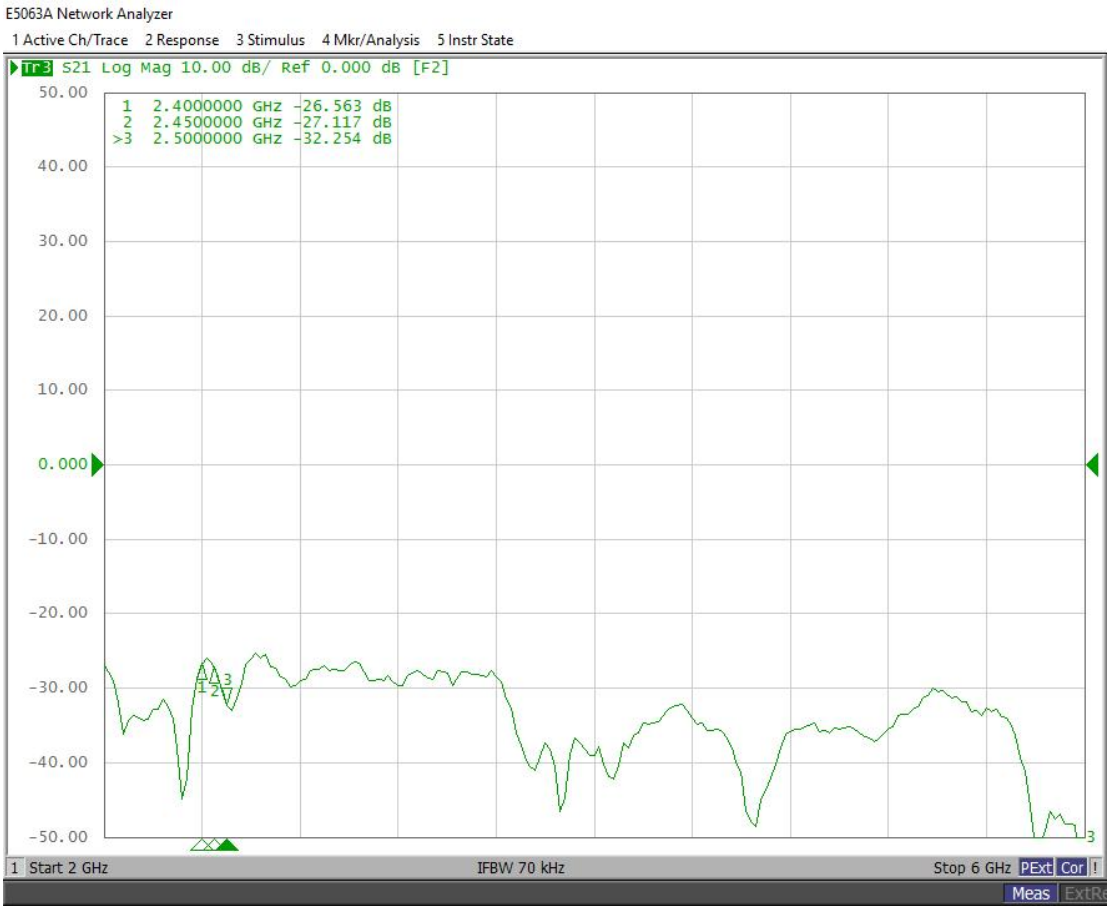
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State



2.2: Antenna gain, efficiency meter:

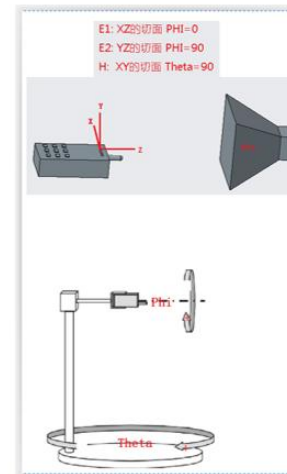
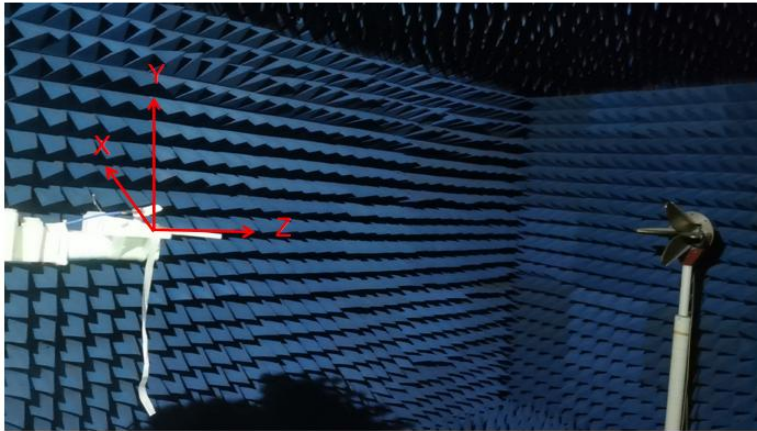
Freq (MHz)	Effi (%)	Gain (dBi)
2400	70.2	4.9
2410	74.8	5.4
2420	79.9	5.4
2430	84.5	5.8
2440	72.0	5.2
2450	71.5	5.3
2460	72.0	5.3
2470	71.5	5.9
2480	73.3	5.7
2490	72.3	5.4
2500	71.9	5.3

2.3: Isolation:

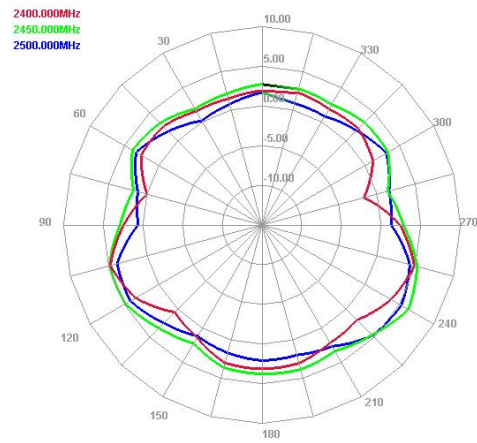


(3) Directional diagram

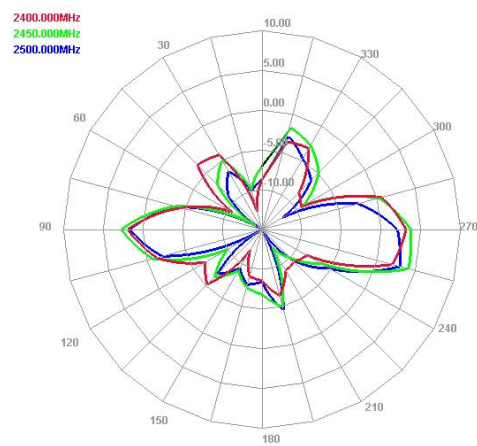
3.1: Test environment diagram:



Horizontal

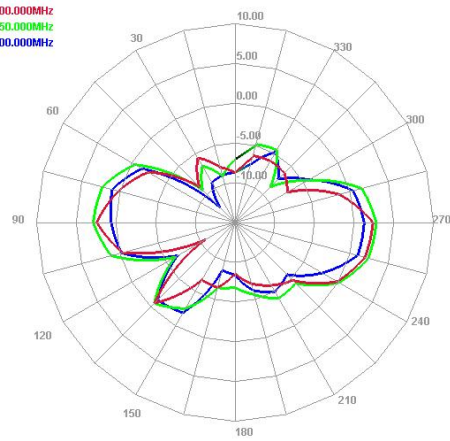


E1 Face



E2 Face

2400.000MHz
2450.000MHz
2500.000MHz



DimensionsReport

Kunshan Innwave Communication Technology Co.,Ltd. Full scale measurement report																								
Vendor		Material Name		Cable+PCB		Part NO		F003D8913910001		Tool Number		Cav. Number		Unit				Comments Luo Hai Jun						
Kunshan Innwave Communication Technology Co.,Ltd.		Material Code		/		Part Name (零件名称)		KD89-2.4G-1 antenna assembly				/		/		☐ INCHES ☐ MILLIMETERS								
Date		2024/7/5				MEASURED DIMENSION					% TOLERANCE USED			T3			DISPOSITION			ACCEPTABLE VARIANCE				
DIM. #	DIMEN SION	DRAWING ZONE	+ TOL.	- TOL.	NOTE	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 5	UPPER	LOWER	0%-25%	25%-50%	50%-75%	75%-100%	100%+	Re-Measure	Accept	Fix Tool	Accept With Variance	DIMEN SION	+TOL.	- TOL.
1	113.00	113.20	0.20	0.20	112.80	113.01	113.00	113.02	113.01	113.02	10%	0%	X								√			
2	14.00	14.20	0.20	0.20	13.80	14.01	14.02	14.01	14.01	14.02	10%	0%	X								√			
3	0.60	0.70	0.10	0.10	0.50	0.61	0.61	0.60	0.60	0.61	10%	0%	X								√			
4	70.00	72.00	2.00	2.00	68.00	70.20	70.23	70.22	70.21	70.21	12%	0%	X								√			
5	1.37	1.42	0.05	0.05	1.32	1.37	1.37	1.37	1.37	1.36	0%	20%	X								√			
6	5.40	5.55	0.15	0.15	5.25	5.41	5.42	5.44	5.42	5.41	27%	0%		X							√			
7	65.00	65.10	0.10	0.10	64.90	65.02	65.02	65.01	65.01	65.02	20%	0%	X								√			
8	75.00	75.15	0.15	0.15	74.85	75.02	75.01	75.00	75.04	75.02	27%	0%		X							√			
9	7.90	8.05	0.15	0.15	7.75	7.91	7.92	7.91	7.92	7.92	13%	0%	X								√			
10	1.50	1.60	0.10	0.10	1.40	1.50	1.52	1.51	1.52	1.50	20%	0%	X								√			
11	2.00	2.30	0.30	0.30	1.70	2.02	2.02	2.01	2.01	2.04	13%	0%	X								√			
12	1.00	1.30	0.30	0.30	0.70	1.01	0.99	0.99	1.00	1.01	3%	3%	X								√			
13	1.00	1.30	0.30	0.30	0.70	1.00	0.99	1.02	1.02	1.01	7%	3%	X								√			

5 Reliability test report



KunShan Innowave Communication Technology CO.,Ltd.

KD89

Reliability test report

Experimental report number: 20240326022

The name of a product or commodity: 2.4G-1

Color: Black

DATE: 2024.3.26

CHECKED BY: Zhang Zaoqin

AUDITOR BY: Yan Wulin

APPROVED BY: Luo Hai Jun

Serial number	Test item	QTY	Experimental result	Remark
1	Salt spray test	3PCS	OK	
2	High temperature storage test	3PCS	OK	
3	Low temperature storage test	3PCS	OK	
4	Temperature shock test	3PCS	OK	
5	Constant temperature and humidity	3PCS	OK	
6	Adhesion test	3PCS	OK	

Preservation Department:

Quality Department

Form number:

RX-FR-QAC-068 A0

6、 Bill of materials



KunShan Innowave Communication Technology CO.,Ltd.

BOM

Client: /		type:	MD15	☒	E-BOM	2024/7/3	T3	5	2.4G-1 wire length is changed, 2.4G-1/2 foam is added	LI Ji Sheng
Project: KD89		Edition:	T3	☒	P-BOM	2024/5/27	T2	14	The RF line specifications and dimensions are changed, and the color of the SMT PCB is changed	LI Ji Sheng
		主BOM		☒		2024/4/7	T1.1	2	2.4 The length of the G-2 RF cable is changed	LI Ji Sheng
						2024/3/26			Initial release	LI Ji Sheng
						Change date	Markers	Places	Change content	signature
Term	Change mark	New part number	Product name	Gauge lattice	Material (Surface treatment)	Colour	Dosage	Customer part number	supplier	Reserve injection
1		T3 F003B8913910001	The KD89 has a built-in 2.4G-1 antenna assembly	MD15 2.4G-1 antenna Grey line length 70mm	Halogen PCB+ coaxial line	Black	1 PCS		Innowave	self-control
2		MD03B8936910001	The KD89 has a built-in 2.4G-1 PCB	113*14*0.6mm	Halogen 0.6mm FR4 single panel, single side black oil OSP process	Black	1 PCS			outsourcing
2	T3	S003B8902930001	The KD89 has a built-in 2.4G-1 RF cable	Φ1.37*102mm	Halogen-free copper wire, both ends peeled with tin (line loss 0.5-1.0dB impedance 50 ohms)	Light grey	1 PCS		Innowave	self-control
3	T3	T01B0125	1.37 Common coaxial line	/	Halogen-free copper wire, both ends peeled with tin (line loss 0.5-1.0dB impedance 50 ohms)	Light grey	0.102米			Common materials/outsourced
3		B15A0003	Lead-free environmental protection high temperature tin ba	Lead-free environmental protection high temperature tin strip weight 18g	Halogen-free tin content 99.3%	Silver	0.023g/pcs			Common materials/outsourced
2	T3	MD03B8907910001	KD89 built-in 2.4G pad high foam	13*7*2.0mm	Halogen-free EVA 60 degree foam + domestic glue on one side	Black	1 PCS			outsourcing
2		B15A0002	Lead-free green tin wire 0.8mm diameter	Φ0.8mm	Halogen-free rosin content 2.5-3.0% Weight 18g	Silver	0.046g/pcs			outsourcing
2		R000B2D00061000	Zip-lock bag 006 280*380mm	Transparent, anti-static, self-sealing single layer thickness 0.07mm	Halogen-free transparent, anti-static, self-sealing single layer thickness 0.07mm	Transparent	1/100PCS			outsourcing
2		B01A0026	Carton 350*350*250mm	Carton 350*350*250mm	Halogen-free carton 350*350*250mm	Natural quality	1/1000PCS			outsourcing

