

KunShan Innowave Communication Technology CO.,Ltd.

【Material acknowledgement】

CUSTOMER NAME:ShenZhen Azroad Technology Incorporated CO LTD

PRODUCT NAME: KD89 (F003D8913980003)

CUSTOMER: L530100082639

Customer material name: MD15

PRODUCT: Antenna: MD15-5G antenna 1 Size: 100*10*0.6mm Black
line exposed line length 75mm 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/>

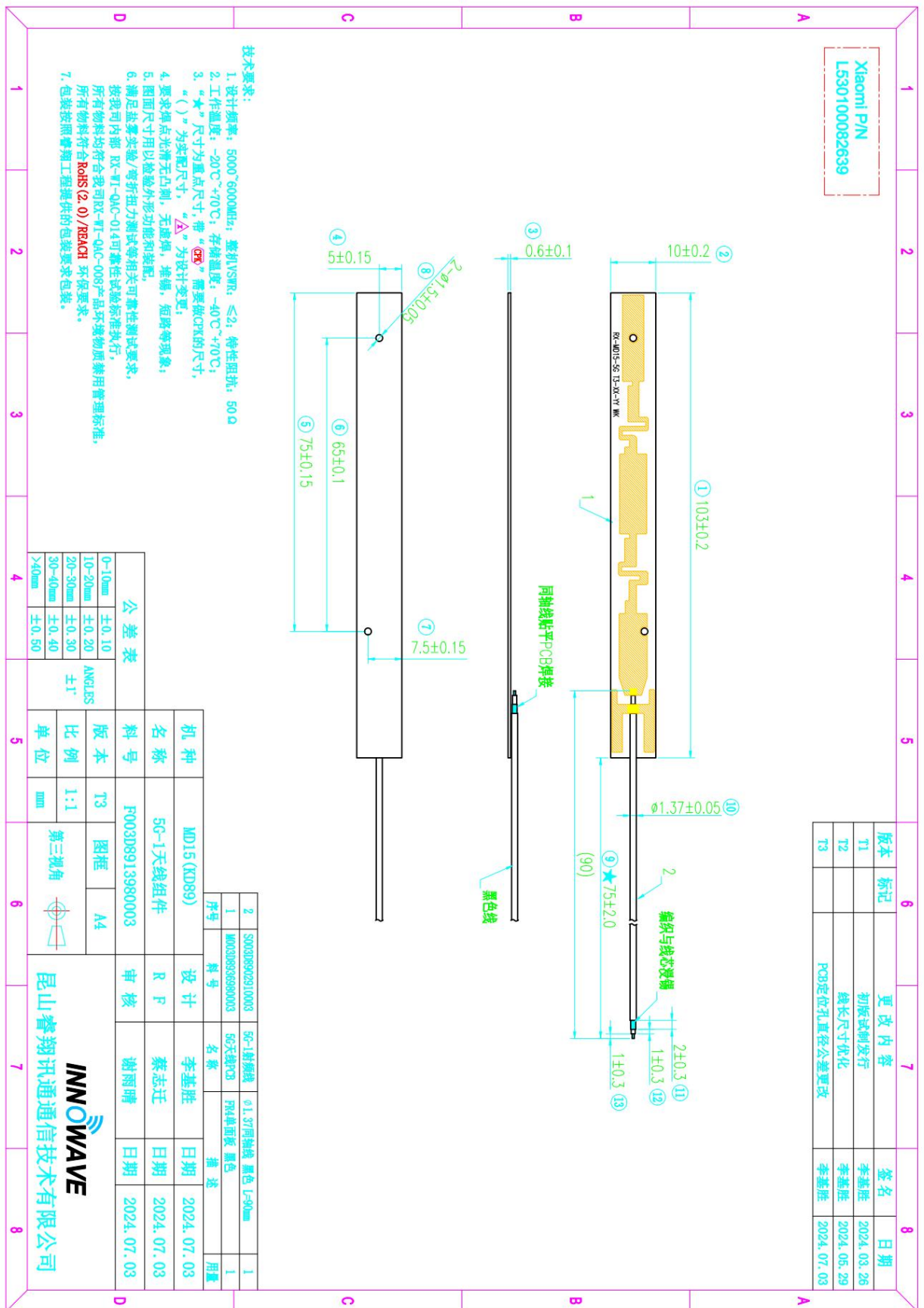
(1) Antenna description

Product main technical parameters

Main technical specificationf

Main technical specifications		Main technical specifications	
Frequency Range (MHz)	5150-5850	Frequency Range (MHz)	5150-5850
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

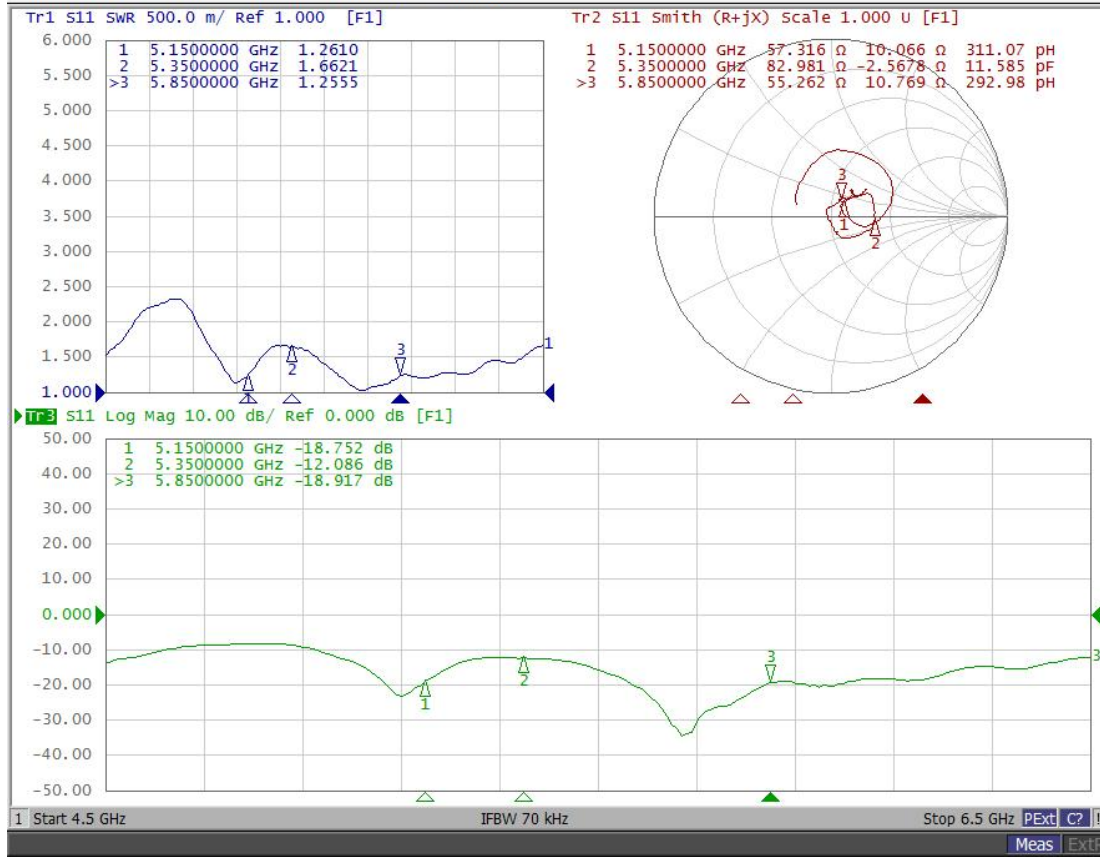


(2) Test report

2.1: Network analysis test report

E5063A Network Analyzer

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



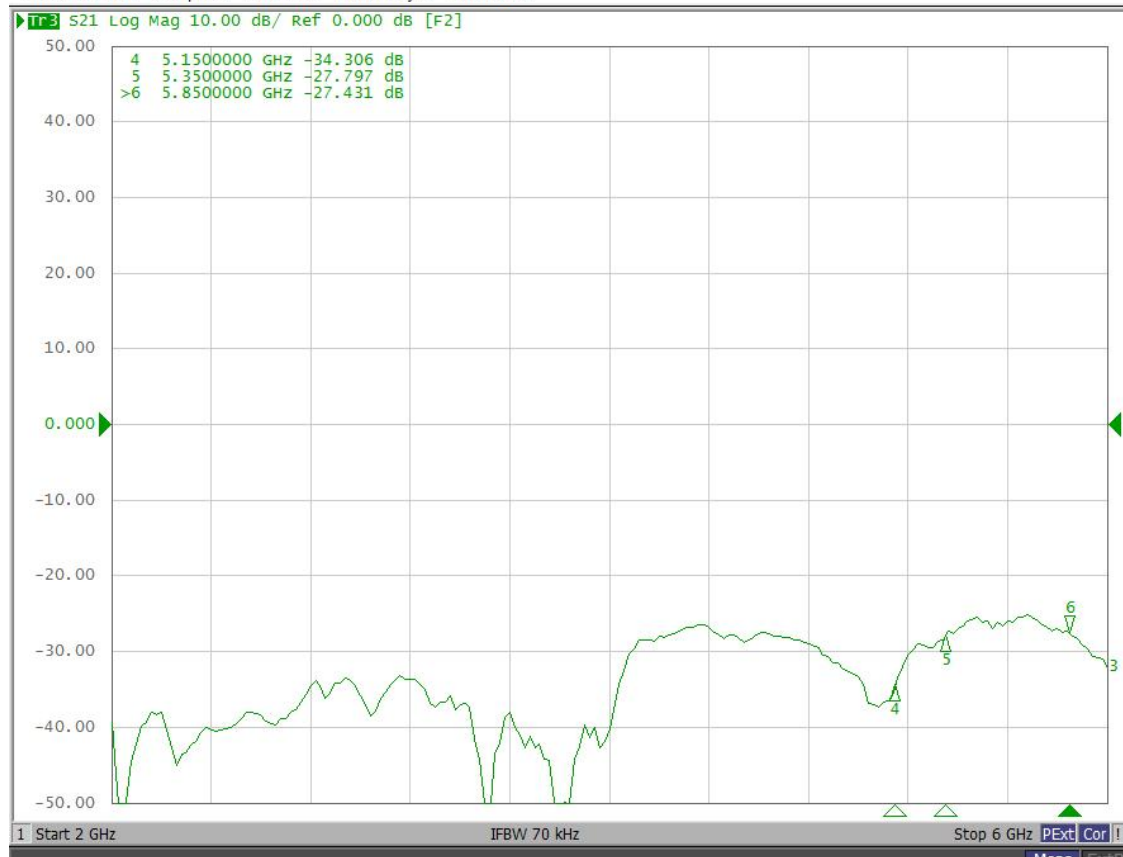
2.2: Antenna gain, efficiency meter:

Freq (MHz)	Effi (%)	Gain (dBi)
5150	66.6	5.4
5200	64.7	5.4
5250	63.6	5.3
5300	69.4	5.6
5350	71.7	5.6
5400	68.0	5.6
5450	67.7	5.1
5500	75.0	5.5
5550	75.3	5.3
5600	70.5	5.2
5650	70.7	5.0
5700	71.8	5.4
5750	69.9	5.4
5800	66.6	5.4
5850	67.5	5.3

2.3: Isolation:

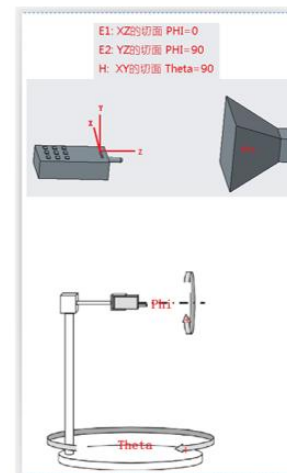
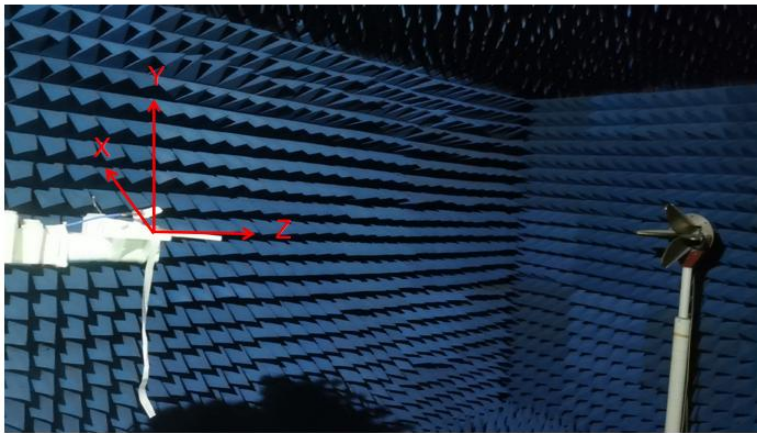
E5063A Network Analyzer

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

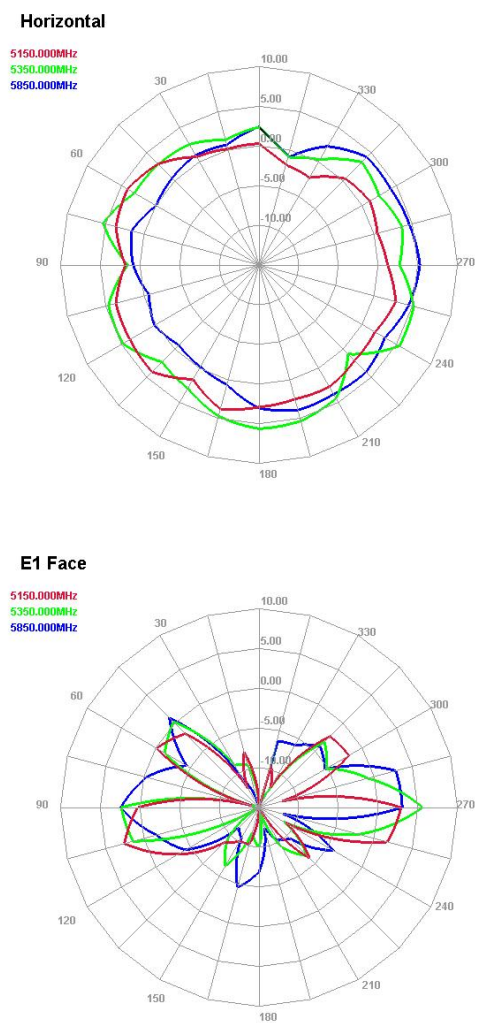


(3) Directional diagram

3.1: Test environment diagram:

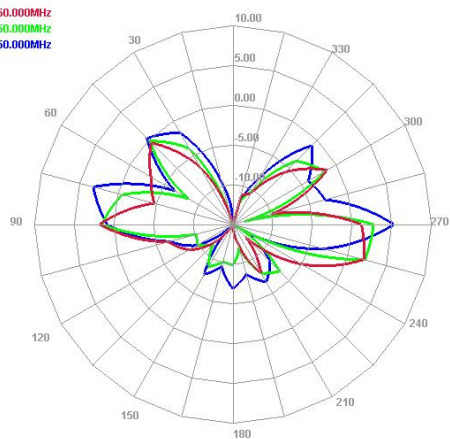


2.4G 方向图:



E2 Face

5150.000MHz
5350.000MHz
5850.000MHz



DimensionsReport

 Kunshan Innowave Communication Technology Co.,Ltd. Full scale measurement report																									
Vendor		Material Name		Cable+PCB		Part NO		F003D8913910003		Tool Number		Cav. Number		Unit				Comments Luo Hai Jun							
Kunshan Innowave Communication Technology Co.,Ltd.		Material Code		/		Part Name		KD89-5.8G-1 antenna assembly				/		/		☐ INCHES ☒ MILLIMETERS									
Date		2024/5/28				MEASURED DIMENSION					% TOLERANCE USED			Rev		T2		DISPOSITION					ACCEPTABLE VARIANCE		
DIM. #	DIMENSION	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	DIMENSION	+ TOL.	- TOL.	
1	103.00	103.20	0.20	0.20	102.80	103.01	103.03	103.01	103.03	103.02	15%	0%	X								√				
2	10.00	10.20	0.20	0.20	9.80	10.01	10.02	10.01	10.01	10.02	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	5.00	5.15	0.15	0.15	4.85	5.01	5.02	5.02	5.01	5.01	13%	0%	X								√				
5	75.00	75.15	0.15	0.15	74.85	75.02	75.01	75.00	75.04	75.02	27%	0%		X							√				
6	65.00	65.10	0.10	0.10	64.90	65.02	65.02	65.01	65.01	65.02	20%	0%	X								√				
7	7.50	7.65	0.15	0.15	7.35	7.51	7.52	7.51	7.52	7.51	13%	0%	X								√				
8	1.50	1.60	0.10	0.10	1.40	1.51	1.52	1.50	1.49	1.50	20%	6%	X								√				
9	75.00	78.00	3.00	3.00	72.00	75.02	75.01	75.00	75.04	75.02	1%	0%	X								√				
10	1.37	1.42	0.05	0.05	1.32	1.37	1.36	1.37	1.37	1.37	0%	20%	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: 20240326021

The name of a product or commodity: 5G-1

Color: Black

Production date: 2024.3.26

CHECKED BY: Zhang Zaoqin

AUDITOR BY: Yan Wulin

APPROVED BY:

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-1/2.5G is added	LI Ji Sheng		
						2024/5/27	T2	14	The RF line specifications and dimensions are changed, and the color of the 5G ANT-RFV is changed	LI Ji Sheng		
						2024/4/7	T1.1	2	2.4 The length of the G-2 RF cable is changed	LI Ji Sheng		
						2024/3/26						
Project	KD89	Edition:	T3	☒	P-BOM	Change date	Markers	Places	Initial release	LI Ji Sheng		
									Change content	signature		
1		T2	P00308913980003	The KD89 has a built-in 5G-1 antenna assembly		The black cable length of the MD15 5G-1 antenna is 75mm		Halogen PCB+ coaxial line	Black	1 PCS	Innowave	Self-control
2		T2	M00308936980003	KD89 built-in 5G antenna PCB		103*10*0.6mm		Halogen 0.6mm F84 single panel, single side black oil OSP process	Black	1 PCS		Outsourcing
2		T2	S00308902910003	The KD89 has a built-in 5G-1 RF cable		Φ1.37*90mm		Halogen-free copper wire, both ends peeled with tin (line loss 0.5-1.0dB impedance 50 ohms)	Black	1 PCS	Innowave	Self-control
3		T2	T0110116	1.37 Common coaxial line		/		Halogen-free copper wire, both ends peeled with tin (line loss 0.5-1.0dB impedance 50 ohms)	Black	0.09M		Common materials/on
3			B15A0003	Lead-free environmental protection high temperature tin bar		Lead-free environmental protection high temperature tin strip weight 18g		Halogen-free tin content 99.3%	Silver	0.023g/pcs		Common materials/on
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			8000E2D00061000	Zip-lock bag 006 260*380mm		Transparent, anti-static, self-sealing single layer thickness 0.07mm		Halogen-free transparent, anti-static, self-sealing single layer thickness 0.07mm	Transparent	1/50PCS		Outsourcing
2			B01A0026	Carton 350*350*250mm		Carton 350*350*250mm		Halogen-free carton 350*350*250mm	Natural quality	1/500PCS		Outsourcing

7. Material list