Saward Antenna Debugging Report

Customer Name: Yizhong

Project Name: VK7B

Date: January 15, 2024

Project contact information

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Email:

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Project Introduction

1.Project Description

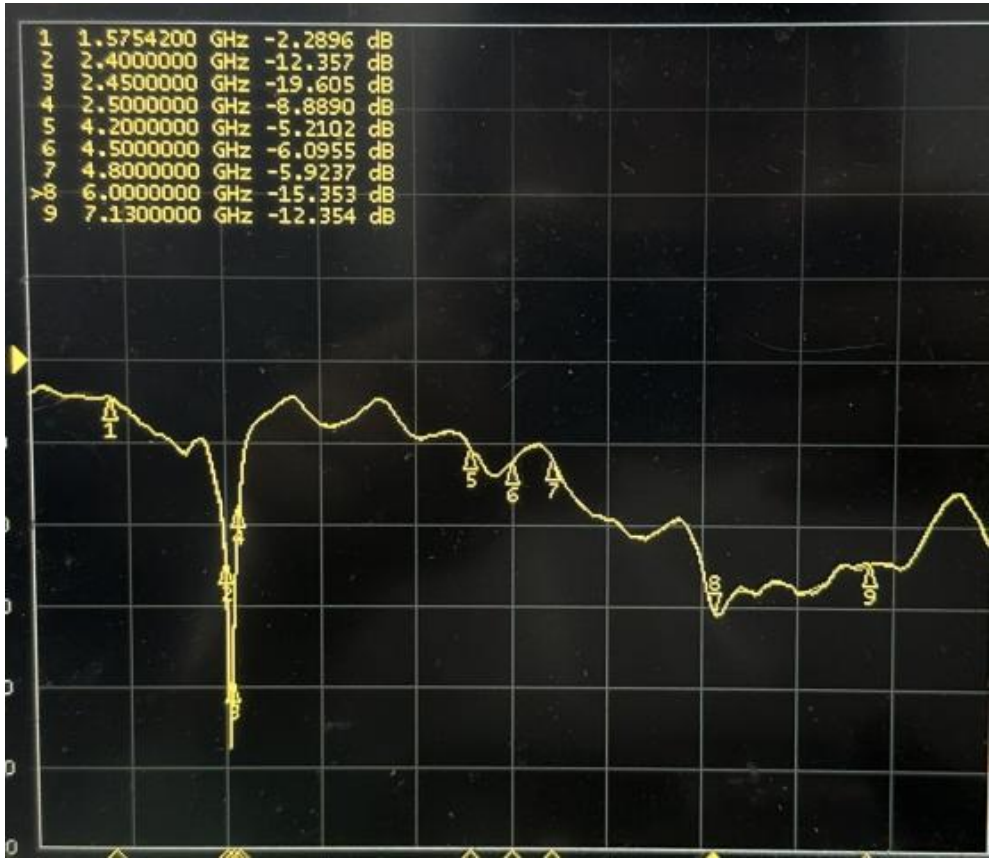
Number of project antennas	Machine type
2	flat
Machine shell material: plastic shell	

2.Antenna Overview

Antenna number	name	Working frequency band/MHZ	Material/Structure
1	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	PCB
2	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	PCB

WIFI&BT main antenna S11

WIFI&BT sub antenna S11



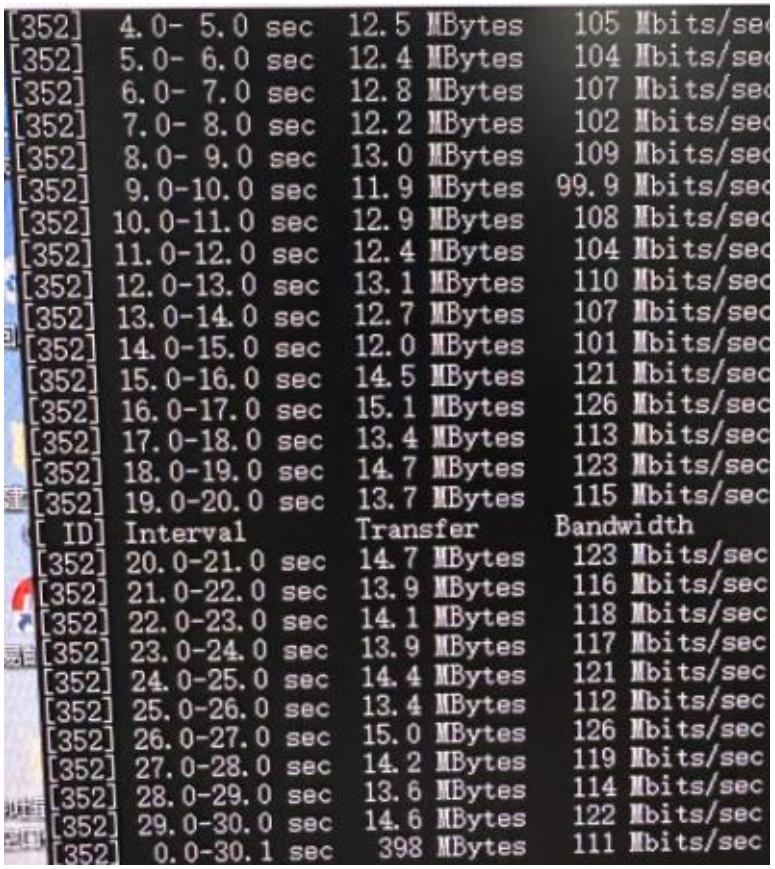
WIFI antenna active data

Test	802.11b : 11MBps		
Result	1	6	11
Frequency (MHz)	2412	2437	2462
TRP(dBm)	16.02	16.25	16.69
TIS(dBm)	-81.05	-79.71	-84.41
Test	802.11g : 54MBps		
Result	1	6	11
Frequency (MHz)	2412	2437	2462
TRP(dBm)	13.6	14.77	15.23
TIS(dBm)	-72.23	-71.87	-74.23
Test	802.11n : MCS7		
Result	1	6	11
Frequency (MHz)	2412	2437	2462
TRP(dBm)	14.5	15.19	15.09
TIS(dBm)	-70.12	-68.54	-71.45

Test	802.11n : MCS7		
Result	36	100	161
Frequency (MHz)	5180	5500	5805
TRP(dBm)	14.07	14.46	14.45
TIS(dBm)	-70.55	-70.1	-70.59
Test	802.11a : 54MBps		
Result	36	100	161
Frequency (MHz)	5180	5500	5805
TRP(dBm)	15.82	15.63	15.64
TIS(dBm)	-71.4	-71.21	-71.78

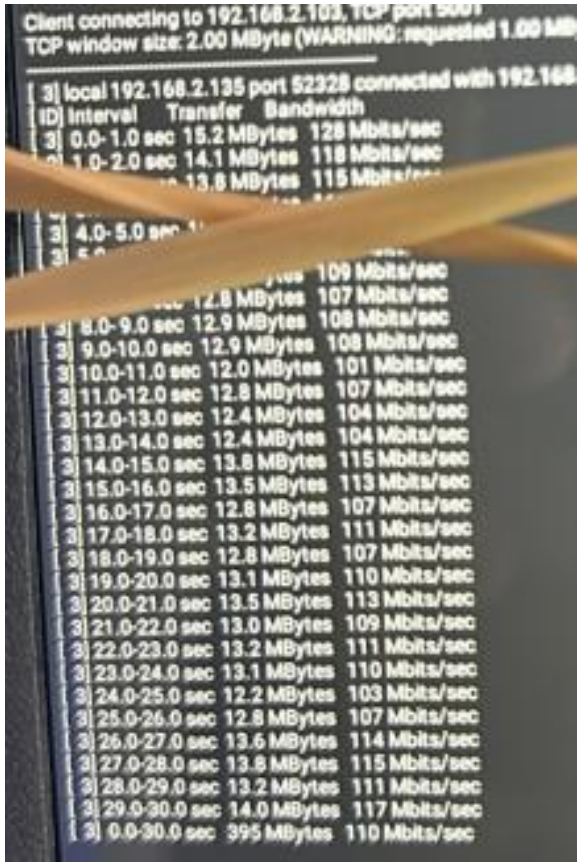
WIFI antenna throughput test (test image)

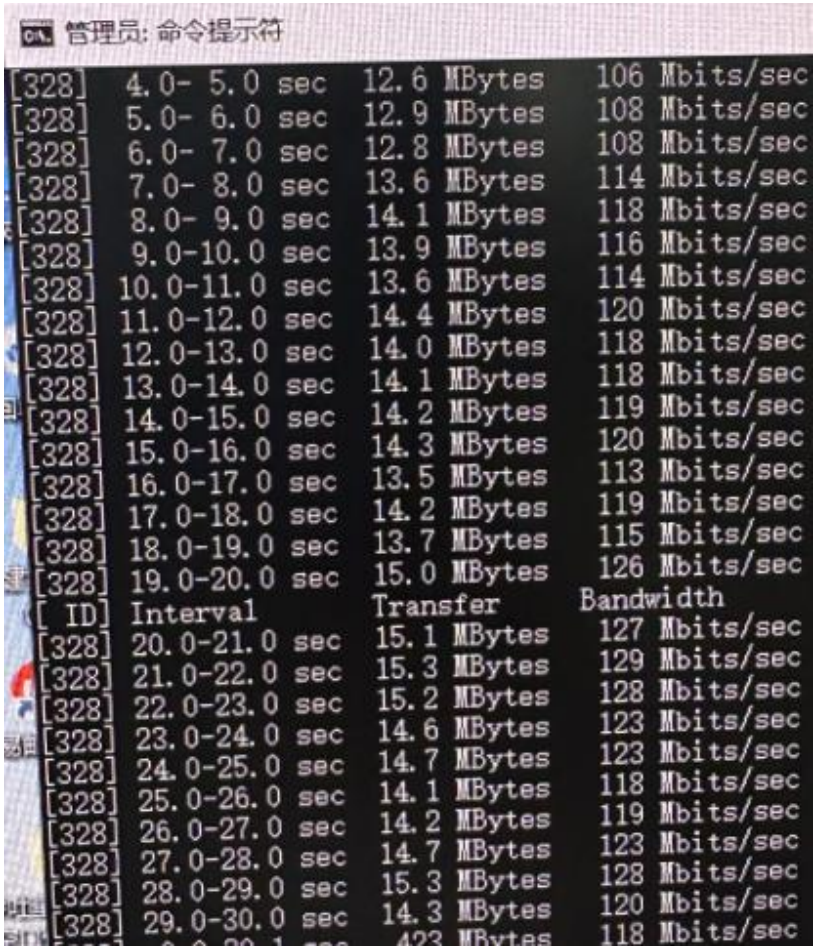
Test data 2.4Gwifi upload/download



WIFI antenna throughput test (test image)

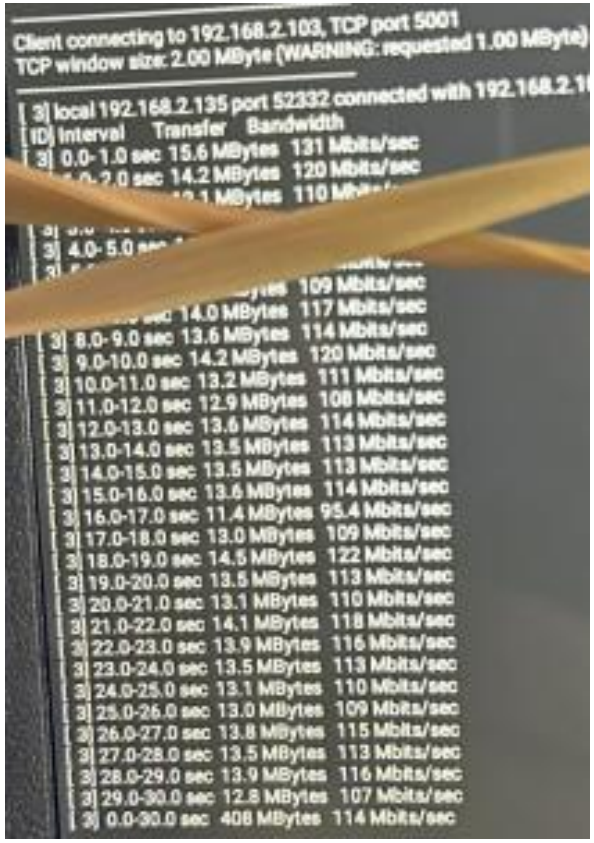
Test data uploaded/downloaded via 5Gwifi

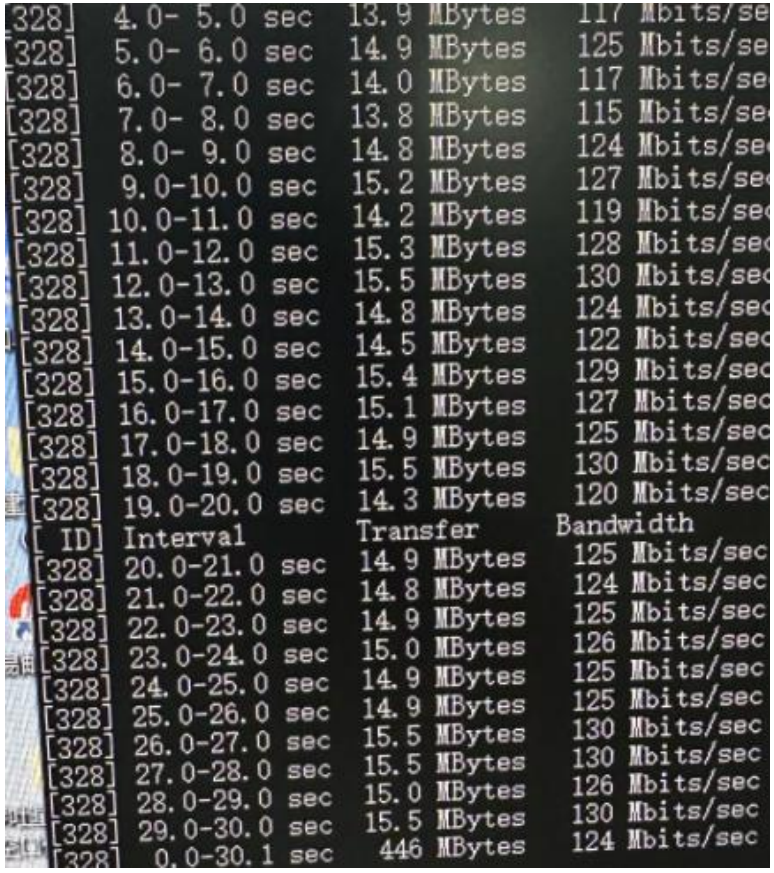




WIFI antenna throughput test (test image)

Test data 6Gwifi upload/download





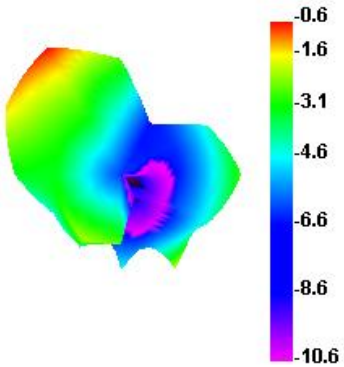
BT antenna measured distance

Actual measurement effect	
Model number	1
testing environment	Soward R&D Center
Test equipment	huaiwei AM08
test distance	10m≥

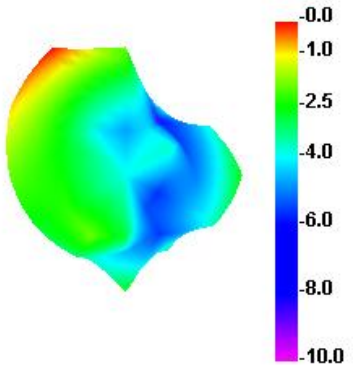
WIFI&BT antenna 1 efficiency

Passive Test For 2.4G			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	30.79	-5.12	-0.58
2410	32.4	-4.89	-0.3
2420	32.69	-4.86	-0.22
2430	31.53	-5.01	-0.31
2440	31.82	-4.97	-0.19
2450	32.37	-4.9	-0.05
2460	33.59	-4.74	0.15
2470	33.42	-4.76	-0.09
2480	31.33	-5.04	-0.72
2490	31.21	-5.06	-1.16
2500	28.75	-5.41	-1.9

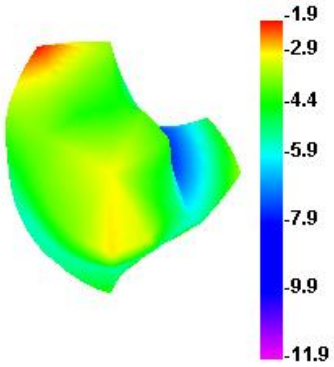
2400.000MHz



2450.000MHz



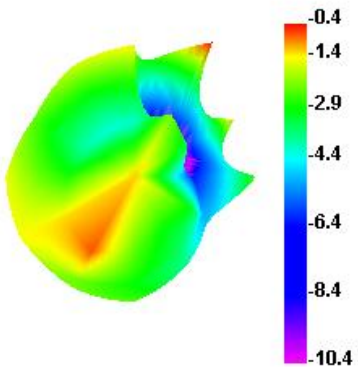
2500.000MHz



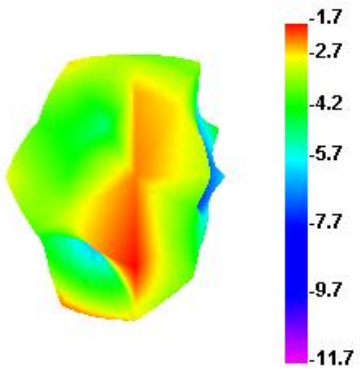
5GWIFI antenna 1 efficiency

Passive Test For 5G-WIFI			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
5000	29.97	-5.23	-0.35
5100	28.57	-5.44	-1.05
5200	29.04	-5.37	-1.18
5300	26.07	-5.84	-1.96
5400	24.92	-6.03	-2
5500	27.78	-5.56	-1.71
5600	24.05	-6.19	-1.99
5700	28.82	-5.4	-0.88
5800	27.6	-5.59	-2.22
5900	28.97	-5.38	-1.13
6000	29.89	-5.25	-0.55

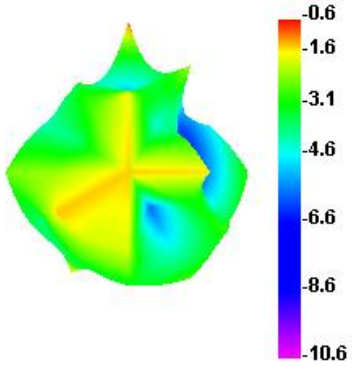
5000.000MHz



5500.000MHz



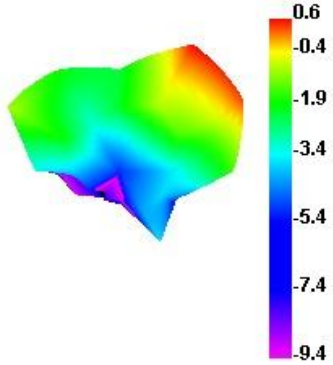
6000.000MHz



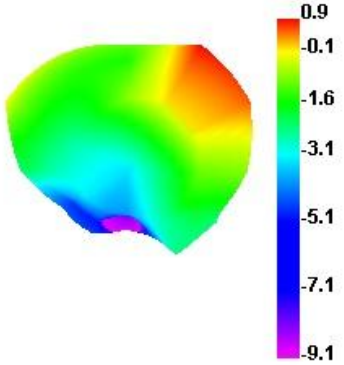
WIFI 6 antenna 1 efficiency

Passive Test For 6G-WIFI			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
6100	27.95	-5.54	0.65
6200	29.35	-5.32	0.86
6300	29.96	-5.23	0.92
6400	27.9	-5.54	0.36
6500	27.01	-5.68	1.54
6600	29.36	-5.32	1.87
6700	28.19	-5.50	2.13
6800	32.86	-4.83	3.82
6900	30.23	-5.20	3.63
7000	22.86	-6.41	1.6

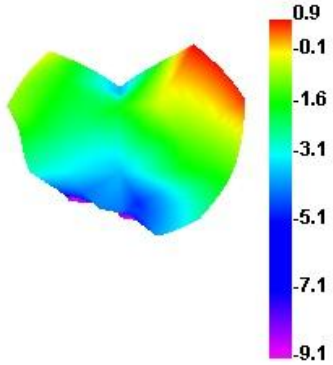
6100.000MHz



6300.000MHz



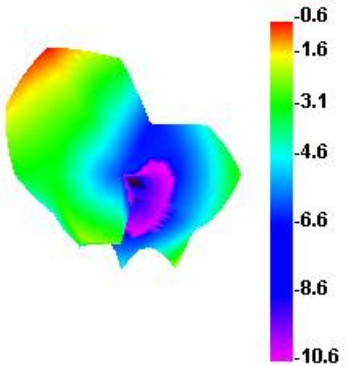
6600.000MHz



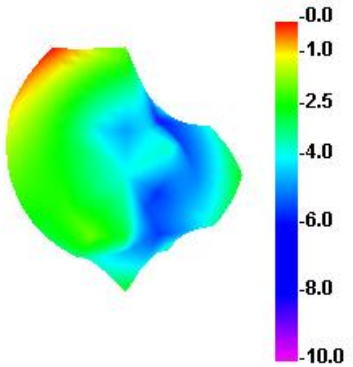
WIFI&BT antenna 2 efficiency

Passive Test For 2.4G			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	30.79	-5.12	-0.58
2410	32.4	-4.89	-0.3
2420	32.69	-4.86	-0.22
2430	31.53	-5.01	-0.31
2440	31.82	-4.97	-0.19
2450	32.37	-4.9	-0.05
2460	33.59	-4.74	0.15
2470	33.42	-4.76	-0.09
2480	31.33	-5.04	-0.72
2490	31.21	-5.06	-1.16
2500	28.75	-5.41	-1.9

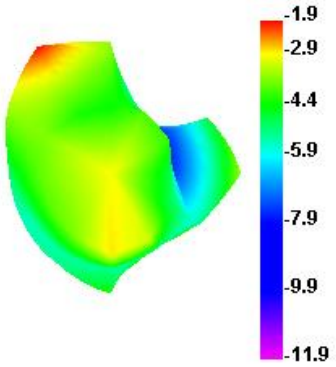
2400.000MHz



2450.000MHz



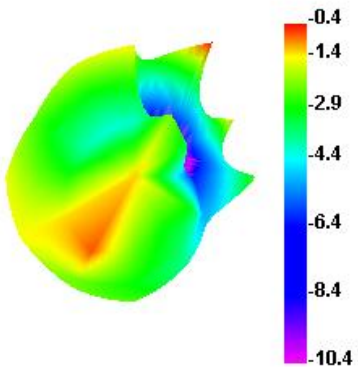
2500.000MHz



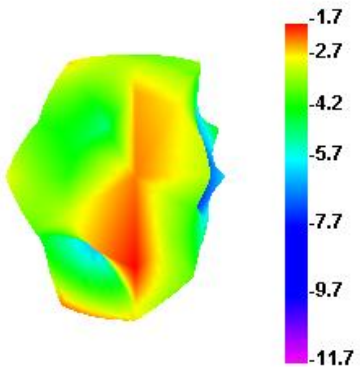
5GWIFI antenna 2 efficiency

Passive Test For 5G-WIFI			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
5000	29.97	-5.23	-0.35
5100	28.57	-5.44	-1.05
5200	29.04	-5.37	-1.18
5300	26.07	-5.84	-1.96
5400	24.92	-6.03	-2
5500	27.78	-5.56	-1.71
5600	24.05	-6.19	-1.99
5700	28.82	-5.4	-0.88
5800	27.6	-5.59	-2.22
5900	28.97	-5.38	-1.13
6000	29.89	-5.25	-0.55

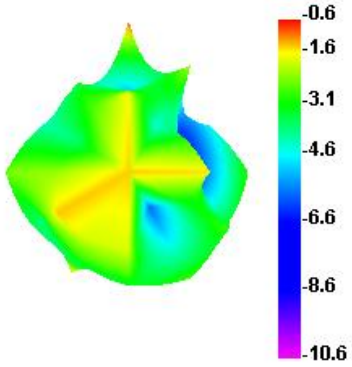
5000.000MHz



5500.000MHz



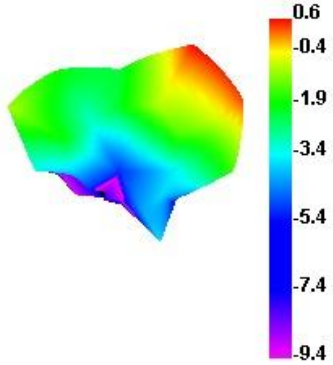
6000.000MHz



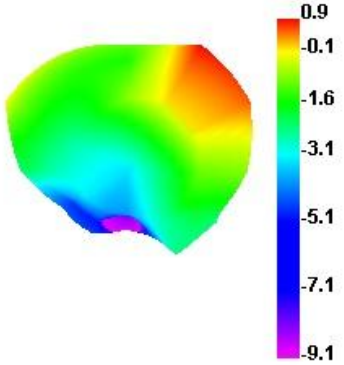
WIFI 6 antenna 2 efficiency

Passive Test For 6G-WIFI			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
6100	27.95	-5.54	0.65
6200	29.35	-5.32	0.86
6300	29.96	-5.23	0.92
6400	27.9	-5.54	0.36
6500	27.01	-5.68	1.54
6600	29.36	-5.32	1.87
6700	28.19	-5.50	2.13
6800	32.86	-4.83	3.82
6900	30.23	-5.20	3.63
7000	22.86	-6.41	1.6

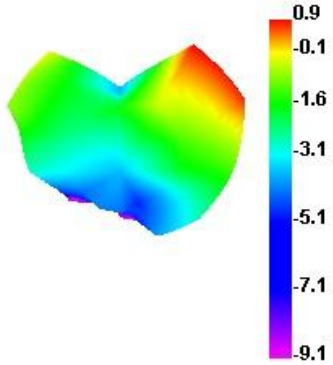
6100.000MHz



6300.000MHz



6600.000MHz



WIFI antenna signal strength measured image (data)

Testing location: Our R&D office
Test time: 14:00-14:30
Testing distance: 10-15 meters
Signal strength: -48dBm to -38dBm

Note: 1. This report is based on the actual debugging and testing of the prototype, including environmental treatment, antenna position, and assembly position of various components

Cannot be changed arbitrarily;

2. If there are any changes to the materials used in the prototype, please provide timely feedback to our company for re verification;

3. List of sensitive devices:

TP (material, coating, wiring, etc.)

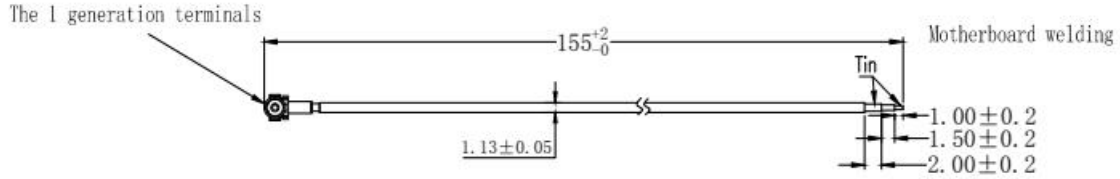
Screen (amplification circuit, LED, ribbon design, etc.)

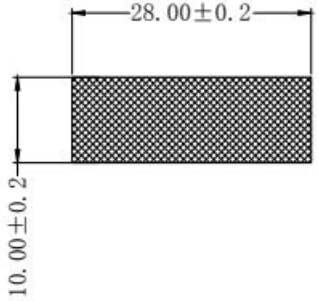
Shell material (antenna assembly method, structural interference, shell material, antenna position height and area, etc.)

Motherboard (motherboard conduction, RF circuit matching, PA, dual power, filtering, LNA, power circuit, etc.)

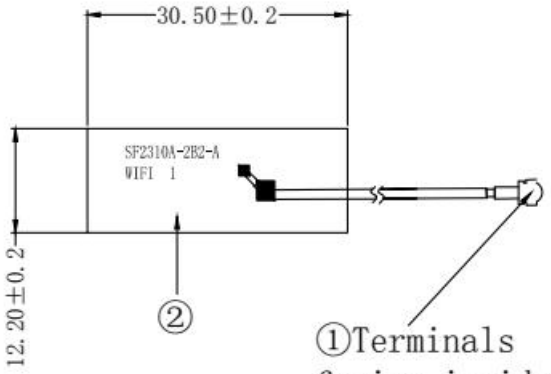
Camera, battery, motor, MIC, fingerprint recognition module, etc

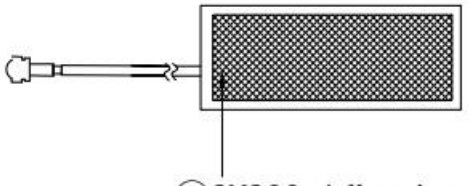
4. Due to the small number or only one testing machine, some probabilistic issues cannot be completely identified. It is recommended to conduct small-scale trial production before mass production to identify problem points (such as flashing screens, speaker noise, TP jumping, black screen crash, signal diving, etc.)





3M300 Adhesive





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	Adhesive	yellow	1	28*10mm		signatures	date	mass	signatures	date	
2	PCB	black	1	SF2310A-2B2-A	RD	YWD	2023.12.11	Q C			
1	coaxialline	black	1	ϕ=1.13mm	RF						
	name	color	quantity	specifications	audits			approval			

SWARD

ShenZhen SWARD Communication Technology Co.Ltd

SF2310A-2R11B-155-A

time markup					percentage
1			A		1 : 1

ROHS