

Parts Acknowledgment

Name of Part: WIFI antenna

Specification of Parts:

Stare at the material numbe: 10883000130

Model of application: X5R-AK (Hidden Recorder -RK Platform - Module 6221)

Name of Supplier: Shenzhen Suo Ward Communication Technology Co., Ltd.

Type of Supplier: ☒ Manufacturer、☐ Agent、☐ Trader;

Manufacturer's material number: SF2138A-1R23B-090-A

Recognition number:

Keep an eye on the date of issue:

Supplier approval column

To develop: LTT		audit:		Approved by the:	
* The following is the check column of the tag tag					
Material to send sample check column			Material confirmation and approval column		
Procurement Engineer	Purchasing Supervisor		Research and Development Engineer	Research and Development Supervisor	

DDPai Technology CO.,LTD. Tel: 86-755-26401213

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Address: Building 6, No. 139, Xinhuang Road, Xindai Town, Pinghu City, Jiaxing, Zhejiang

Supplier Address: 6th Floor, Building B, Hexi Hangcheng Industrial Zone, No. 135, Qianjin Second Road, Bao 'an District, Shenzhen

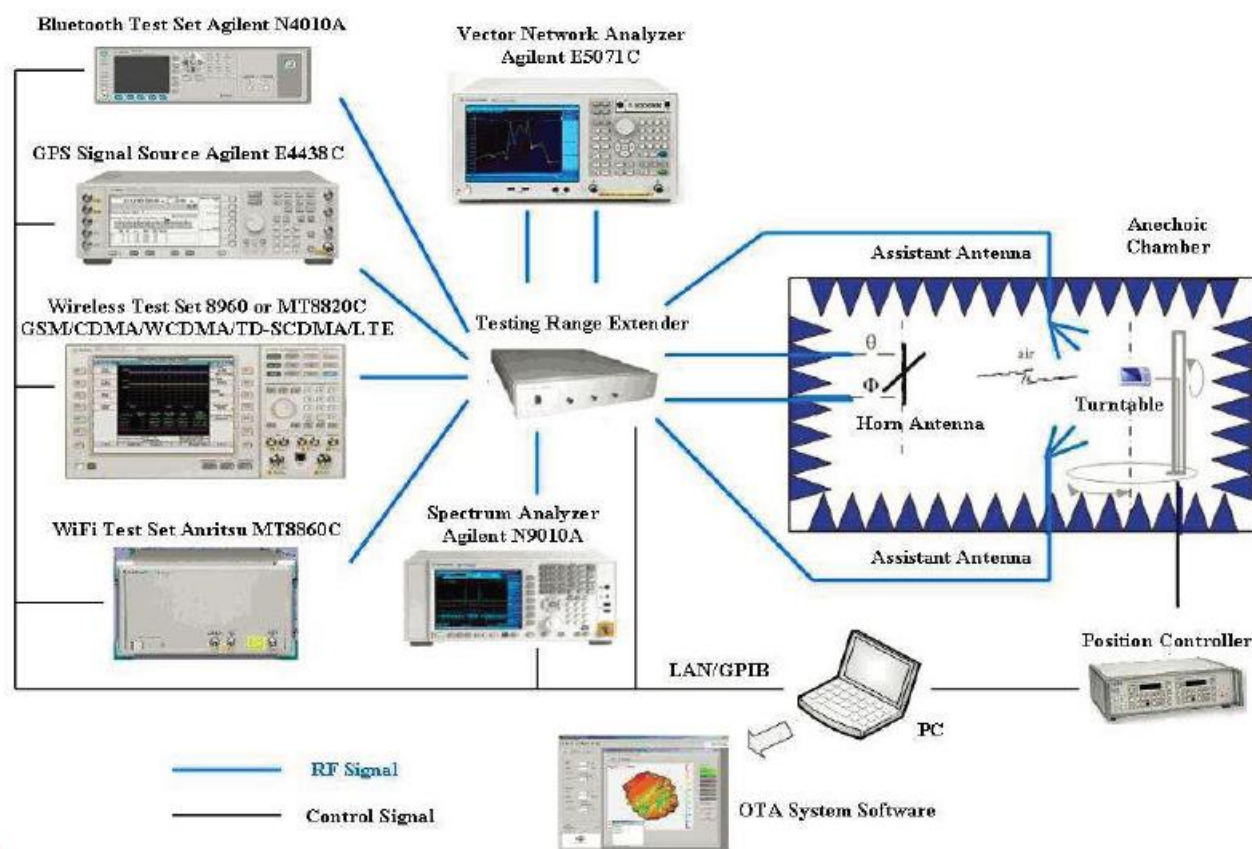
Contact information of supplier: Chen Heng /13717086260

Serial number	Certification number	Material type	Date of issue	Remarks
1	A2220186128101ER1	Tinned copper wire	2022-05-17	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	SZXC2203054804	Tin wire	2022-09-19	One year
7	SZXC2203054808	Tin	2022-09-19	One year
8	ETR22300684	Printing ink	2022-03-09	One year
9	EKR22501369	Substrate	2022-05-27	One year
10	CANEC2227574118	EVA foam	2023-01-03	One year
11	SZXC2202709609	Conductive cloth	2022-08-16	One year
12	CANEC2218227002	Gold plating	2022-08-30	One year

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一: 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

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:

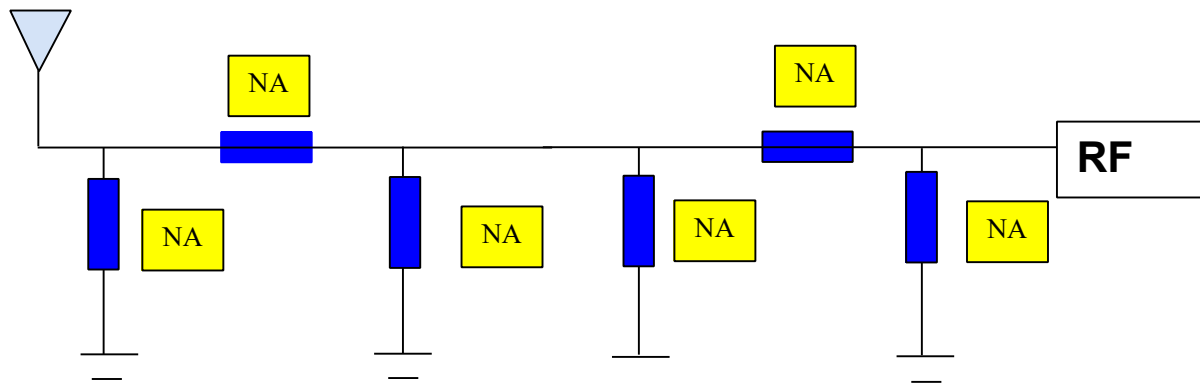
Description	2.4GHz~5GHz	Units
VSWR	≤ 2.0	
Average Antenna Gain	≥ -4.5	dB
Antenna Efficiency	≥ 40	%
Feed Impedance	50 ohms	
Operating Temperature	-40 to +85 deg C	
Polarization / Azimuth	Linear / Omni-directional	

(2)Mechanical Information

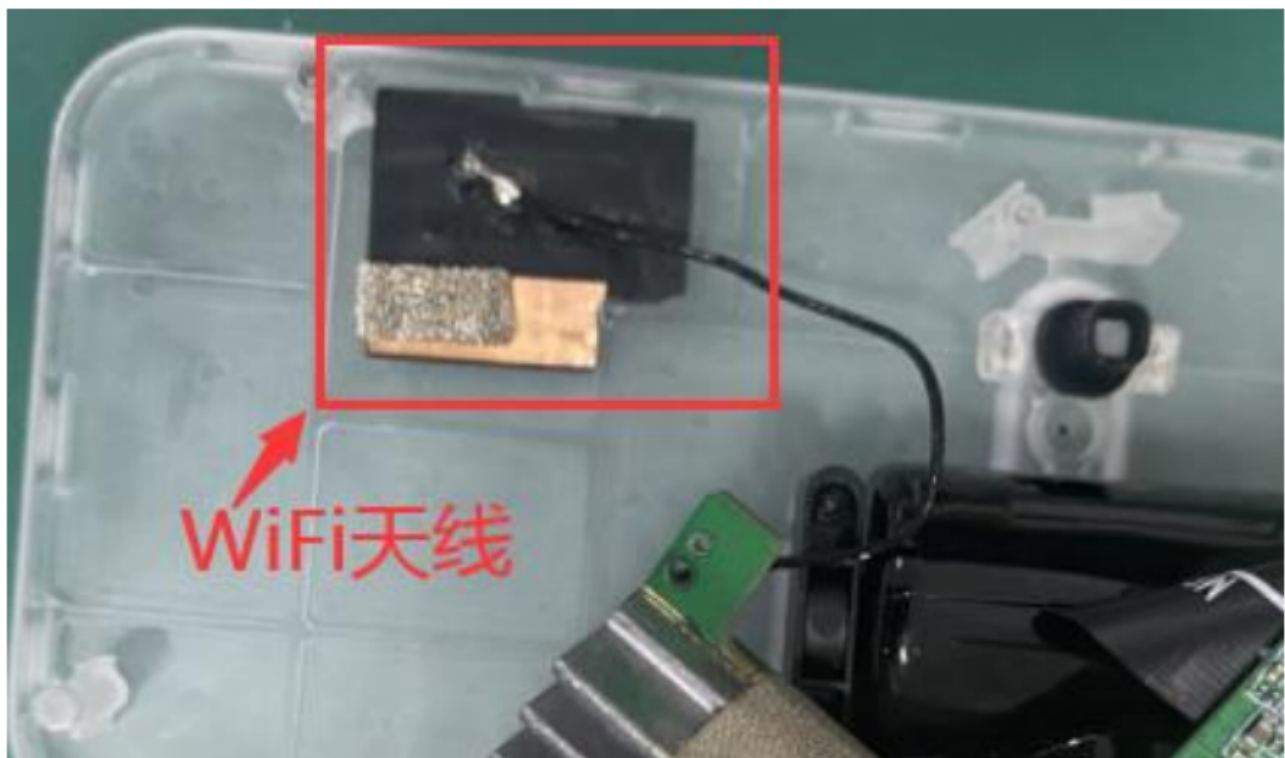
Mechanical Dimension	
Cable Length	090mm/BLACK
Description	WIFI&BT antenna
Material	FPC
Coaxial Cable	50Ω/O. D. 0.81mm
Environmental	
Operation Temperature	-40 to +85 deg C
Storage Temperature	-40 to +85 deg C

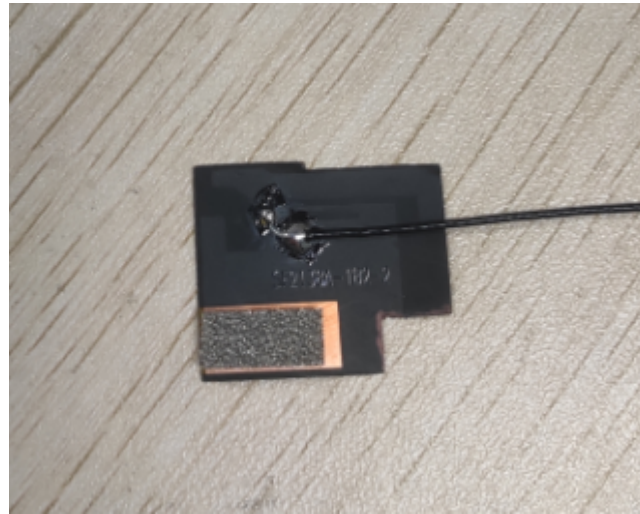
三: Matching circuit diagram & machine picture & antenna picture

(1) Matching circuit



(2) Machine picture & antenna picture





四:Antenna standing wave ratio Antenna efficiency Active data

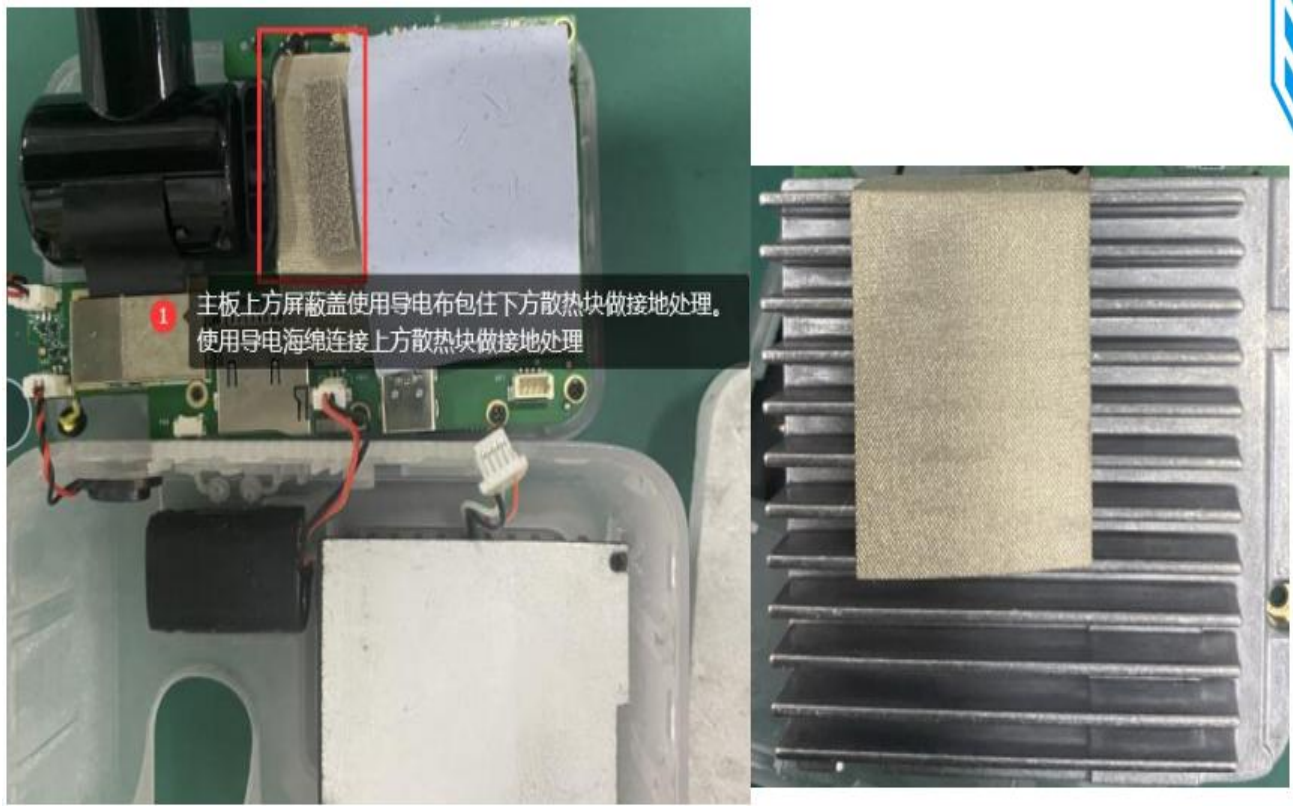


Passive Test For 2.4G				Passive Test For 5G-WIFI			
Freq	Effi	Effi	Gain	Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)	(MHz)	(%)	(dB)	(dBi)
2400	47.29	-3.25	-0.17	5000	62.8	-2.02	3.53
2410	46.7	-3.31	-0.1	5100	65.17	-1.86	3.36
2420	49.42	-3.06	0.4	5200	66.1	-1.8	3.8
2430	51.26	-2.9	0.63	5300	67.36	-1.72	4.23
2440	51.05	-2.92	0.8	5400	61.52	-2.11	3.51
2450	49.91	-3.02	1.01	5500	54.04	-2.67	2.6
2460	47.44	-3.24	0.98	5600	55.44	-2.56	3.33
2470	44.44	-3.52	0.78	5700	58.44	-2.33	3.32
2480	45.42	-3.43	0.85	5800	53.64	-2.71	3.74
2490	49.51	-3.05	1.1	5900	54.36	-2.65	4.76
2500	53.26	-2.74	1.21	6000	48.46	-3.15	3.59

Active data

802.11b : 11Mbps			802.11n : MCS7		
Test	Wifi 2G TRP	Wifi 2G TIS	Test	Wifi 5G TRP	Wifi 5G TIS
Result	6	6	Result	36	36
Frequency (MHz)	2437	2437	Frequency (MHz)	5180	5180
TRP (dBm)	14	-77.83	TRP (dBm)	12.56	-68.63
802.11g : 54Mbps			802.11a : 54Mbps		
Test	Wifi 2G TRP	Wifi 2G TIS	Test	Wifi 5G TRP	Wifi 5G TIS
Result	6	6	Result	36	36
Frequency (MHz)	2437	2437	Frequency (MHz)	5180	5180
TRP (dBm)	14.28	-61.36	TRP (dBm)	12.95	-71.11
802.11n : MCS7					
Test	Wifi 2G TRP	Wifi 2G TIS			
Result	6	6			
Frequency (MHz)	2437	2437			
TRP (dBm)	14.44	-59.89			

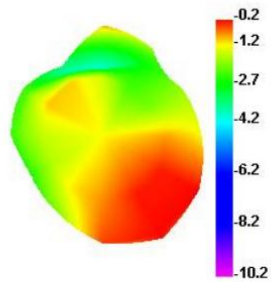
五:Environmental treatment



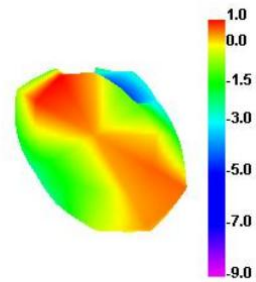
Note: Please optimize the specific environment treatment according to the test report

六:3D pattern

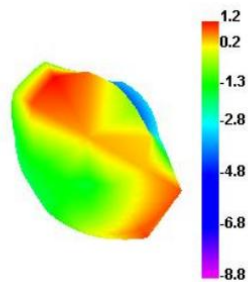
2400.000MHz



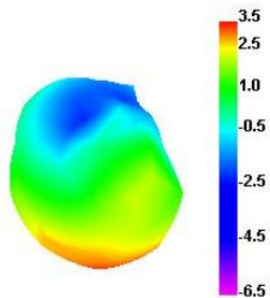
2450.000MHz



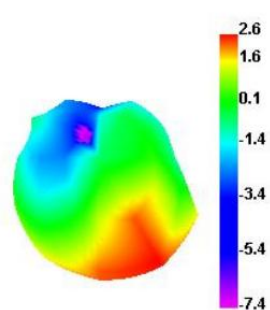
2500.000MHz



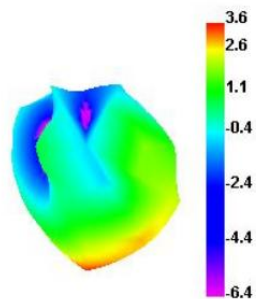
5000.000MHz



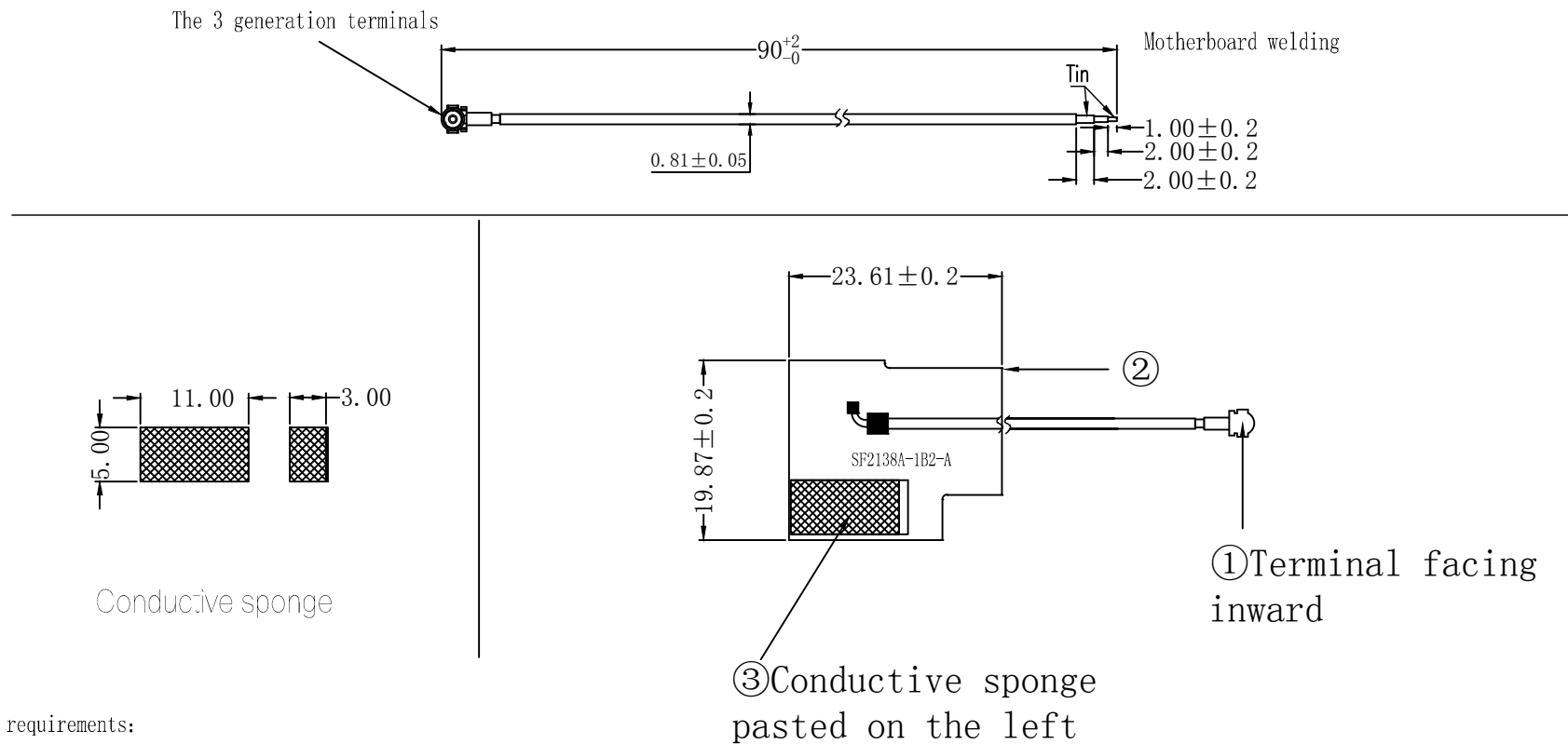
5500.000MHz



6000.000MHz



七:Structural drawing



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											SWARD			ShenZhen SWARD Communication Technology Co.Ltd
4														SF2138A-1R23B-090-A
3	Conductive soonge	gray	1	11*5*3mm	signatures	date	mass	signatures	date	time markup			percentage	ROHS
2	FPC	black	1	SF2138A-1B2-A						1		A		
1	coaxial line	black	1	φ=0.81mm	RF								1 : 1	
	name	color	quantity	specifications	audits			approval						