

KunShan Innowave Communication Technology CO.,Ltd.

【Material acknowledgement】

CUSTOMER NAME:ShenZhen Azroad Technology Incorporated CO LTD

PRODUCT NAME: KD89 (F003D8913980004)

CUSTOMER: L530100082839

Customer material name: MD15

PRODUCT: Antenna: MD15-5G antenna 2 Size: 100*10*0.6mm Black
line exposed line length 165mm 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

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(1) Antenna description

Product main technical parameters

Main technical specificationf

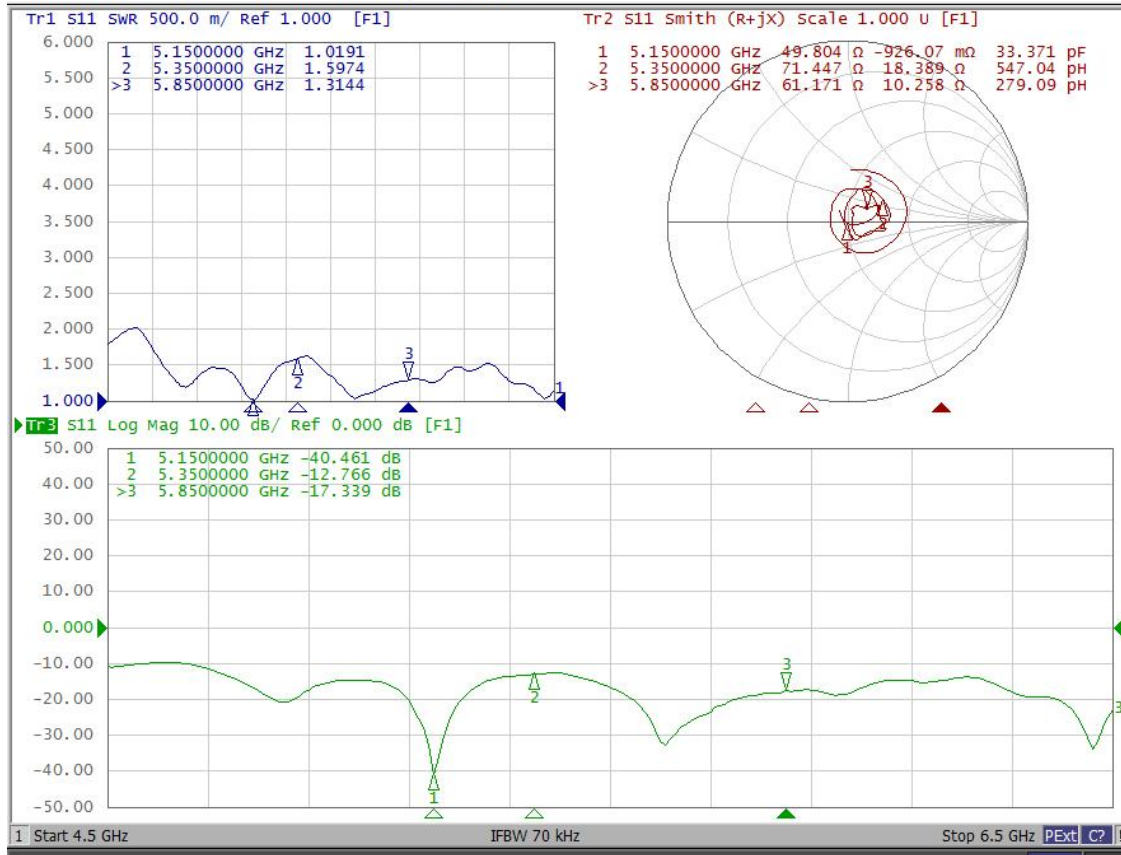
Main technical specifications		Main technical specifications	
Frequency Range (MHz)	5150-5850	Frequency Range (MHz)	5150-5850
Impedance (Ω)	50	Impedance (Ω)	50
Peak Gain(dBi)	5.0	Peak Gain(dBi)	5.0
VSWR	≦2.0	VSWR	≦2.0
Polarization	vertical polarization	Polarization	vertical polarization
Radiation	Omni-directional	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℃

(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



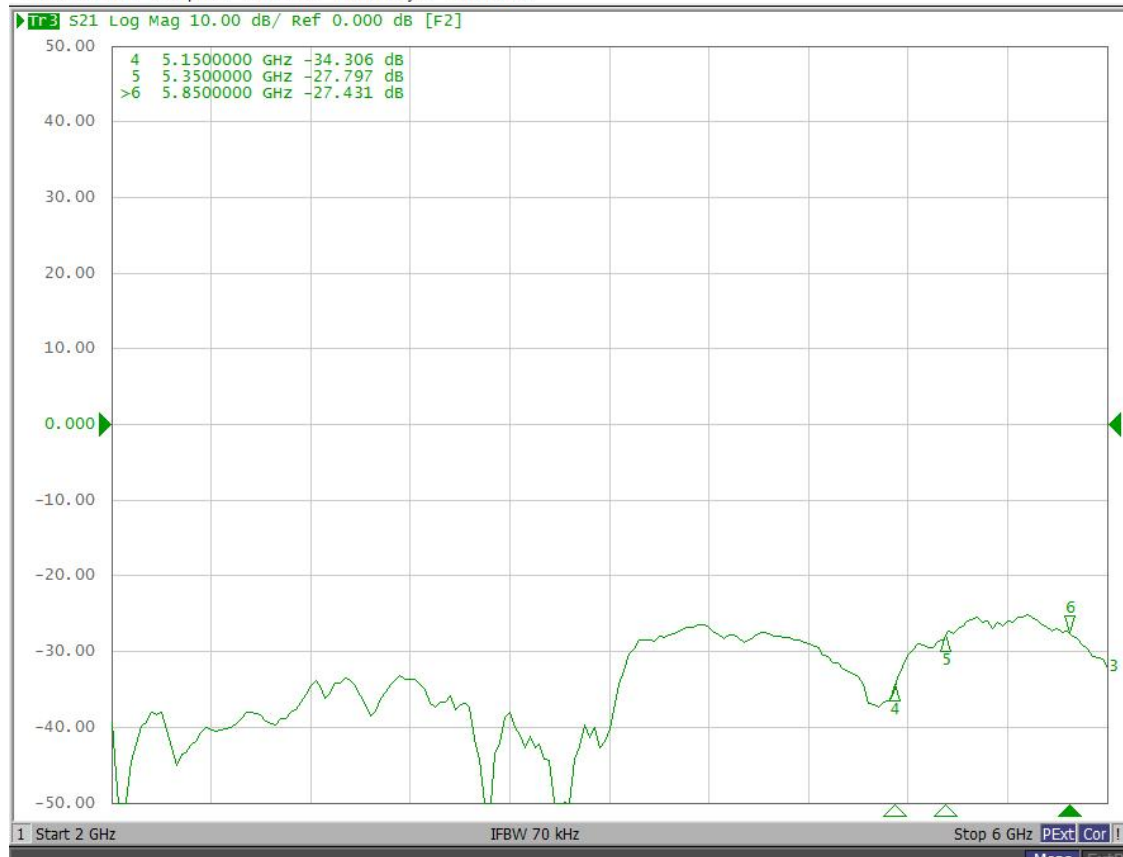
2.2: Antenna gain, efficiency meter:

Freq (MHz)	Effi (%)	Gain (dBi)
5150	62.3	5.6
5200	65.2	5.5
5250	63.3	5.1
5300	63.9	5.1
5350	69.1	5.6
5400	67.0	5.8
5450	64.7	5.5
5500	70.4	5.5
5550	71.1	5.5
5600	67.7	5.6
5650	69.3	5.8
5700	69.7	5.6
5750	68.9	5.6
5800	68.1	5.5
5850	69.3	5.6

2.3: Isolation:

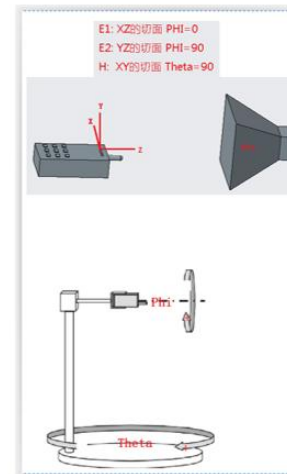
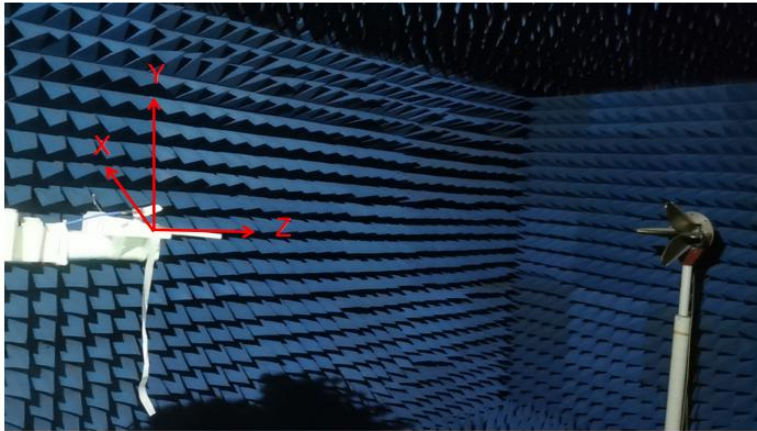
E5063A Network Analyzer

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

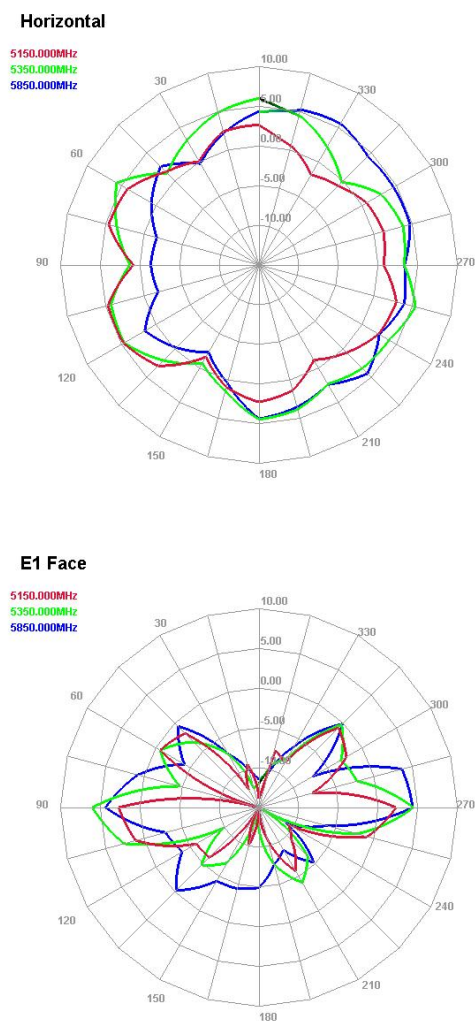


(3) Directional diagram

3.1: Test environment diagram:

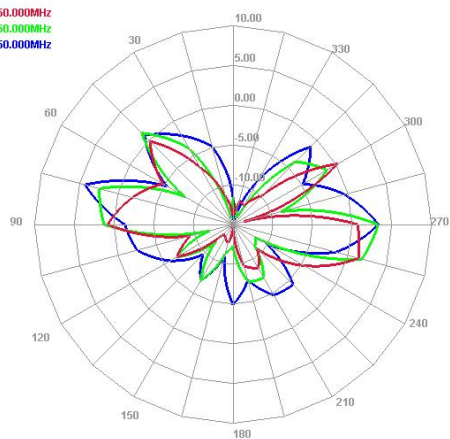


2.4G 方向图:



E2 Face

5150.000MHz
5350.000MHz
5850.000MHz



DimensionsReport

Vendor(供应商)		Material Name (材 质名称)		线材+PCB		Part NO(料号)		F003D8913910004		Tool Number(模号)		Cav. Number(穴数)		Unit(单位)		Comments(设计者签字)								
Kunshan Innowave Communication Technology Co.,Ltd.(昆山睿翔讯通 通信技术有限公司)		Material Code (材 质牌号)		/		Part Name (零件名称)		KD89-5.8G-2天线组 件				/		Rev(版本)				T2		☐ INCHES ☒ MILLIMETERS				
Date(日期)		2024/5/28				MEASURED DIMENSION(实测尺寸)					% TOLERANCE USED(公差使用百分比)		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	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	165.00	168.00	3.00	3.00	162.00	165.02	165.01	165.00	165.04	165.02	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.				

6、 Bill of materials

 KunShan Innowave Communication Technology CO.,Ltd.												
BOM												
Client: / type: MD15												
Project KD89 Edition: T3												
BOM												
□ E-BOM □ F-BOM												
2024/7/3 T3 5 2.4~1 wire length is changed, 2.4~1/2 2mm is added Li Ji Shen												
2024/5/27 T2 14 The RF line specifications and dimensions are changed, and the color of the SMT BGA is changed Li Ji Shen												
2024/4/7 TL1 2 2.4 The length of the G-2 RF cable is changed Li Ji Shen												
2024/3/26 Change date Markers Places Initial release Change content Li Ji Shen signature												
1			T2	F003D8913960004	The KD89 has a built-in 5G-2 antenna assembly	The black cable length of the MD15 5G-2 antenna is 105mm	Halogen PCB+ coaxial line	Black	1 PCS		Innowave	Self-control
2			T2	MD033B936800003	KD89 built-in 5G antenna PCB	103*10*0.6mm	Halogen 0.6mm F44 single panel, single side black oil OSP process	Black	1 PCS			Outsourcing
2			T2	S0033B9802910004	The KD89 has a built-in 5G-2 RF cable	Φ1.37*180mm	Halogen-free copper wire, both ends peeled with tin (Line loss 0.5~1.008 impedance 50 ohms)	Black	1 PCS		Innowave	Self-control
3			T2	T010116	1.37 Common coaxial line	/	Halogen-free copper wire, both ends peeled with tin (Line loss 0.5~1.008 impedance 50 ohms)	Black	0.18H			Common materials/outsourced
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/outsourced
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				8000BZ300601000	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

