

Antenna specification for approval

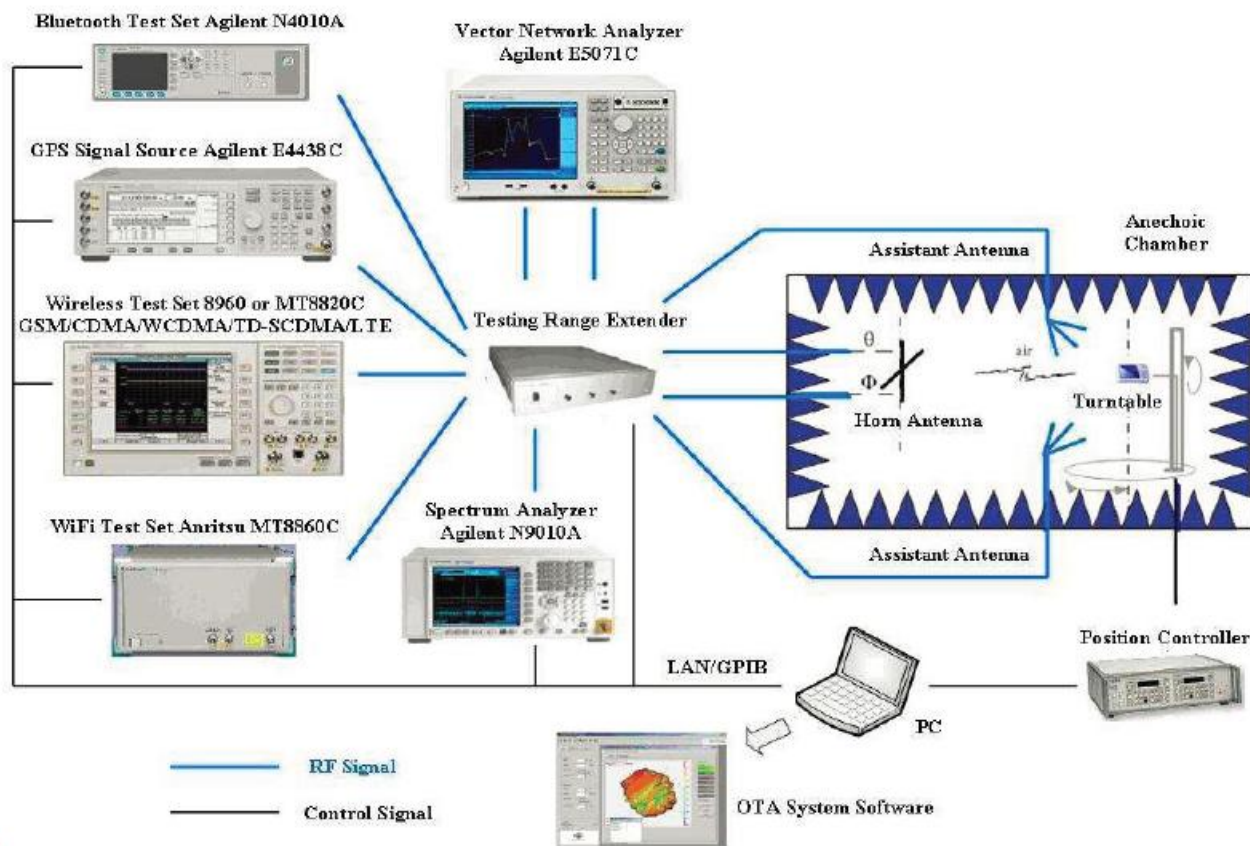
Customer name	Botslab		
Model	HK40PIUS (Lipstick Recorder)		
Antenna frequency	2.4GHZ&5GHz		
Antenna function	WIFI&BT&5G WiFi antenna		
Antenna material	shrapnel	color	silvery
model	SF2577A-3B6-A		
Material number	SF2577A-3B6-A		
Customer Part Number			
Ward accepted the signature		Client acknowledges signature	
structure		Purchase	
Document control		structure	
radio frequency		engineering	
To examine		QC	
Responsible LTT		To examine	
date 2026.01.05	Seal area	date 2026.01.05	Seal area

Serial number	Certification number	Material type	Date of issue	Remarks
1	SHAEC24025471005	Tinned copper wire	2024-11-25	One year
2	SHAEC24027284565	halogen	2024-12-06	One year
3	SHAEC24027480902	Adhesive	2024-12-06	One year
4	SHAEC24029171725	FEP sheath	2024-12-26	One year
5	SHAEC24027284563	FEP insulation	2024-12-05	One year
6	SZXEC25002243404	Tin wire	2025-06-30	One year
7	SZXEC25002243408	Tin	2025-06-30	One year
8	ETR25501383	Printing ink	2025-05-20	One year
9	A2250132593101001E	Substrate	2025-03-10	One year
10	CANEC24028865417	EVA foam	2025-01-03	One year
11	A2240439752101001	Conductive cloth	2024-07-29	One year
12	SZXEC24002471802	Gold plating	2024-08-08	One year

catalogue

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一: Device Support & Testable Antenna Type



Antenna function	frequency range	Testing instruments	Testing method	Testing standards
2G antenna (GSM)	824MHz-960MHz, 1710MHz-1990MHz	5071B, 8960, OTA darkroom	Active testing, passive testing	Soward standards, customer requirements
3G antenna (WCDMA/TDSCDMA/CDMA-EVDO/2000)	824MHz-960MHz, 1710MHz-2170MHz	5071B, 8960, OTA darkroom	Active testing, passive testing	Soward standards, customer requirements
4G天线 (LTE-FDD/LTE-TDD)		5071B, CMW500, SP8011, OTAdarkroom	Active testing, passive testing	Soward standards, customer requirements
WIFI antenna	2.4GHz-2.48GHz, 5.15GHz-5.35GHz, 5.725GHz-5.825GHz	5071B, CMW500, OTAdarkroom, Router, PC	Active testing, passive testing, APK testing, throughput testing	Soward standards, customer requirements
BT antenna	2.4GHz-2.48GHz	5071B, OTAdarkroom, Bluetooth Speaker	Active testing, passive testing, actual testing	Soward standards, customer requirements
Positioning antenna (GPS, GLONASS, Beidou, Galileo)	1575.42MHz ± 10MHz 1602MHz±0.5625MHz 1561MHz±2.046MHz	5071B, OTAdarkroom, APK	Active testing, passive testing, actual testing	Soward standards, customer requirements
NFC antenna	13.56MHz	5071B, Specialized testing fixture, OTAdarkroom, APK	Passive testing and actual measurement	Soward standards, customer requirements
Remote control antenna	433MHz	5071B, OTAdarkroom	Passive testing and actual measurement	Soward standards, customer requirements
NB_IOT	with LTE-FDD	CMW500 (high-end version)	Active testing, passive testing	Under construction (power standard basically consistent with 4G)

二:Overview

(1)Antenna performance

- 1.This approval sheet supports for MID project.Shrapnel 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: 2.4GHz~5GHz
- 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:

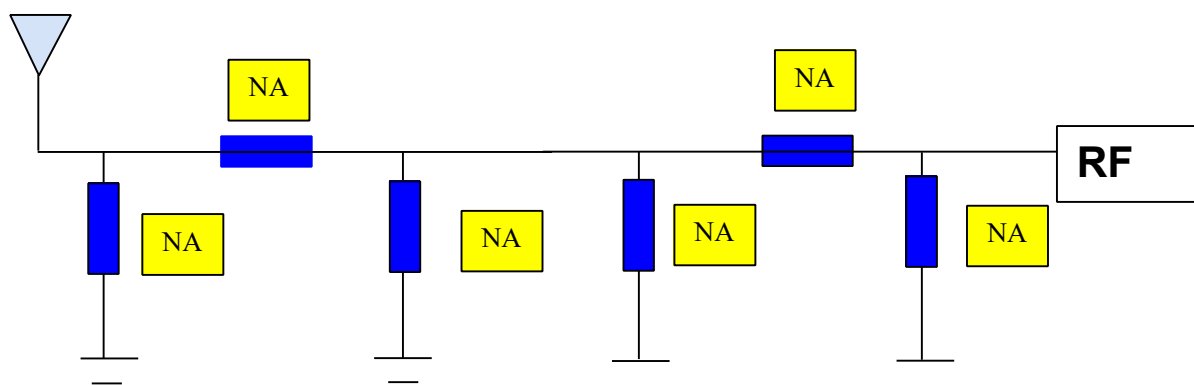
Description	2.4GHz~5GHz	Units
VSWR	≤ 2.0	
Average Antenna Gain	≥ -4.5	dB
Feed Impedance	50 ohms	
Operating Temperature	-40 to +85 deg C	
Polarization / Azimuth	Linear / Omni-directional	

(2)Mechanical Information

Mechanical Dimension	
Cable Length	NA
Description	WIFI antenna
Material	Shrapnel
Coaxial Cable	NA
Environmental	
Operation Temperature	-40 to +85 deg C
Storage Temperature	-40 to +85 deg C

三: Match circuit diagrams & machine images & antenna images

(1) Matching circuit



(2) Machine picture & antenna picture





四:Antenna Standing Wave Ratio & Antenna Efficiency



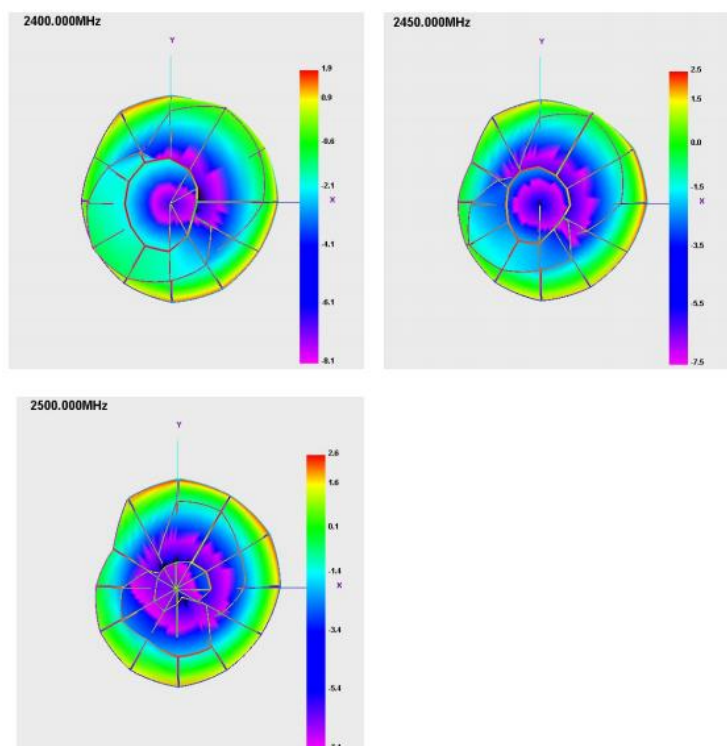
Passive Test For 2.4G			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	58.26	-2.35	1.89
2410	57.4	-2.41	1.92
2420	66.43	-1.78	2.64
2430	68.64	-1.63	2.9
2440	71.77	-1.44	3.18
2450	61.52	-2.11	2.54
2460	60.97	-2.15	2.44
2470	54.36	-2.65	1.76
2480	56.2	-2.5	1.73
2490	59.55	-2.25	1.93
2500	67.74	-1.69	2.58

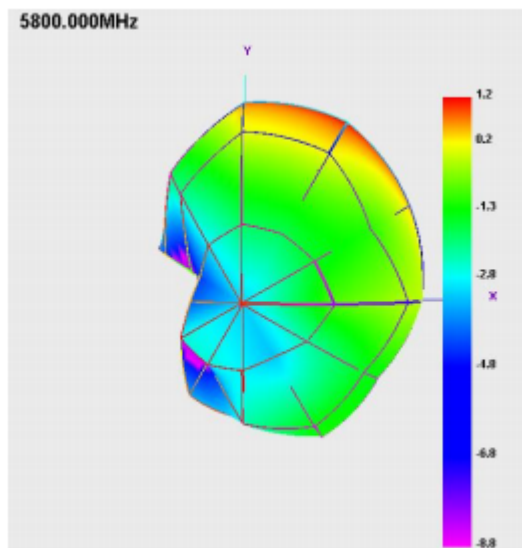
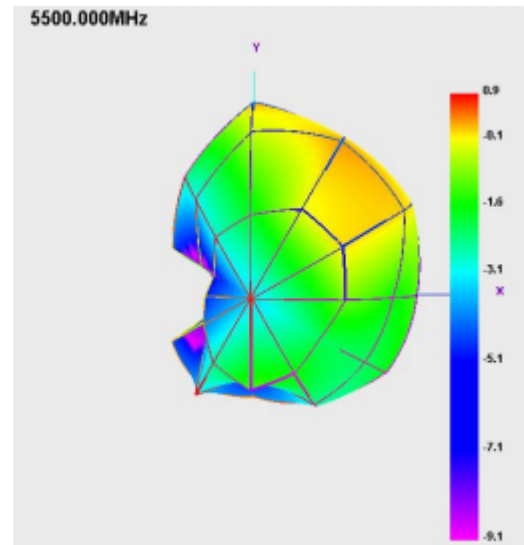
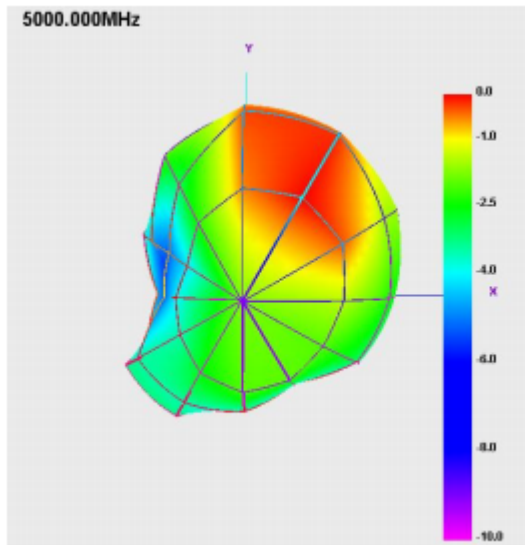
Passive Test For 5G wifi			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
5000	45.08	-3.46	0.02
5100	56.24	-2.5	0.77
5200	51.82	-2.86	0.26
5300	67.96	-1.68	1.42
5400	58.18	-2.35	1.02
5500	52.17	-2.83	0.86
5600	52.91	-2.76	0.96
5700	45.98	-3.37	0.26
5800	49.14	-3.09	1.24
5900	45.4	-3.43	0.87
6000	44.59	-3.51	0.62

五:Active data

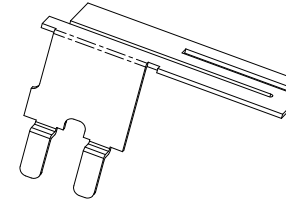
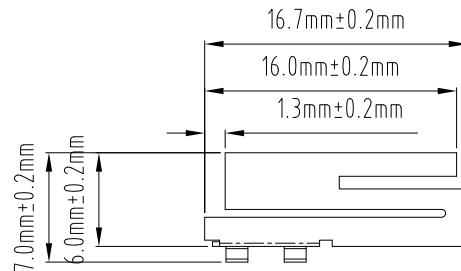
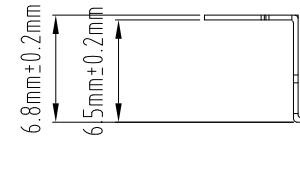
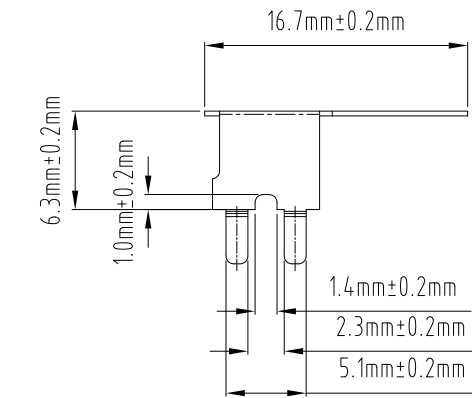
802.11b : 11Mbps 20M			802.11a : 54Mbps 20M		
1	6	11	36	64	165
2412	2437	2462	5180	5320	5825
10.47	10.51	10.74	13.84	13.49	11.63
-79.65	-79.53	-79.26	-69.52	-70.98	-70.83
802.11g : 54Mbps 20MTRP			802.11n : MCS7 20M		
1	6	11	36	64	165
2412	2437	2462	5180	5320	5825
10.09	10.33	10.53	13.41	13.39	11.72
-68.32	-68.53	-68.77	-70.63	-70.09	-70.74
802.11n : MCS7 20M					
1	6	11			
2412	2437	2462			
10.04	10.86	10.5			
-63.32	-63	-63.18			

六:3D pattern





七:structural drawings



Packaging requirements:
1. PE plastic bag packaging
2,500 pieces per bag.

Note:
1. Dimensions with * or tolerances are critical dimensions.
Unspecified fillets are R0.2mm. Unspecified tolerances shall comply with Class B tolerance
Inspection of all die-cutting hole dimensions
The burr height shall not exceed 0.02mm
2. The material of the spring plate is nickel silver, with a thickness of 0.3mm
3. Salt spray test passed for 24 hours

	signature	year, month, day	mass production	signature	year, month, day
RD	JYX	2026. 1. 5			
RF					
workmanship			approve		

Shenzhen Suowode Communication Technology Co., Ltd										
		unit: mm		name: WIFI antenna						
GENERAL TOLERANCE					Part Number: SF2577A-3B6-A					
DIM	CRADI	A	B	C	material: Nickel silver					
0-6		±0.05	±0.07							
6-18		±0.07	±0.15							
18-30		±0.10	±0.20							
30-50		±0.15	±0.25							
50-100		±0.20	±0.30		surface treatment: clean					
ANGULAR					∠ ±0.5°		color: true colors		proportion: 1:1	version: 2

八:packaging diagram

1. Packaging photos (pictures):

1、Photos or pictures of individual material packaging	2、Photos or pictures of single-layer placement of inner packaging
 remark:	 remark:
3、Photos or pictures of the outer packaging	4、Supplier material packaging anti-counterfeiting mark
 remark:	remark:

2. Material Packaging Information Form:

serial number	Material Name	Material Specifications	material	Is it anti-static	Quantity of single box packaging	Single box packaging weight (KG)	remark
1	WIFI antenna	16.70*7.00*0.30mm	Nickel silver	No	NA	NA	
2	outer packaging	26.2*20*20mm	Corrugated paper (B=B)	No	NA		
3							
4							

The shipping packaging method is (4): 1. Roll packaging; 2. Disk installation; 3. Bulk; 4. Carton packaging; 5. Rubber box packaging; 6. Other_____

九: Inspection Standard

Inspection Standard

customer	Botslab	Product Name and Specifications	SF2577A-3B6-A	Sample Quantity	3PCS	Sample Submission Date	2026.01.05			
Inspection Standard	☒ normal inspection ☐ tightened inspection ☐ Reduced inspection									
sampling method	MIL-STD-105E Sampling Table AQL:0.040%									
sampling size	10				sampling inspection results	OK				
project	Inspection content	Inspection Standard	Inspection Method	Test results			judgment			
package inspection	IQC Inspection	1. Packaging method that meets customer requirements, without mixing.		OK			qualified			
		2. Accurate quantity and clear spare parts		OK			qualified			
		3. Clear, complete, and error free labeling, with clear markings on the tail box		OK			qualified			
Dimensional and visual inspection	IQC Inspection	1. Main body size inspection, meeting accuracy requirements (main body external dimensions and thickness)	Calipers/microimeters	standard size				qualified		
				Outline Tolerance ± 0.01	Sample 1	Sample 2	Sample 3			
				long	16.70	16.70	16.70			
				wide	7.00	7.00	7.00			
						high	0.30	0.30	0.30	
		2. The color is consistent with the drawing requirements, with no color difference	Sample comparison	OK			qualified			
		3. The surface is free of indentation, dirt, burrs, and oxidation	visual estimation	OK			qualified			
		4. Surface treatment must comply with the drawings and whether tin has been applied	Visual inspection/soldering iron experiment	OK			qualified			
other										
final judgment	☒ OK ☐ NG&									

approve Yang Wende Review Tang Liuxing tabulation Li Tingting