

Antenna specification for approval

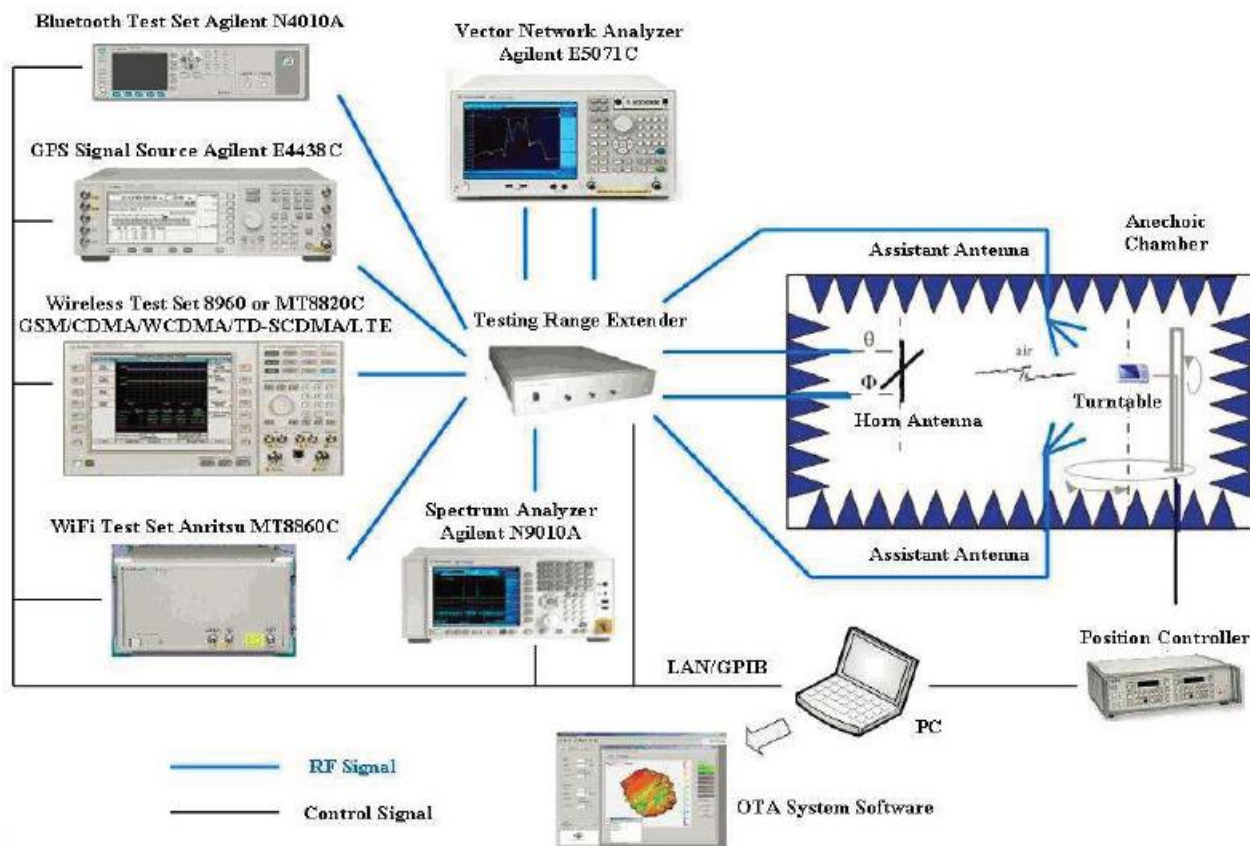
Customer name	Topway		
Model	TC210M-T0 scope WIFI&BT version		
Antenna frequency	2.4GHZ		
Antenna function	WIFI&BT antenna		
Antenna material	FPC	FPC color	black
model	SF2526C-1B2-A		
Material number	SF2526C-1L24B-055-A		
Customer Part Number			
Ward accepted the signature		Client acknowledges signature	
structure		Purchase	
Document control		structure	
radio frequency		engineering	
To examine		QC	
Responsible LTT		To examine	
date 2026.06.25	Seal area	date 2026.06.25	Seal area

Serial number	Certification number	Material type	Date of issue	Remarks
1	A2260126383102001E	Tinned copper wire	2026-03-05	a year
2	SHAEC25032493503	halogen	2025-12-12	a year
3	SHAEC25032493501	Adhesive	2025-12-12	a year
4	A2260280297102001E	FEP sheath	2025-04-27	a year
5	SHAEC26004093123	FEP insulation	2026-02-14	a year
6	SZxEC25002243404	Tin wire	2025-06-30	a year
7	SZxEC25002243408	Tin	2025-06-30	a year
8	ETR26403059M01	Printing ink	2025-05-20	a year
9	A2260137534101001E	Substrate	2026-03-04	a year
10	A226033075810100201	EVA foam	2025-05-07	a year
11	A2250475186101001	Conductive cloth	2025-07-09	a year
12	A2250437743102001E	Gold plating	2025-07-01	a year

Catalogue

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一: Device support & testable antenna types



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. FPC antennas include in this project. This report is for the performance of WIFI&BT 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:

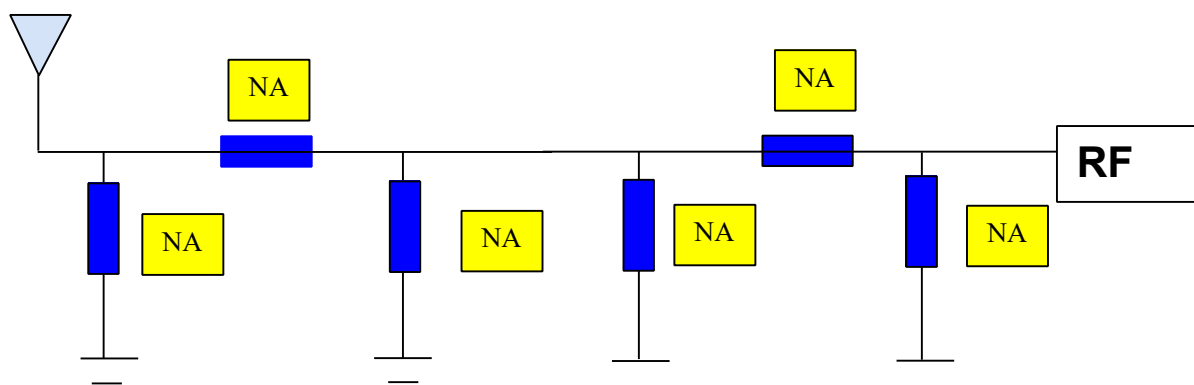
Description	2. 4GHZ~2. 5GHz	Units
VSWR	≤ 2.0	
Average Antenna Gain	≥ -4.5	dB
Feed Impedance	50 ohms	
Operating Temperature	-40 to +85 deg C	
Polarization / Azimuth	Linear / Omni-directional	

(2)Mechanical Information

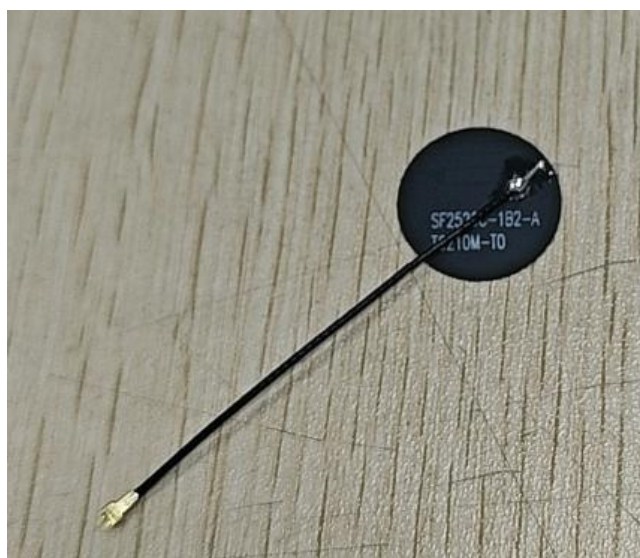
Mechanical Dimension	
Cable Length	055mm/BLACK
Description	WIFI&BT antenna
Material	FPC
Coaxial Cable	50Ω /0. D. 0. 81mm
Environmental	
Operation Temperature	-40 to +85 deg C
Storage Temperature	-40 to +85 deg C

三: Match circuit diagrams, machine images, and antenna images

(1) matching circuit



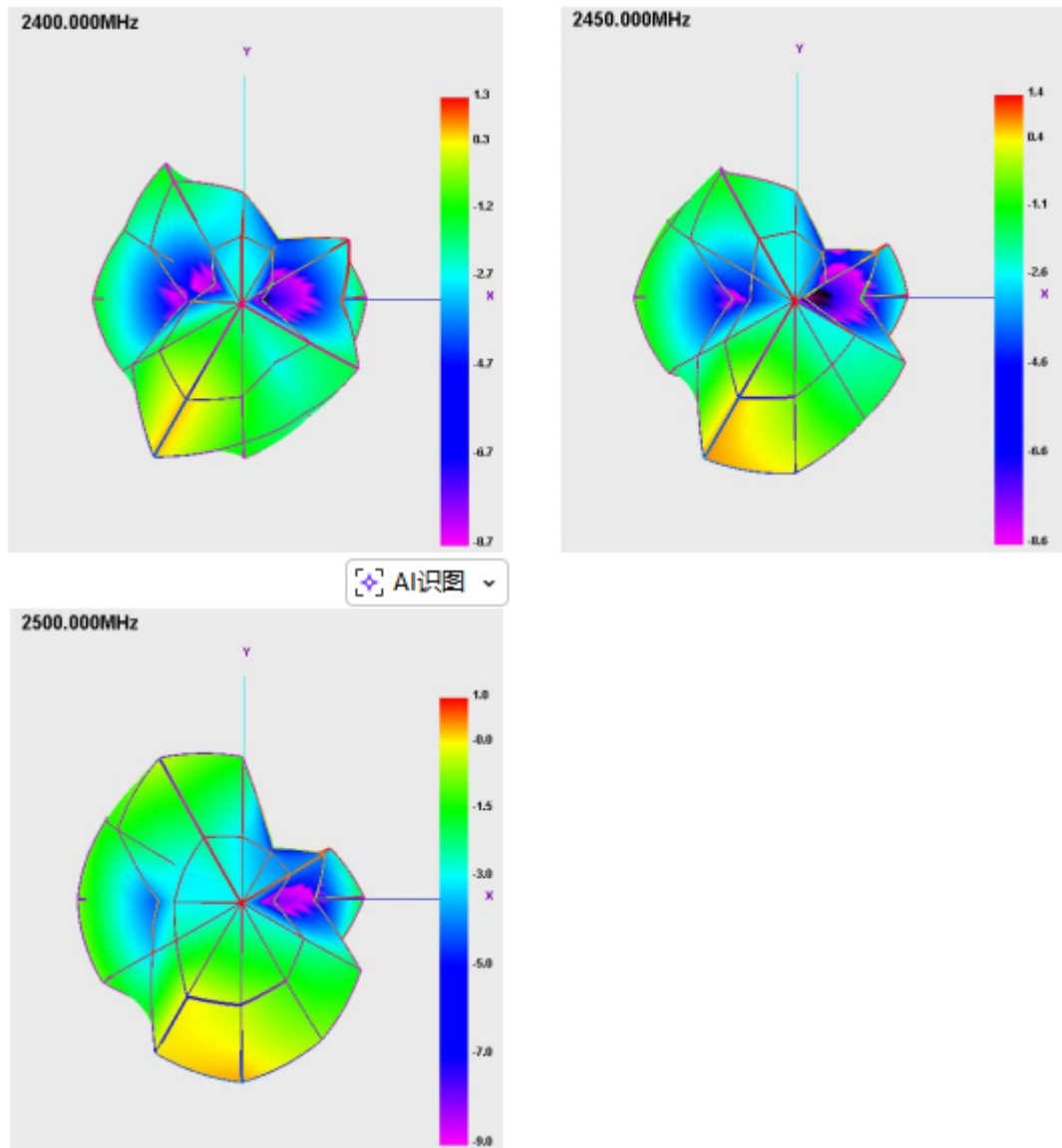
(2) Machine images&antenna images



四:Antenna Efficiency (VSWR)

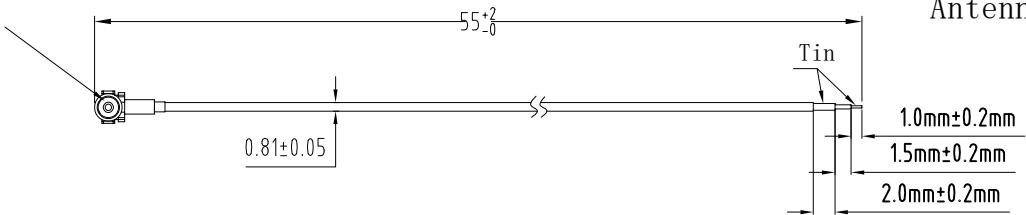
Passive Test For 2.4G			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	31.07	-5.08	-0.05
2410	29.28	-5.33	-0.34
2420	28.15	-5.51	-0.6
2430	31.58	-5.01	-0.15
2440	33.69	-4.73	0.15
2450	37.58	-4.25	0.69
2460	36.29	-4.4	0.66
2470	31.37	-5.03	0.1
2480	27.8	-5.56	-0.46
2490	29.03	-5.37	-0.26
2500	30.4	-5.17	-0.05

五:3D pattern

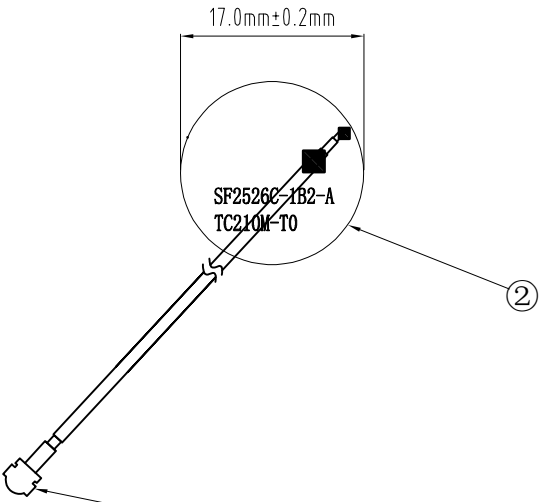


六:structural drawings

4th connector



Antenna welding



①The connector is facing inward.

Technical Requirements:

1. Mark * for critical dimensions;
2. Dimensions must comply with the drawing requirements;
3. No incomplete or false soldering at the joints. The joints should be smooth and full.
4. The network test is passed (with the specified waveform).
5. The dimensional tolerances not specified are at level 6 of SJ/T 10628 1995, and the tolerance values are calculated by averaging the upper and lower deviations.



5											
4											
3											
2	FPC		Black	1	SF2526C-1B2-A	RD	WYT	2026. 6. 25	QC		
1	coaxial cable	4th connector	Black	1	φ=0.81mm	RF					
Serial	NAME	Materials	Colour	Count	Description	Process			Approval		

SWARD

ShenZhen SWARD
Communication Technology Co.Ltd

SF2526C-1L24B-055-A

ROHS

Stage marker Organization Ratio

A mm N/A

Total: 1Number pages:1 Page