

Sample Confirmation Letter

supplier	Shenzhen Suowode Communication Technology Co., Ltd			Sample Quantity	1PCS									
Sample Name	WIFI&BT&5G WiFi antenna			Material Code	631102627101									
Specification Description	HPT-50WIFI antenna FPC antenna size: 21.4 * 25.0mm, wire length 90mm SF2627A-1B2-A													
Confirm the reason	☐ New material, first recognition ☐ Material change, reason for change: ☐ Supplier change, reason for change: ☐ other:													
Scope of Application	☐ General materials, specialized materials, machine models: _____													
Manufacturer's address	6th Floor, Building B, Hexi Hangcheng Industrial Zone, No. 135 Qianjin 2nd Road, Bao'an District, Shenzhen													
Manufacturer nature	☐ manufacturing enterprise ☐ agent			Contact person/phone number	Luo Zhiwei: 15989585437									
Sample Requirements														
								Test results: ☐ qualified ☐ unqualified						
								test person:						
date:														
Document List	☐ Specification document ☐ REACHreport ☐ RoHSreport ☐ Proxy certificate ☐ Letter of Guarantee ☐ other:													
Procurement and sample delivery	Elva	structure confirm		R&D confirm		quality confirm								
date		date		date		date								

Antenna specification for approval

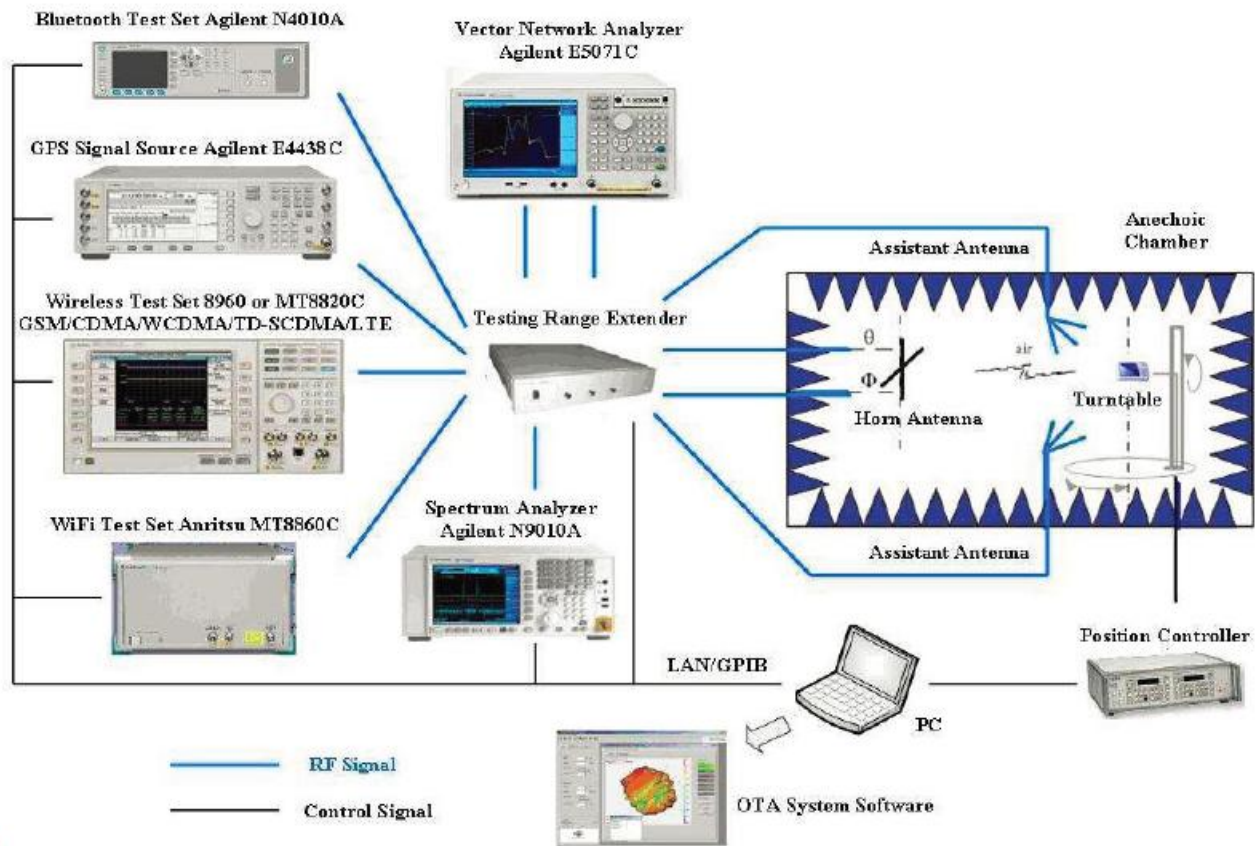
Customer name	Yi Zhong		
Model	HPT-50-5-inch plastic shell - AP6256 module		
Antenna frequency	2.4GHZ&5GHz		
Antenna function	WIFI&BT&5G WiFi antenna		
Antenna material	FPC	FPC color	black
model	SF2627A-1B2-A		
Material number	SF2627A-1R11B-090-A		
Customer Part Number			
Ward accepted the signature		Client acknowledges signature	
structure		Purchase	
Document control		structure	
radio frequency		engineering	
To examine		QC	
Responsible LTT		To examine	
date 2026.06.09	Seal area	date 2026.06.09	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	2026-04-21	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	2026-5-12	a year
9	A2260137534101001E	Substrate	2026-03-04	a year
10	A226033075810100201	EVA foam	2026-05-06	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: 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:

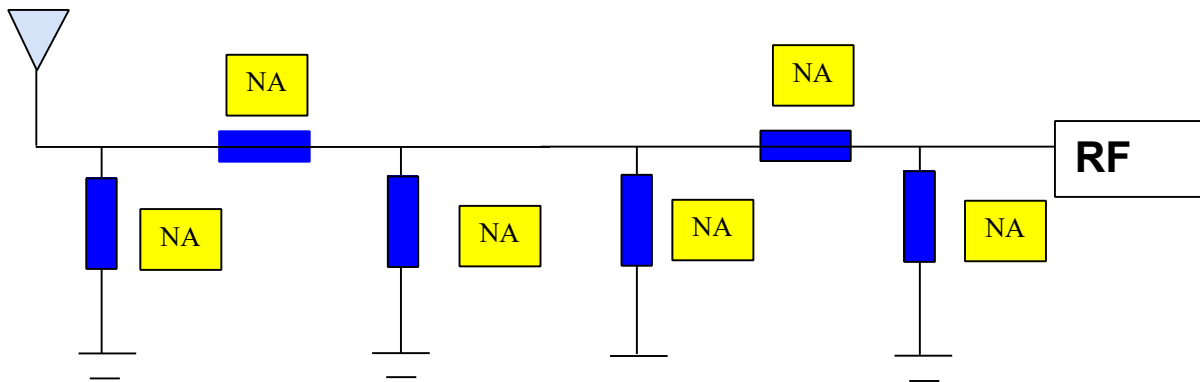
Description	2.4GHz~5GHz	Units
VSWR	≤ 2.0	
Average Antenna Gain	≥ -4.5	dB
Feed Impedance	50 ohms	
Operating Temperature	-40 to +85 deg C	
Polarization / Azimuth	Linear / Omni-directional	

(2)Mechanical Information

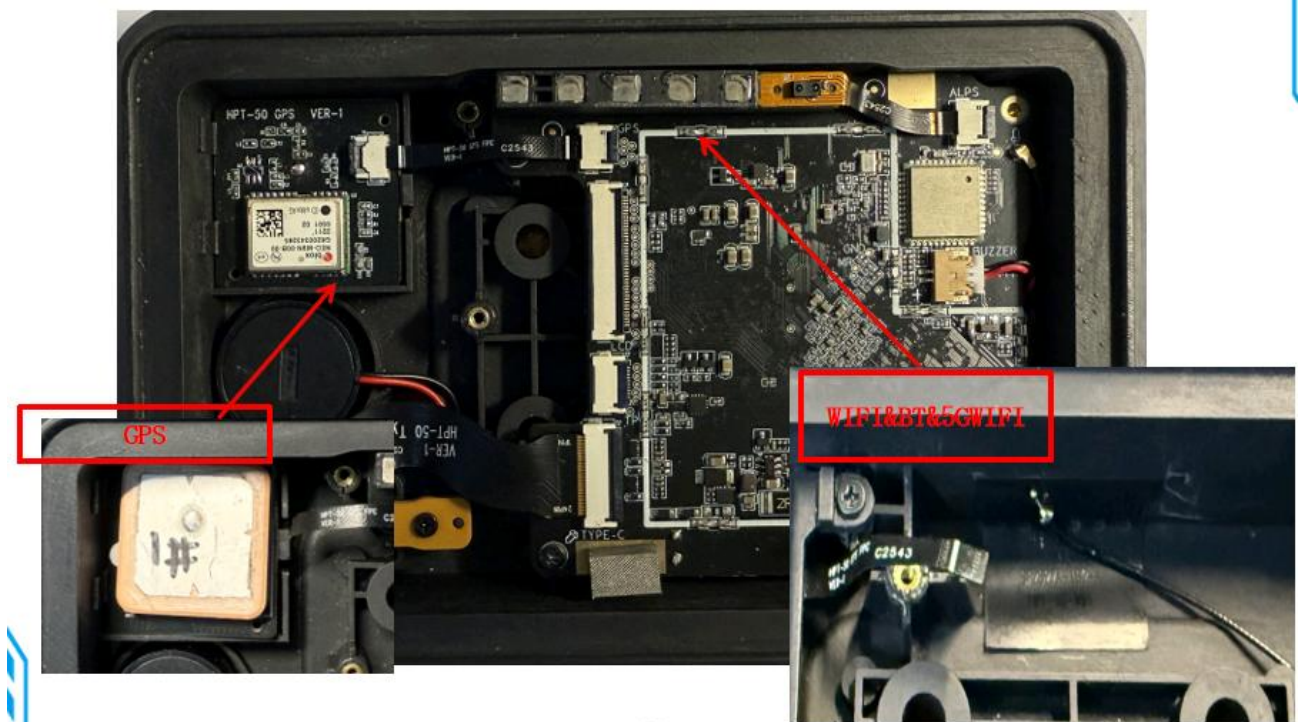
Mechanical Dimension	
Cable Length	090mm/BLACK
Description	WIFI&BT antenna
Material	FPC
Coaxial Cable	50Ω /O. D. 1.13mm
Environmental	
Operation Temperature	-40 to +85 deg C
Storage Temperature	-40 to +85 deg C

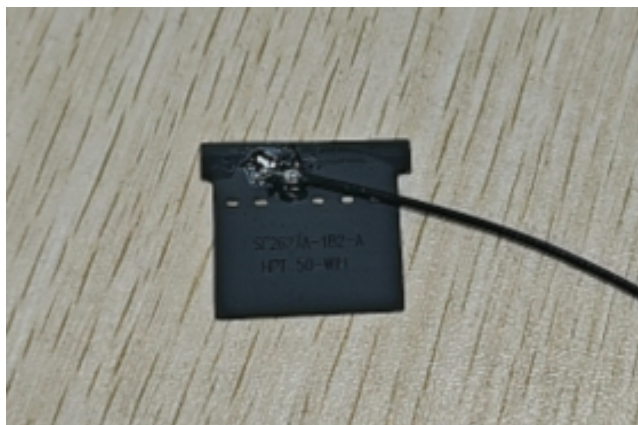
三: Match circuit diagrams, machine images, and antenna images

(1) matching circuit

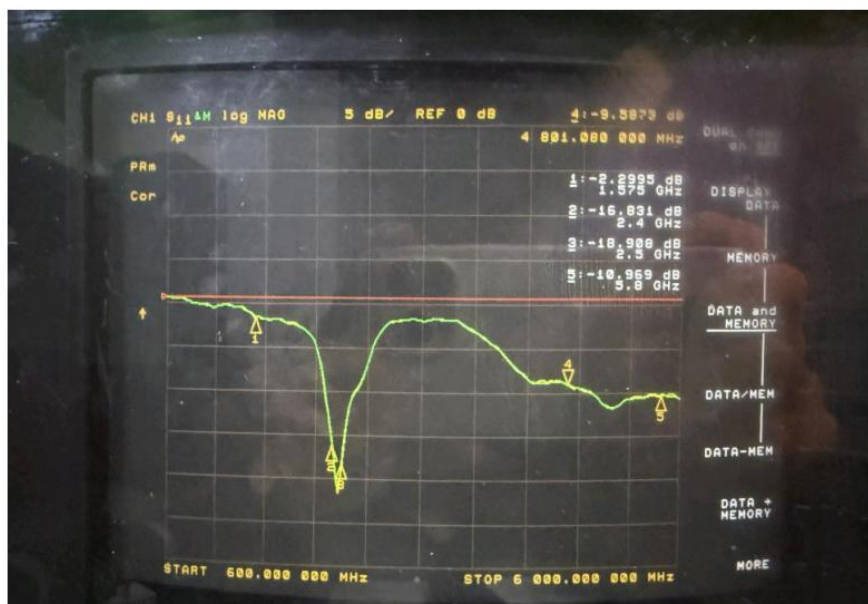


(2) Machine images&antenna images





四 :Antenna Standing Wave Ratio&Antenna Efficiency (VSWR)



Passive Test For 2.4Gwifi								
Freq	Effi	Effi	Gain	Gain	UHS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
2400	30.06	-5.22	-0.26	-2.41	14.254	15.801	-0.26	-12.96
2410	31.2	-5.06	-0.17	-2.32	14.449	16.753	-0.17	-12.39
2420	40.29	-3.95	0.76	-1.39	18.487	21.798	0.76	-11.76
2430	43.92	-3.57	1.07	-1.08	20.134	23.789	1.07	-12.01
2440	47.07	-3.27	1.42	-0.73	21.492	25.582	1.42	-11.91
2450	39.8	-4	0.78	-1.37	18.106	21.697	0.78	-12.1
2460	40.01	-3.98	0.89	-1.26	17.979	22.027	0.89	-12.13
2470	37.42	-4.27	0.73	-1.42	16.575	20.845	0.73	-12.45
2480	42.97	-3.67	1.4	-0.75	18.882	24.092	1.4	-12.16
2490	46.44	-3.33	1.73	-0.42	20.414	26.029	1.73	-11.94
2500	53.28	-2.73	2.34	0.19	23.432	29.849	2.34	-12.43

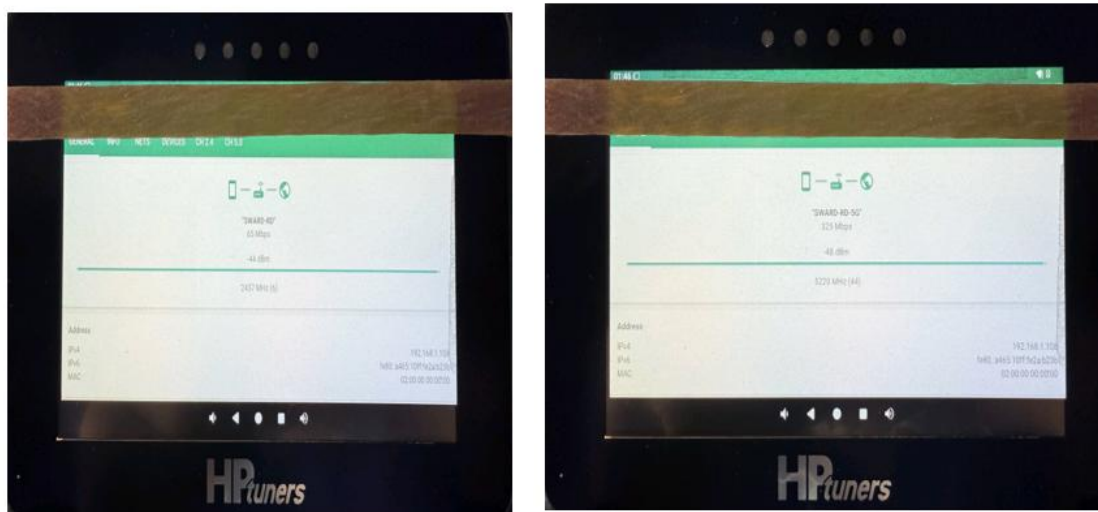
Passive Test For 5Gwifi								
Freq	Effi	Effi	Gain	Gain	UHS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
5000	44.53	-3.51	1.65	-0.5	24.283	20.249	1.65	-14.18
5100	50.57	-2.96	2.24	0.09	28.145	22.423	2.24	-16.44
5200	46.99	-3.28	2.51	0.36	27.07	19.918	2.51	-19.17
5300	70.21	-1.54	4.66	2.51	40.215	29.993	4.66	-13.78
5400	52.96	-2.76	3.71	1.56	28.977	23.987	3.71	-12.29
5500	49.53	-3.05	3.2	1.05	25.777	23.754	3.2	-22.72
5600	46.29	-3.34	1.96	-0.19	22.959	23.332	1.96	-15.21
5700	42.33	-3.73	0.9	-1.25	21.253	21.077	0.9	-13.63
5800	49.06	-3.09	1.31	-0.84	26.144	22.916	1.31	-13.59
5900	44.48	-3.52	0.35	-1.8	22.249	22.233	0.35	-17.76
6000	44.77	-3.49	0.55	-1.6	22.614	22.152	0.55	-18.91

五:throughput test

Iperf throughput test						
model	HPT-50-5 inch plastic shell	module	AP6256 module	software version		
Model Number	frequency band	distance	Test angle	Test data (TX) 1-minute mean	Test data (RX) 1-minute mean	Remarks (number of packet drops)
1	2.4G	2.4G WIFI (Research and development testing 15m)	0°	22.8 Mbps	38.5 Mbps	0
			90°	23.6 Mbps	41.9 Mbps	0
			180°	18.9 Mbps	39.2 Mbps	0
			270°	20.7 Mbps	37.9 Mbps	0
	5G	-				
		5G WIFI (Research and development testing 15m)	0°	189 Mbps	266 Mbps	0
			90°	188 Mbps	284 Mbps	0
			180°	193 Mbps	293 Mbps	0
			270°	175 Mbps	265 Mbps	0

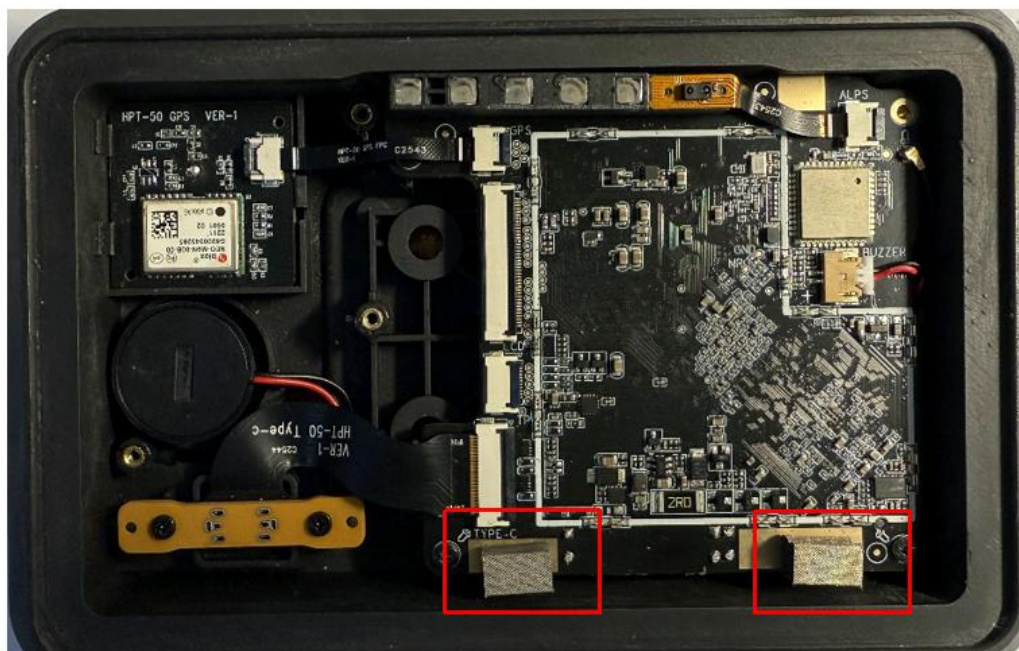
六:Antenna measurement

Actual test effect	
Model number	1
testing environment	Soward R&D Center
Test equipment	Huawei AM08
Test distance	10 meters➤



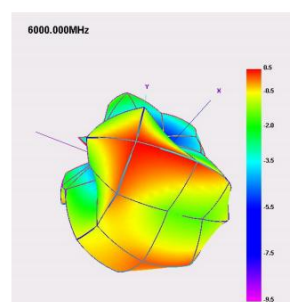
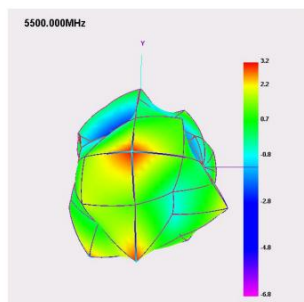
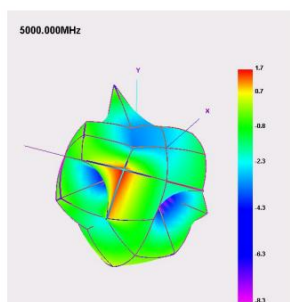
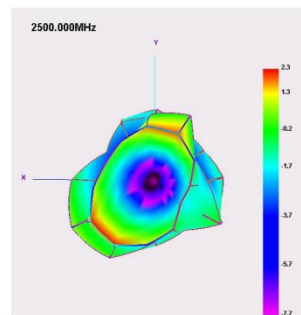
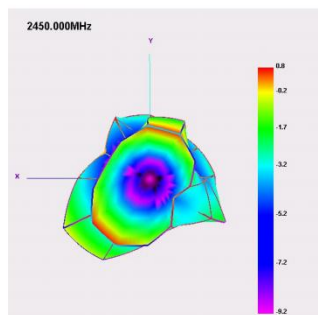
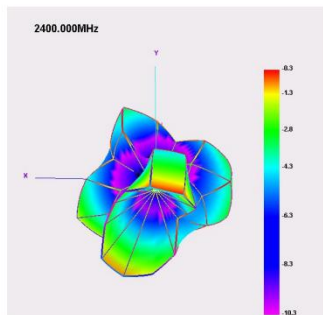
Test location: Our R&D office
 Test time: 15:00-15:30
 Test distance: 10-15 meters
 Signal strength: -44dBm to -48dBm

七:environmental treatment



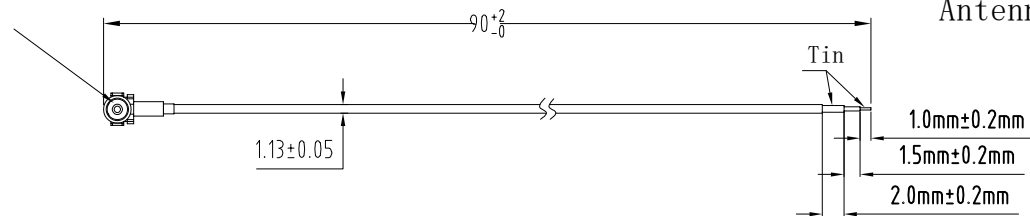
1. Conductive foam and screen grounding treatment at the red frame.

八:3D pattern

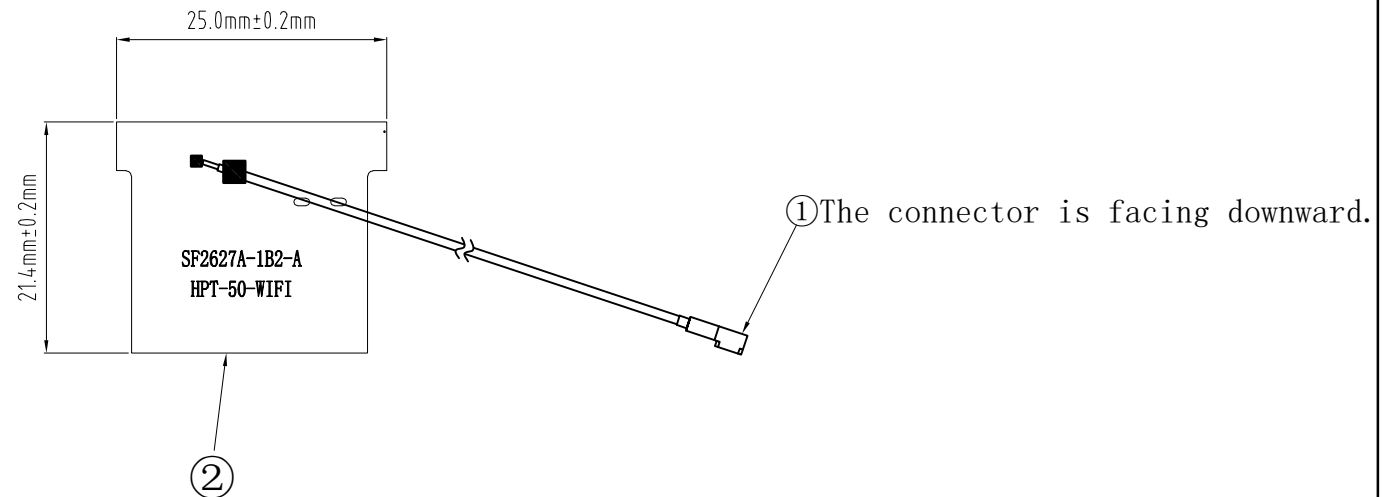


九:structural drawings

1th connector



Antenna welding



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.

- Packaging requirements:
1. PE sealed bag packaging
 2. 100 pieces per bag.

5											
4											
3							Signature	Date		Signature	Date
2	FPC		Black	1	SF2627A-1B2-A	RD	WYT	2026. 6. 9	QC		
1	coaxial cable	1th connector	Black	1	φ=1.13mm	RF					
Serial	NAME	Materials	Colour	Count	Description	Process			Approval		

SWARD

ShenZhen SWARD
Communication Technology Co.Ltd

SF2627A-1R11B-090-A

Stage marker Organization Ratio

A mm N/A

Total: 1Number pages:1 Page

ROHS