

KunShan Innwave Communication Technology CO.,Ltd.

【Material acknowledgement】

CUSTOMER NAME: ShenZhen Azroad Technology Incorporated CO LTD

PRODUCT NAME: KD89 (F003D8913910002)

CUSTOMER: L530100082439

Customer material name: MD15

PRODUCT: Antenna: MD15-2.4G antenna 2 Size: 105*14*0.6mm
Gray line Exposed line length 145mm Innwave

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@innowave.cn

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

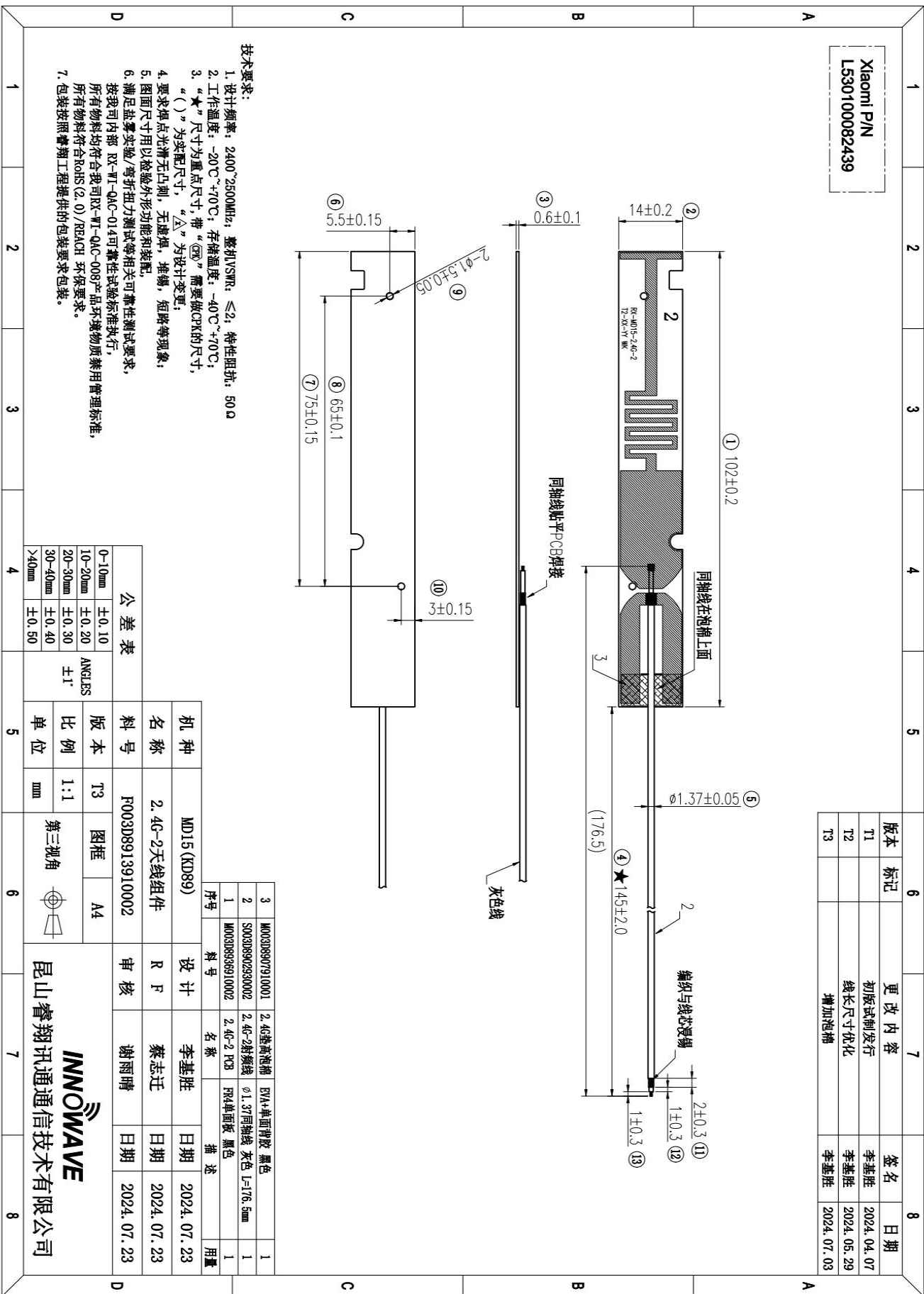
(1) Antenna description

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) 样品天线图

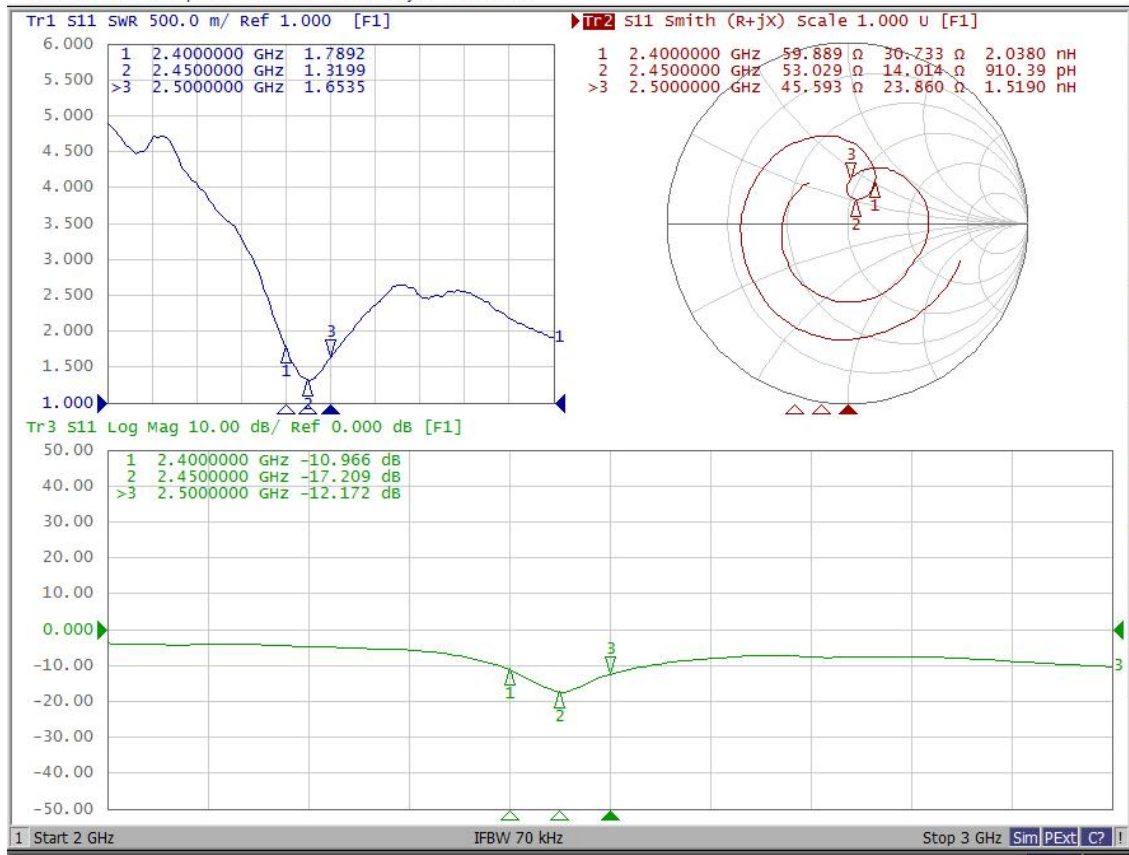


(2) Test report

2.1: Network analysis test report

E5063A Network Analyzer

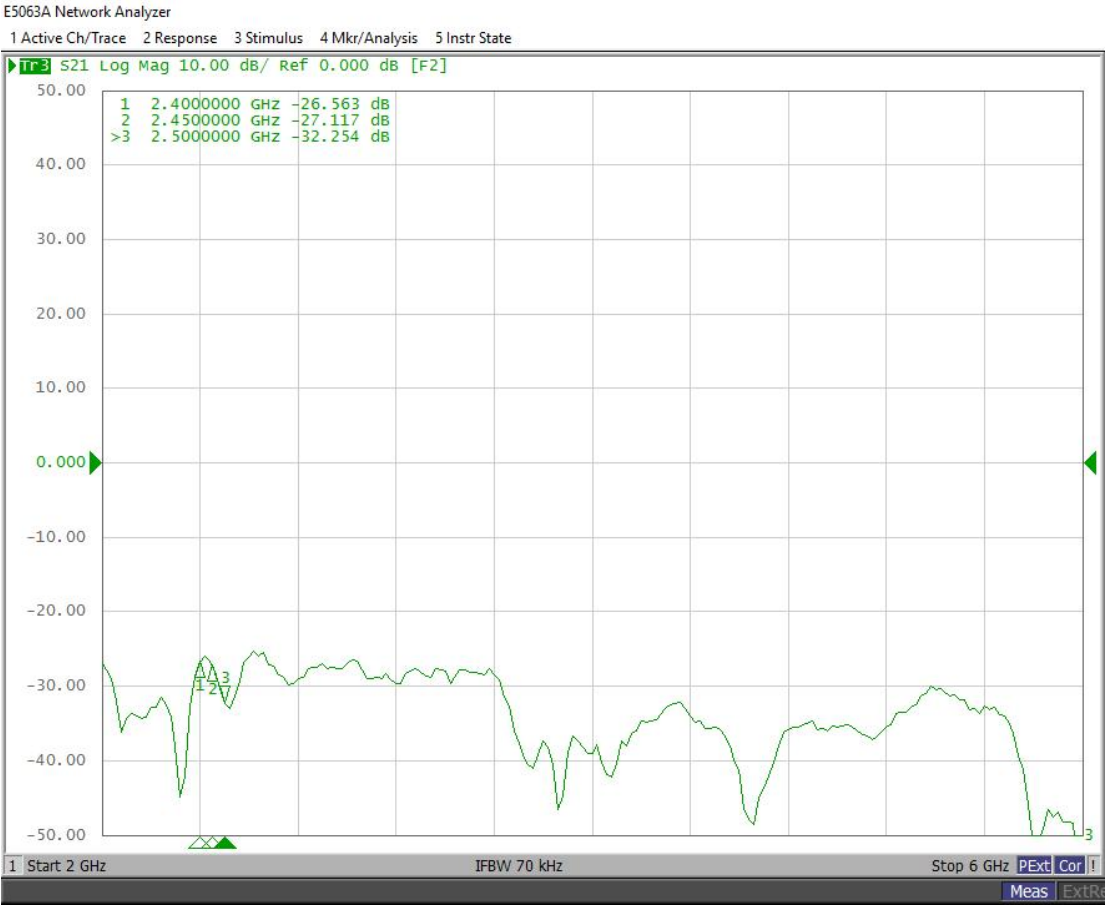
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State



2.2: Antenna gain, efficiency meter:

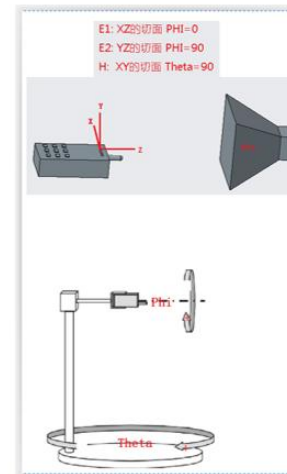
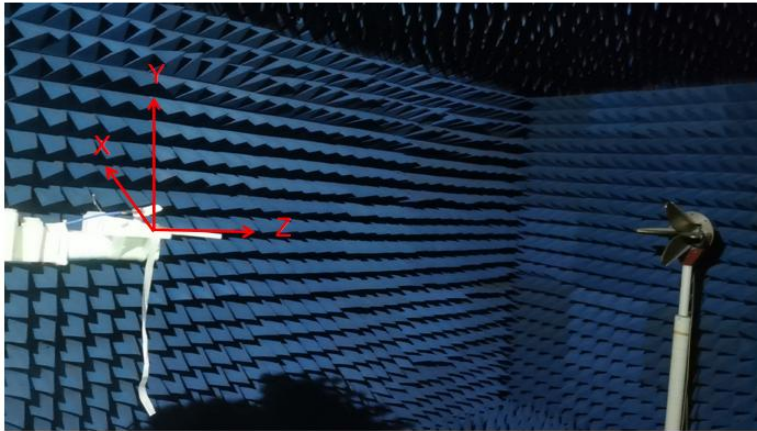
Freq (MHz)	Effi (%)	Gain (dBi)
2400	70.3	4.3
2410	72.7	4.5
2420	71.5	4.8
2430	72.6	5.1
2440	71.8	5.3
2450	72.1	5.5
2460	71.7	5.4
2470	73.3	5.3
2480	72.3	5.2
2490	72.6	5.1
2500	73.4	4.9

2.3: Isolation:

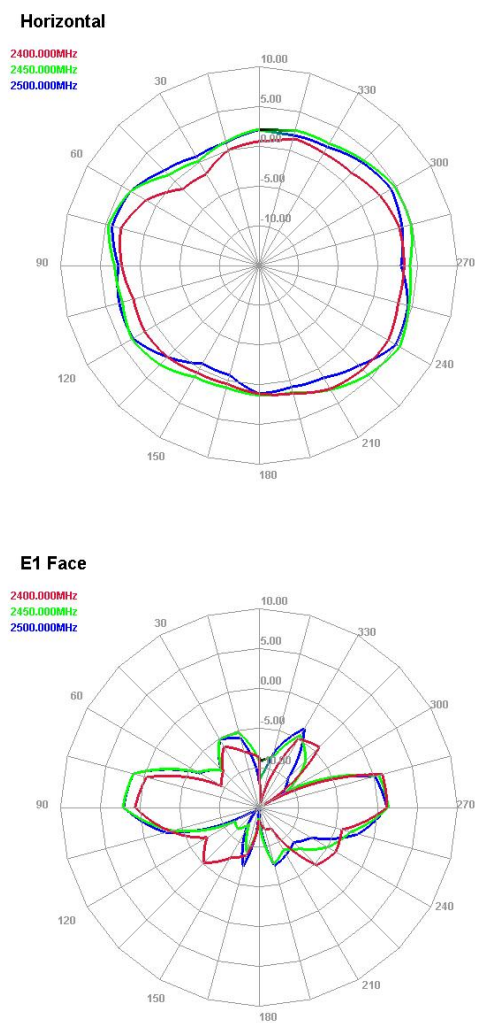


(3) Directional diagram

3.1: Test environment diagram:

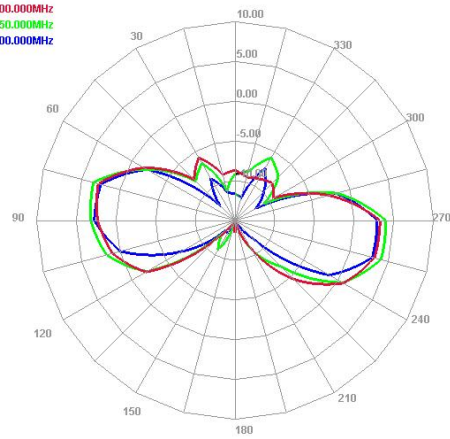


2.4G 方向图:



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		F003D8913910002		Tool Number		Cav. Number		Unit				Comments 验海军						
Kunshan Innwave Communication Technology Co.,Ltd.		Material Code		/		Part Name		KD89-2.4G-2 antenna assembly				/		/		☐ INCHES ☒ MILLIMETERS								
Date		2024/5/28				MEASURED DIMENSION					% TOLERANCE USED			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	102.00	102.20	0.20	0.20	101.80	102.01	102.03	102.01	102.03	102.02	15%	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	145.00	148.00	3.00	3.00	142.00	145.20	145.23	145.22	145.21	145.21	8%	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	5.50	5.65	0.15	0.15	5.35	5.49	5.48	5.49	5.49	5.49	0%	12%	X								√			
7	75.00	75.10	0.10	0.10	74.90	75.02	75.01	75.00	75.04	75.02	40%	0%		X							√			
8	65.00	65.15	0.15	0.15	64.85	65.02	65.02	65.01	65.01	65.02	13%	0%	X								√			
9	1.50	1.60	0.10	0.10	1.40	1.51	1.52	1.50	1.49	1.50	20%	6%	X								√			
10	3.00	3.15	0.15	0.15	2.85	3.01	3.02	3.02	3.02	3.02	13%	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 Innwave Communication Technology CO.,Ltd				
KD89 Reliability test report				
Experimental report number: 20240326021				
The name of a product or commodity: 2.4G-2				
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 Innwave Communication Technology CO.,Ltd.															
BOM																	
												2024/7/3	T3	5	2.4G-1 wire length is changed, 2.4G-1/2 foam 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 PCB 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
Client:	/	type:	MD15			E-BOM			2024/3/26				Initial release	LI Ji Sheng			
Project	KD89	Edition:	T3			P-BOM			Change date	Markers	Places	Change content		signature			
主BOM																	
Term	Change mark	New part number	Product name		Gauge lattice		Material (Surface treatment)				Colour	Dosage	Customer part number	supplier	Reserve injection		
1		T2 P00388913910002	The KD89 has a built-in 2.4G-2 antenna assembly		MD15 2.4G-2 antenna The grey line is 145mm long		Halogen PCB+ coaxial line				Black	1 PCS		Innovave	self-control		
2		M00388936910002	The KD89 has a built-in 2.4G-2 PCB		102*14*0.6mm		Halogen 0.6mm FR4 single panel, single side black oil OSP process				Black	1 PCS			outsourcing		
2	T2	S00388902930002	The KD89 has a built-in 2.4G-2 RF cable		Φ1.37*176.5mm		Halogen-free copper wire, both ends peeled with tin (line loss 0.5-1.008 impedance 50 ohms)				Light gray	1 PCS		Innovave	self-control		
3	T2	T01E0125	1.37 Common coaxial line		/		Halogen-free copper wire, both ends peeled with tin (line loss 0.5-1.008 impedance 50 ohms)				Light gray	0.102PCS			Common materials/outsourcing		
3		B15A0003	Lead-free environmental protection high temperature tin tube		Lead-free environmental protection high temperature tin strip weight 1KG		Halogen-free tin content 99.3%				Silver	0.023g/pcs			materials/outsourcing		
2	T3	M00388907910001	KD89 built-in 2.4G pad high foam		138*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 resin content 2.5-3.0% Weight 1KG				Silver	0.046g/pcs			outsourcing		
2		S00082000061000	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	1/100PCS			outsourcing		
2		B01A0026	Carton 350*350*250mm		Carton 350*350*250mm		Halogen-free carton 350*350*250mm				Natural quality	1/1000PCS			outsourcing		

7. Material list

ROHS report list of raw materials

Material name				MD15						supplier						Innowave					
Material code				F003D8913910001 F003D8913910002						Material specification and model						2.4G finished antenna					
所供产品信息																				Electronic test report	
Serial number	Material name	Raw material specificati	Material supplier	RoHS Controlled Substance Content (ppm)												Test Lab	Report number	Report date	Annex to the report		
				Hg	Cd	Pb	Cr6+	PBBs	PBDEs	DBP	DEHP	BBP	DIBP	Br	Cl						
1	OSP	ZX-1060	Heng Jie	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	471	SGS	CANEC24000510004	2024.1.15			
2	Solder resistance black oil	XZ-160	Xinzheng	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	323	CTI	A2240022944113001E	2024.2.1			
3	Board	FR4	Kuni	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	/	/	SGS	CANEC23010851106	2023.10.11		
4	Sheath	FEP	DAIKEN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	/	/	SGS	SHAEC23021984701	2024.1.4		
5	Insulation	FEP	DAIKEN	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	/	/	SGS	SHAEC23020095573	2023.12.12		
6	Tinned copper wire	锡铜	star	ND	ND	39	ND	ND	ND	ND	ND	ND	ND	ND	/	/	CTI	A2240182175102001E	2024.4.12		
7	Gray mother	FEP	colorant chromatoc	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	/	/	SGS	SHAEC24003626225	2024.3.6		
remark																					

8 Packing method

Form number: EX-FR-30-028
A3

Operational Guidelines

Product Name: KD89-Built-in 2.4G-1 antenna assembly
The name of the process: 包装
Document number: EX-SOP-1333
version/subsequent: A1
process categories: Coax + PCB
Finished product coding: F003D8913910001
Revision date: 2024/7/10
Page: 6/6

Material details (refer to ERP system for material details)

NO	material number	material name	Specifications	Usage	Unit
1		bottom of self-print	Internal Label	80*60mm	/
2		bottom of self-print	External Label	80*60mm	/
3		bottom of self-print	fragile fragile label	50*70mm	2
4	W0000020071	total Labeling - RoHS	Labelers on green background		pcs
5	PT00300143-15	Labels - Monthly Labels (January-December)	Label - Monthly Label (January-December) Round 2.5cm dia		pcs

A breakdown of the tools

NO	equipment/tool name	name of the equipment	equipment/tool specification	Usage	Unit

Operating Precautions

- Organize desktop 7S before assignments.
- Concentrate on printing without mistyping the labels.
- Scan the QR code to check the label information and print it after it is correct.

environmental requirements

1. Inspection of regional worktable illumination requirements: 800Lux±200Lux.
2. The light level of the working table in the working area is required: 800Lux±800Lux.

CTQ Controls

Managing the project	management	management cycle	management

change of curriculum vitae

Editor	Changed content	Date of change	Revisionist
A/0	Initial offering	2024/5/28	Koon Ka Ho
A/1	Drawing set change full page update	2024/7/10	Koon Ka Ho

Approval: Ben Winguo
Quality Confirmation: Navy Locke
Production Confirmation: B
Production/Date: Koon Ka Ho 2024/7/10

operation and photo illustrations

The name: F003D8913910001
Work: KD89-内置2.4G-1天
天线组件
date of: 2023-12-06
Date of: 2023-12-06
Actual: 50
The flow number is: SN: P2312060030301

The internal standard is used on the minimum packaging

The outer label is used on the largest package

RoHS

July

Environmentally friendly
Built logo internal standard,
the internal and external
label size is 2.5*4.5cm, the

Label - month
label (January-
December) circular
diameter 2.5cm
(January
green/February
light yellow/March
yellow/April
orange/May light
purple/June light
green/July dark
green/August)

9 Equipmentlist

Device name	Calibration date	Equipment life	Test engineer
Network analyzer	2024-05-23	2025-05-12	Li Daung Jun
ETS	2024-05-23	2025-05-23	Li Daung Jun