Antenna specification for approval

Customer name	Jixin micro		
Model	TP-NS sight -NT96560-8189FTV module		
Antenna frequency	2.4GHZ		
Antenna function	WIFI anteanna		
Antenna material	PCB	PCB color	green
model	SF2131A-2B3-A		
Material number	SF2131A-2L23B-040-A		
Customer Part Number			

Ward accepted the signature	Client acknowledges signature
structure	Purchase
Document control	structure
radio frequency	engineering
To examine	QC
Responsible LTT	To examine

date 2023.05.23	Seal area	date 2023.05.23	Seal area

6th Floor, Building B, Hexi Hangcheng Industrial Zone, No. 135 Qianjin Second Road, Bao 'an District, Shenzhen
CityTel: 0755-29985185 Fax: 0755-27487028

Serial number	Certification number	Material type	Date of issue	Remarks
1	A22301735411010O1E	Tinned copper wire	2023-04-24	One year
2	CANEC2227657302	halogen	2022-12-28	One year
3	CANEC2227657303	Adhesive	2022-12-28	One year
4	SHAEC23000346911	FEP sheath	2023-01-13	One year
5	SHAEC22004639301	FEP insulation	2022-12-15	One year
6	SZXEC2203054804	Tin wire	2022-09-19	One year
7	SZXEC2203054808	Tin	2022-09-19	One year
8	ETR22800844	Printing ink	2022-08-09	One year
9	EKR22501369	Substrate	2022-05-27	One year
10	CANEC2227574118	EVA foam	2023-01-03	One year
11	SZXEC2202709609	Conductive cloth	2022-08-16	One year
12	CANEC2218227002	Gold plating	2022-08-30	One year

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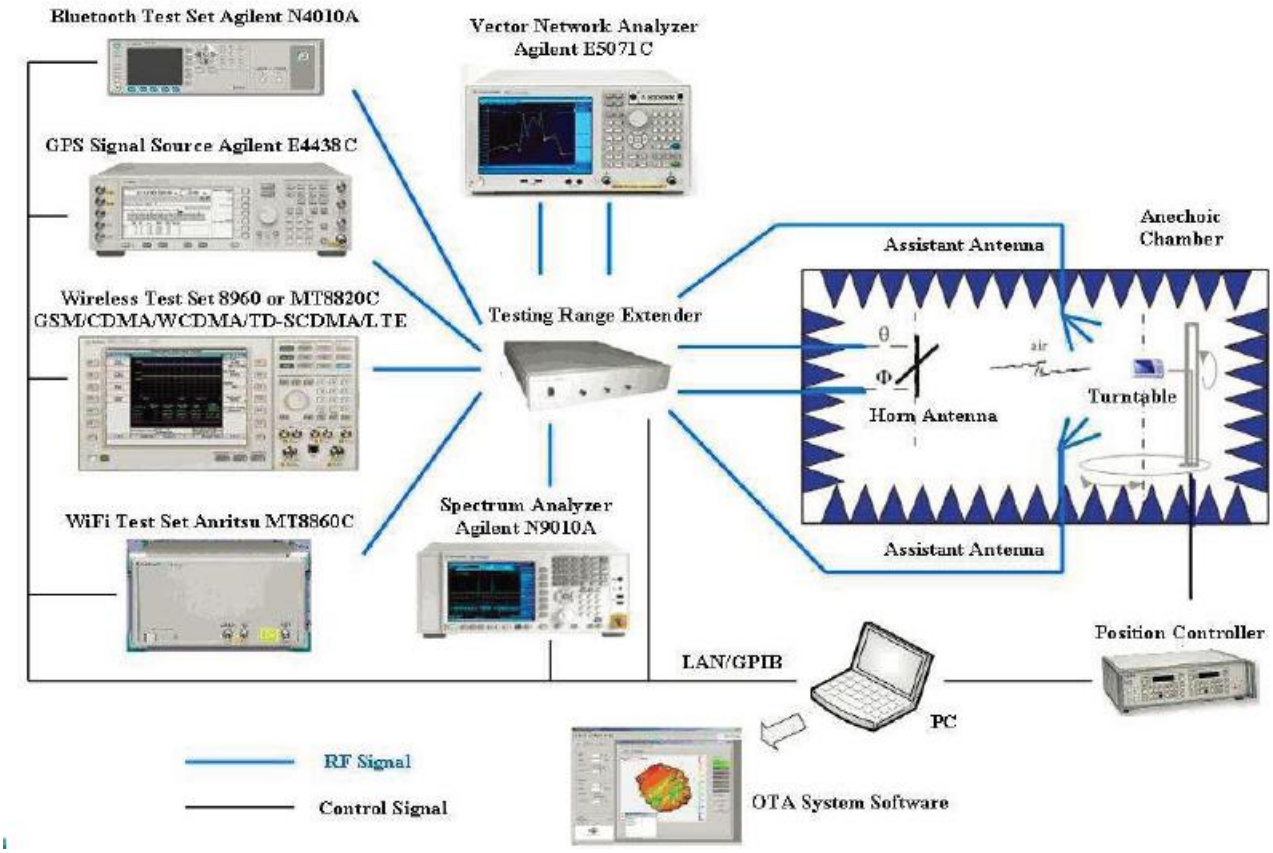
1. Device Support & Testable Antenna Type



Antenna function	Frequency Range	test instrument	test method	standard test
2G antenna (GSM)	824MHz-960MHz, 1710MHz-1990MHz	5071B、8960 OTA darkroom	Active test, passive test	Soward standards, customer requirements
3G antenna (WCDMA/TDSCDMA/CDMA-EVDO/2000)	824MHz-960MHz, 1710MHz-2170MHz	5071B、8960 OTA darkroom	Active test, passive test	Soward standards, customer requirements
4G antenna (LTE-FDD/LTE-TDD)		5071B、CMW500、SP8011、OTA darkroom	Active test, passive test	Soward standards, customer requirements
WIFI antenna	2.4GHz-2.48GHz, 5.15GHz-5.35GHz, 5.725GHz-5.825GHz	5071B、CMW500、OTA darkroom、router、PC	Active test, passive test, APK actual test, throughput test	Soward standards, customer requirements
BT antenna	2.4GHz-2.48GHz,	5071B、OTA darkroom、Bluetooth Speaker	Passive test, actual test	Soward standards, customer requirements
Positioning antenna (GPS, GLONASS, Beidou, Galileo)	1.575.42MHz±10MHz 1602MHz+0.5625MHz 1561MHz+2.046MHz	5071B、OTA darkroom、APK	Passive test, actual test	Soward standards, customer requirements
NFC antenna	13.56MHz	5071B、Dedicated test fixture、OTA darkroom、APK	Passive test, actual test	Soward standards, customer requirements
Remote control antenna	433MHz	5071B、OTA darkroom	Passive test, actual test	Soward standards, customer requirements

2. Overview

(1)Antenna performance

1. This approval sheet supports for MID project. PCB antennas include in this project. This report is for the performance of WIFI antenna.

2. Antenna shape size: Meet the requirement of MID

3. Antenna band: 2400MHz~2500MHz

4. Antenna material: Antenna material meet the requirement of MID

5. Adhesive performance: Adhesive performance meet the requirement of MID

6. Antenna performance meet the spec below:

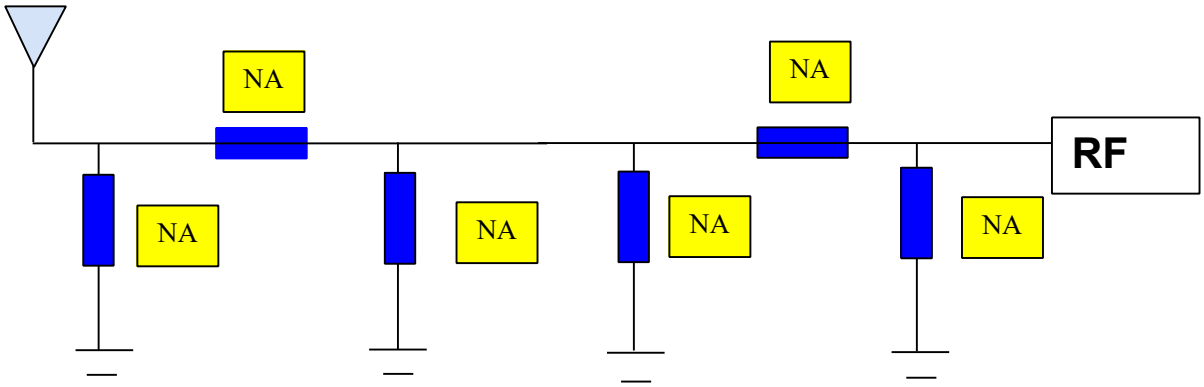
Description	2.4GHZ~2.5GHz	Units
VSWR	≤2.0	
Average Antenna Gain	≥-4.5	dB
Antenna Efficiency	≥40	%
Feed Impedance	50 ohms	
Operating Temperature	-40 to +85 deg C	
Polarization / Azimuth	Linear / Omni-directional	

(2)Mechanical Information

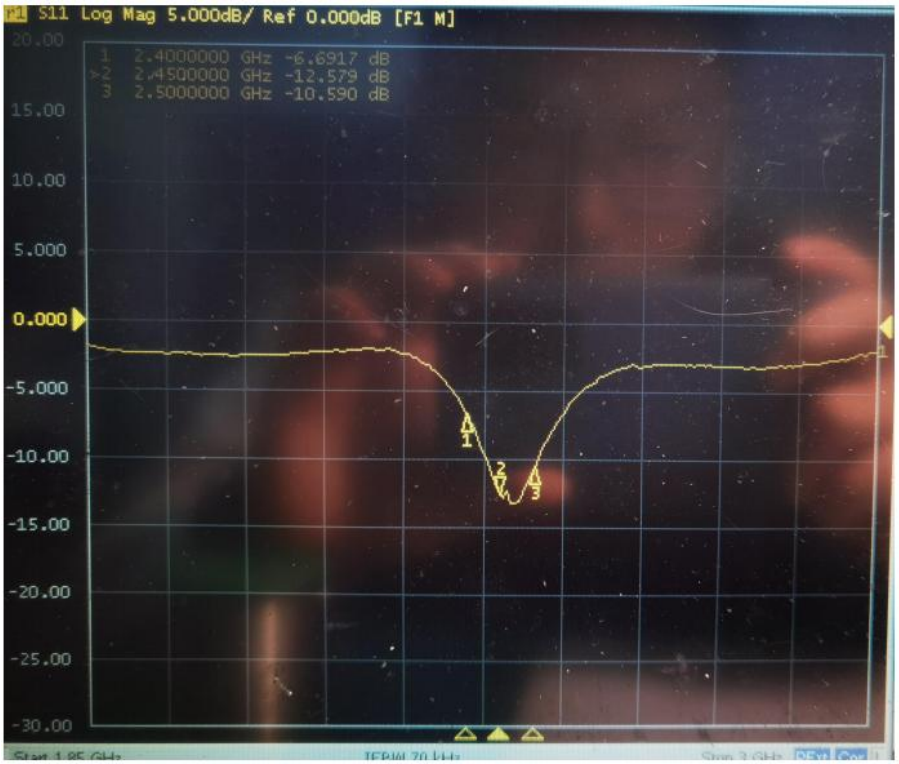
Mechanical Dimension	
Cable Length	040mm/BLACK
Description	WIFI antenna
Material	PCB
Coaxial Cable	50Ω/O.D.0.81mm
Environmental	
Operation Temperature	-40 to +85 deg C
Storage Temperature	-40 to +85 deg C

3. Matching circuit diagram & machine picture & antenna picture

(1)Antenna standing wave ratio & Antenna Efficiency

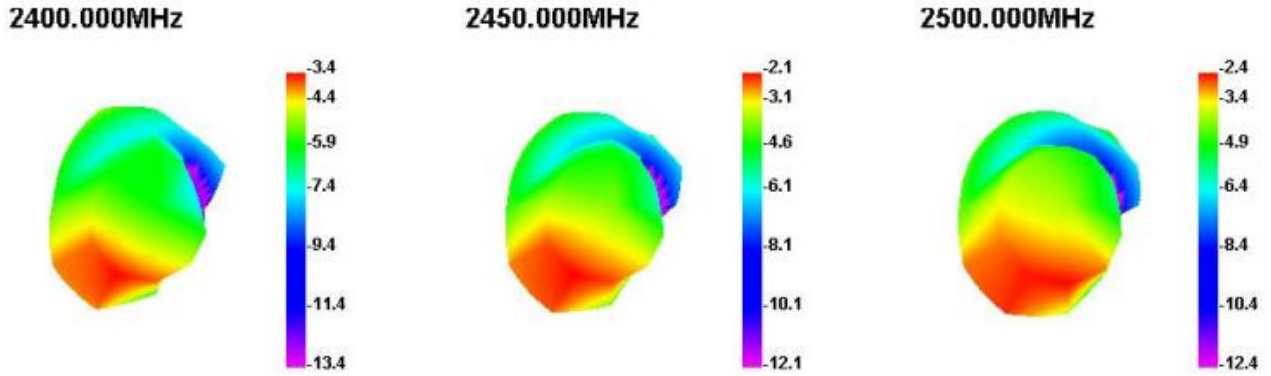


4. Antenna standing wave ratio & Antenna Efficiency

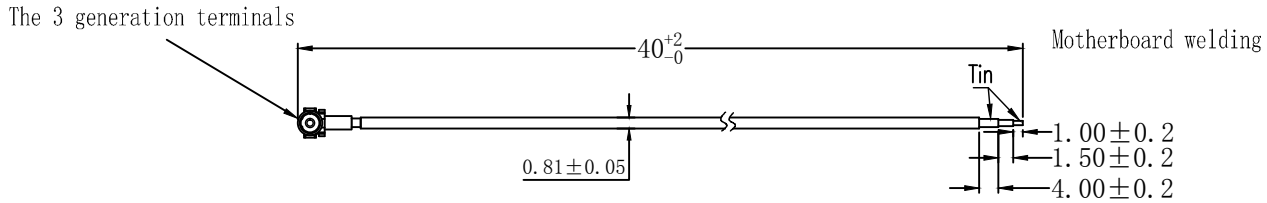


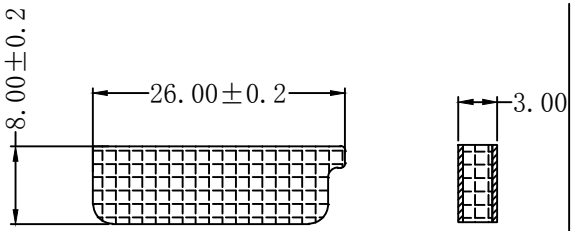
Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	13.03	-8.85	-3.43	-5.58	7.509	5.524	-3.43	-20.29	5.42	90	46.77	47.04
2410	17.54	-7.56	-1.91	-4.06	10.258	7.278	-1.91	-19.07	5.65	90	46.94	47.16
2420	17.25	-7.63	-2.06	-4.21	10.057	7.189	-2.06	-18.73	5.57	90	47.02	47.39
2430	17.16	-7.65	-1.87	-4.02	10.147	7.015	-1.87	-19.63	5.79	90	47.31	47.67
2440	17.72	-7.52	-1.88	-4.03	10.413	7.307	-1.88	-20.47	5.63	90	47.68	47.91
2450	16.86	-7.73	-2.05	-4.2	10.004	6.857	-2.05	-20.51	5.68	90	47.98	48.27
2460	17.79	-7.5	-2.04	-4.19	10.524	7.262	-2.04	-20.29	5.46	90	47.79	48.02
2470	19.21	-7.16	-1.75	-3.9	11.501	7.71	-1.75	-19.68	5.42	90	47.6	47.7
2480	21.16	-6.75	-1.43	-3.58	12.564	8.592	-1.43	-19.42	5.32	90	47.93	48.05
2490	17.97	-7.45	-2.07	-4.22	10.719	7.253	-2.07	-20.41	5.39	90	48.1	47.95
2500	16.64	-7.79	-2.43	-4.58	9.898	6.741	-2.43	-21.36	5.36	90	48.13	48.09

5. 3D pattern

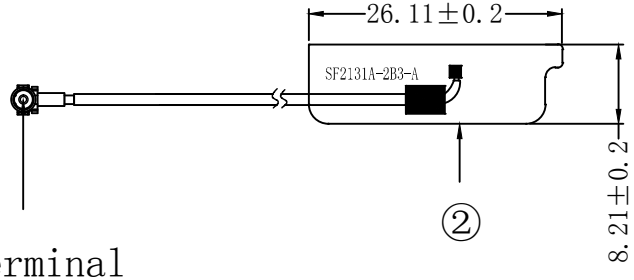


6. Structural drawing





Double-sided adhesive
insulation foam
Separate shipment



①Terminal
outward

technical requirements:
1.* for critical dimensions;
2.Size conform to the requirements of the drawings;
3.No virtual welding welding point, false welding。Require full welding points。
4.Network test pass。
5.No marked tolerance according toSJ/T 10628 1995 6classes;

5											
4											
3	Insulating foam	gray	2	26*8*3mm		signatures	date	mass	signatures	date	
2	PCB	green	1	SF2131A-2B3-A	RD	YWD	2023.05.23	Q C			
1	coaxial line	black	1	ϕ=0.81	RF						
	name	color	quantity	specifications	audits			approval			

SWARD

time markup					percentage
1			A		1 : 1

ShenZhen SWARD Communication Technology Co.Ltd

SF2131A-2L23B-040-A

ROHS