SWARD

A11M2N-Antenna test report

Customer name: Bmorn

Project name: AE1013-BND-H60 motherboard

Issue: 2025.04.24

6th Floor, Building B, Hexi Hangcheng Industrial Zone, No. 135, Qianjin 2nd Road, Bao'an District, Shenzhen
Building B, Hexi Hangcheng Industrial Zone, No. 135 Qianjin No. 2 Road, Baoan District, Shenzhen

Project Contact Details

Customer contact:

Hand mail

Machine: box:

Soward structure:

Fl as

Machine:

Phone: 0755-29985185

Box:yangwende@szsward.com

Soward RF: Yang Wende

Fl as

Machine: 176 7457 9060

Phone: 0755-29985185

Box:yangwende@szsward.com

PROJECT INTRODUCTION

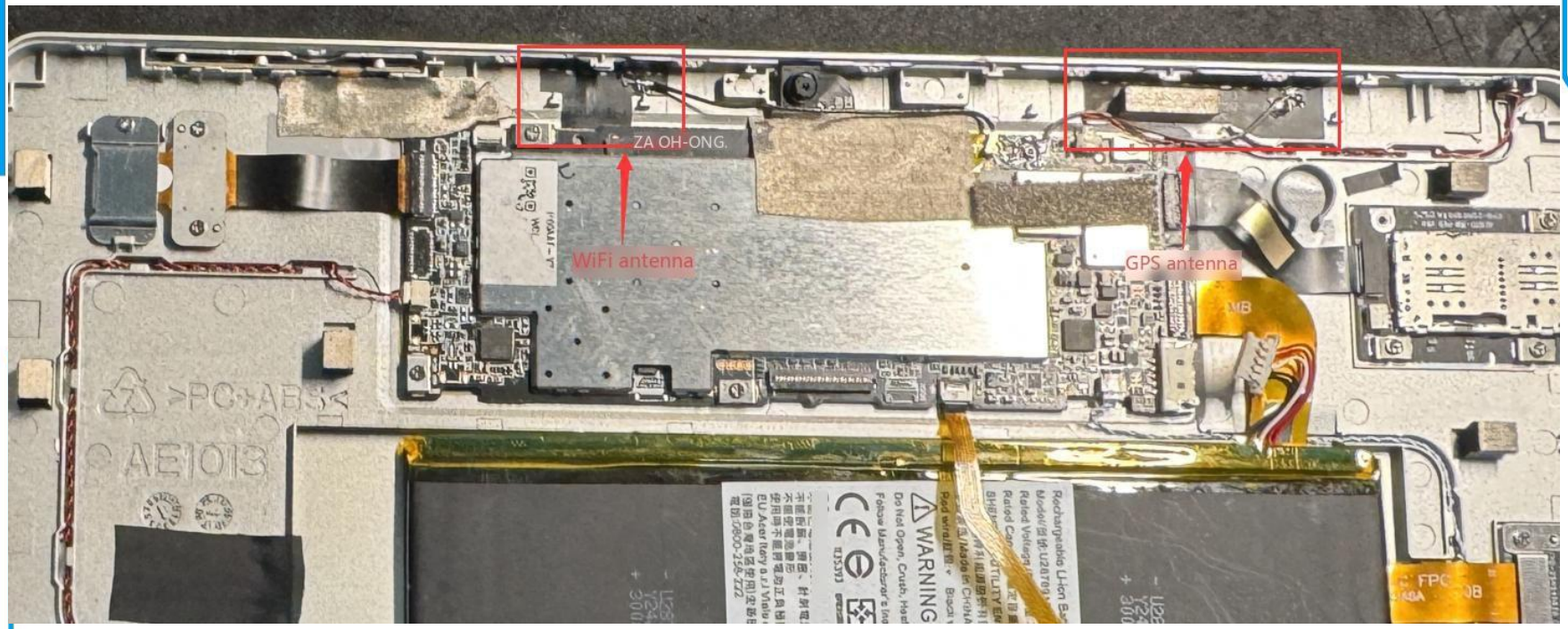
1. Project description

Number of antennas	Machine type
2	Tablet
Machine housing material: 10.95 inch metal shell	

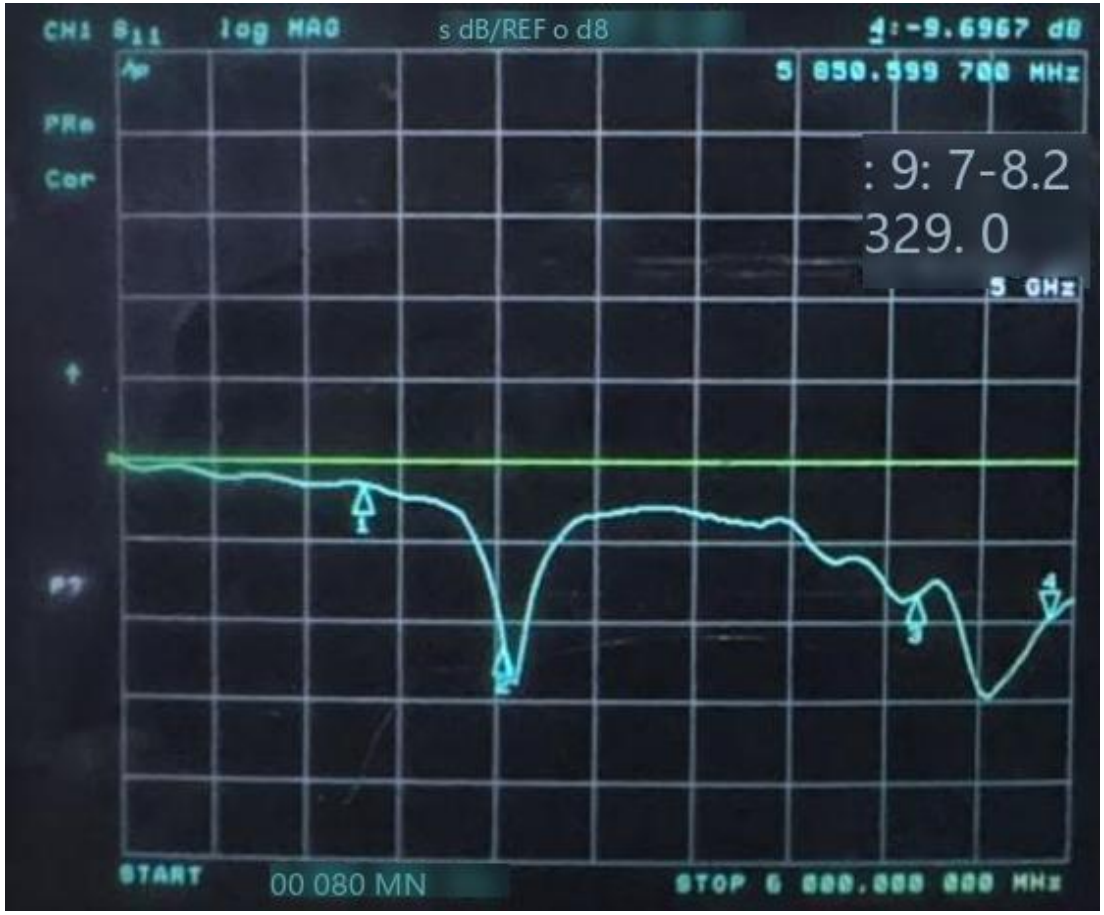
2. Antenna description

Antenna number	Name	Working frequency band/MHZ	Material/structure
1	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	FPC
2	GPS	1575MHz	FPC

Antenna layout



WIFI&GPS&BT Antenna S11



Building B, Hexi Hangcheng Industrial Zone, No. 135, Qianjin 2nd Road, Bao'an District, Shenzhen

135 Qianjin No. 2 Road, Baoan District, Shenzhen

WIFI antenna throughput test

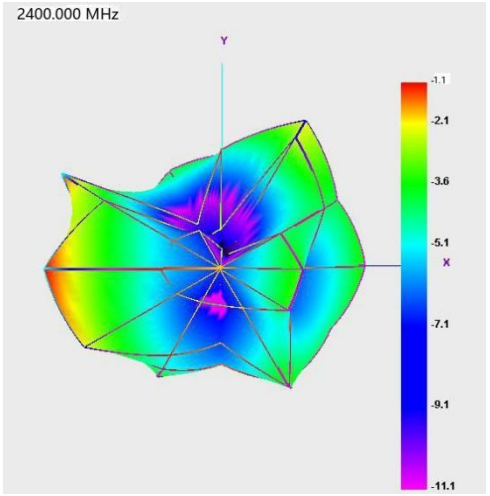
Iperf throughput test						
Model		Module		Software		
Model Number	Channel	Distance	Test Angle	Test data (TX) 1min average	Test data (RX) 1min mean	Notes (Number of Packet
2.4GWIFI		15 meters	0°	35.6M/S	66.5M/S	0
			90°	36.2M/S	62.8M/S	
			180°	33.5M/S	63.7M/S	
			270°	32.7M/S	64.0M/S	
5GWIFI		15 meters	0°	143M/S	252M/S	0
			90°	138M/S	255M/S	
			180°	140M/S	262M/S	
			270°	149M/S	26M/S	

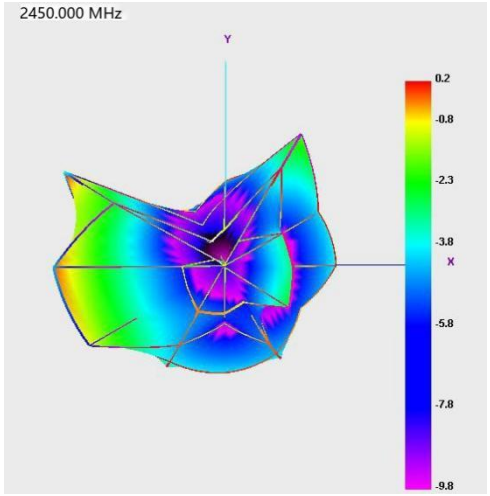
BT antenna measured distance

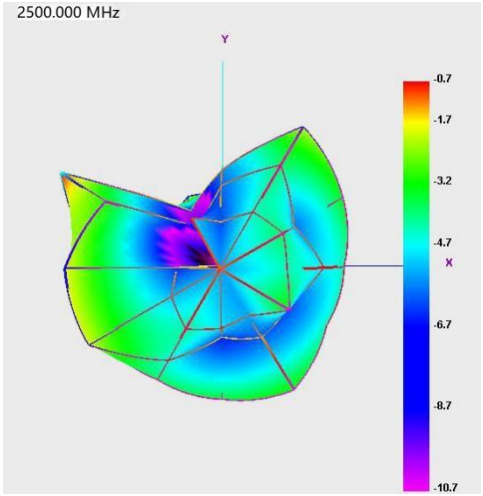
Test results	
Model number	1
Test environment	Soward R&D Center
Test equipment	Huawei AM08
Test distance	10 meters ⩾

WIFI&BT antenna efficiency

Passive Test For 2.4G			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
2400	32.65	-4.86	-1.06
2410	33.27	-4.78	-0.67
2420	33.31	-4.77	-0.38
2430	35.97	-4.44	0.05
2440	36.22	-4.41	0.08
2450	36.46	-4.38	0.16
2460	35.84	-4.46	0.01
2470	30.92	-5.1	-0.73
2480	28.95	-5.38	-1.14
2490	29.46	-5.31	-1.05
2500	31.52	-5.01	-0.71

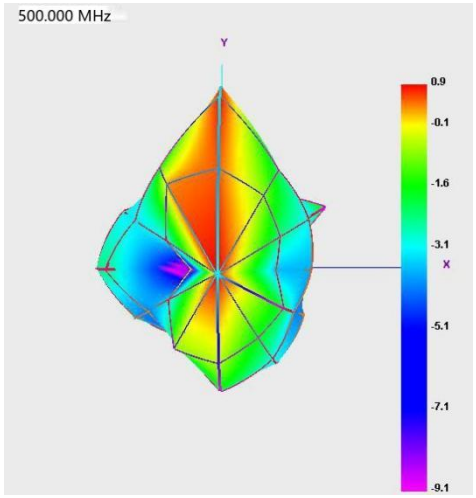


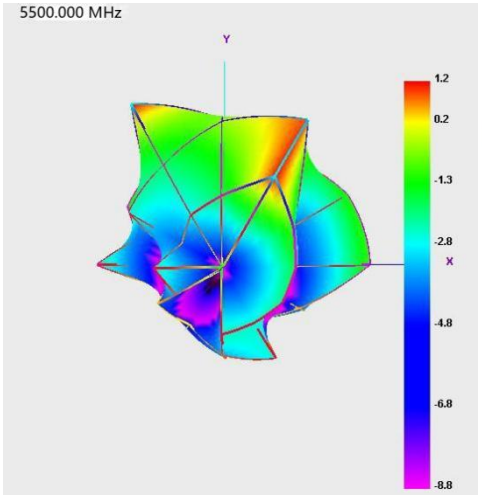


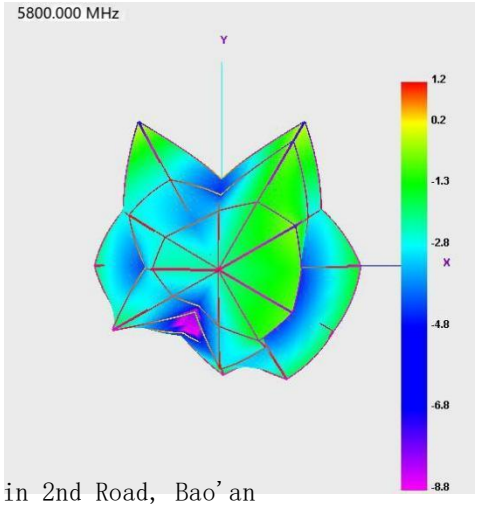


5GWIFI antenna efficiency

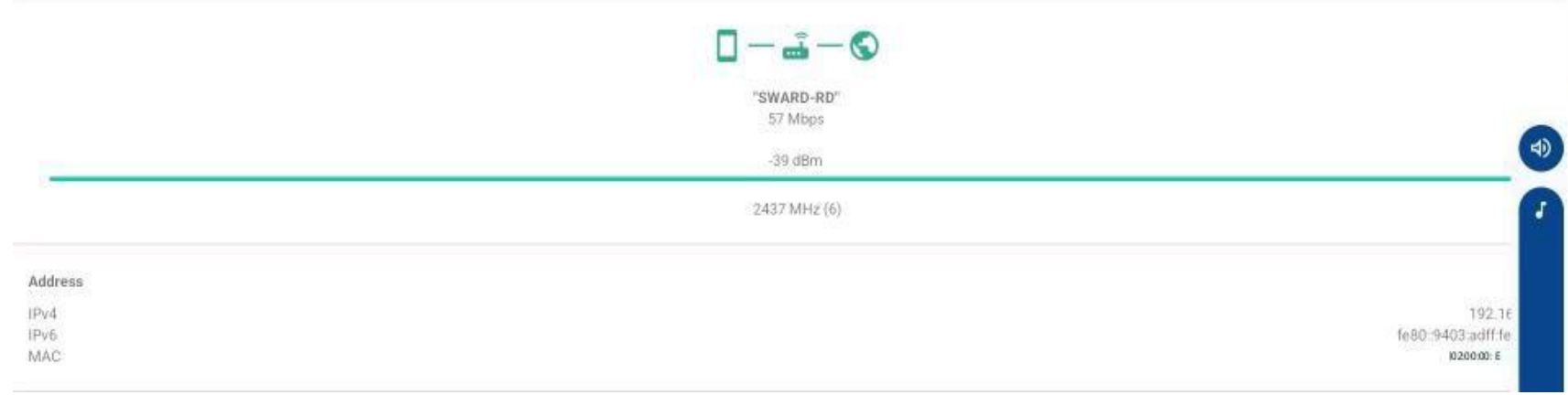
Passive Test For 5G-WIFI			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
5000	29.3	-5.33	0.89
5100	35.6	-4.49	3.04
5200	28.66	-5.43	1.28
5300	35.35	-4.52	0.97
5400	43.57	-3.61	1.99
5500	36.96	-4.32	1.17
5600	30.48	-5.16	0.33
5700	27.54	-5.6	-1.27
5800	25.52	-5.93	1.21
5900	19.93	-7.01	-1.46
6000	22.52	-6.47	-1.35

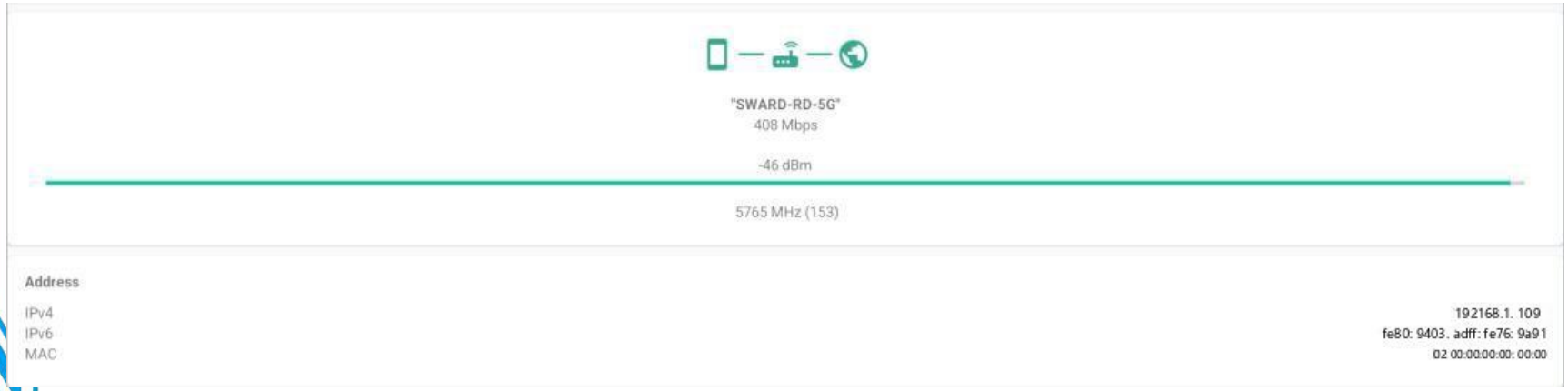






WIFI antenna signal strength measured image (data)





Test location: our R&D office Test time: 14:00-14:30 Test distance: 10m-15m
Signal strength: -49dBm to -40dBm

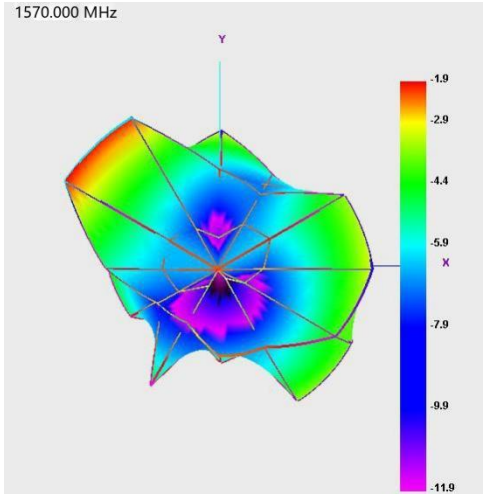
GPS Antenna S11

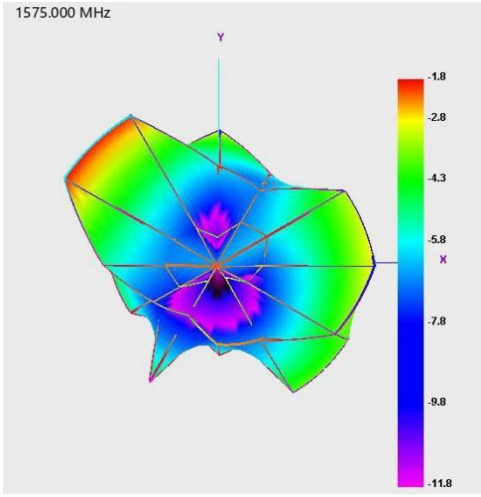
Building B, Hexi Hangcheng Industrial Zone, No. 135, Qianjin 2nd Road, Bao'an District, Shenzhen

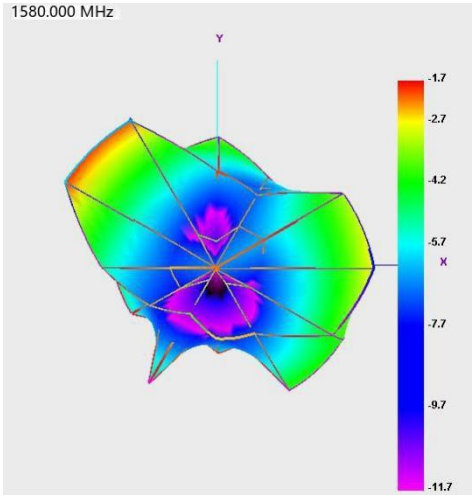
135 Qianjin No. 2 Road, Baoan District, Shenzhen

GPS Antenna Efficiency

Passive Test For GPS			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
1570	36.57	-4.37	-1.92
1571	36.61	-4.36	-1.9
1572	36.71	-4.35	-1.91
1573	36.89	-4.33	-1.85
1574	37.14	-4.3	-1.83
1575	37.4	-4.27	-1.78
1576	37.42	-4.27	-1.77
1577	37.35	-4.28	-1.74
1578	37.23	-4.29	-1.72
1579	36.98	-4.32	-1.72
1580	36.66	-4.36	-1.72



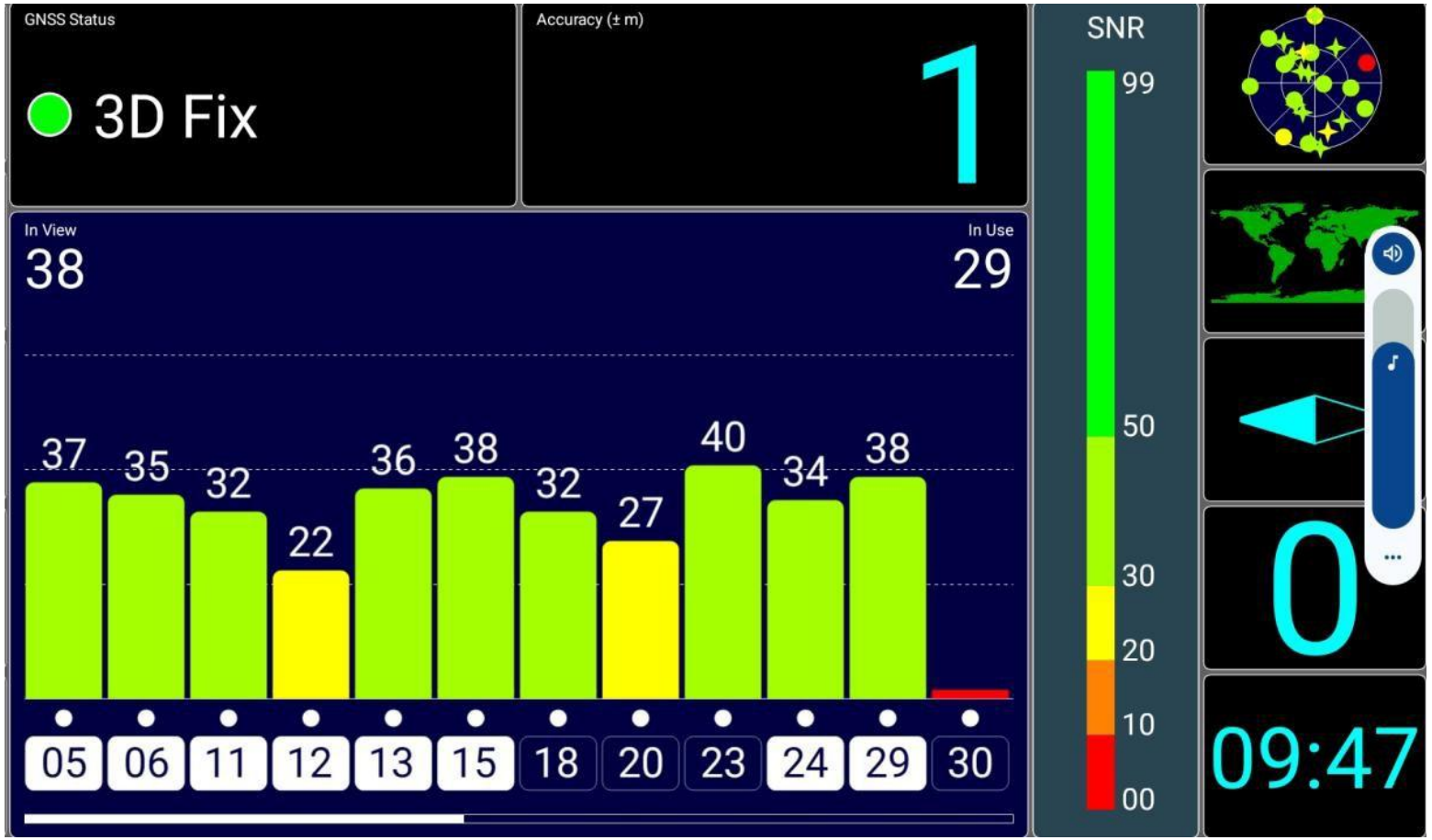




Building B, Hexi Hangcheng Industrial Zone, No. 135, Qianjin 2nd Road, Bao'an District, Shenzhen

135 Qianjin No. 2 Road, Baoan District, Shenzhen

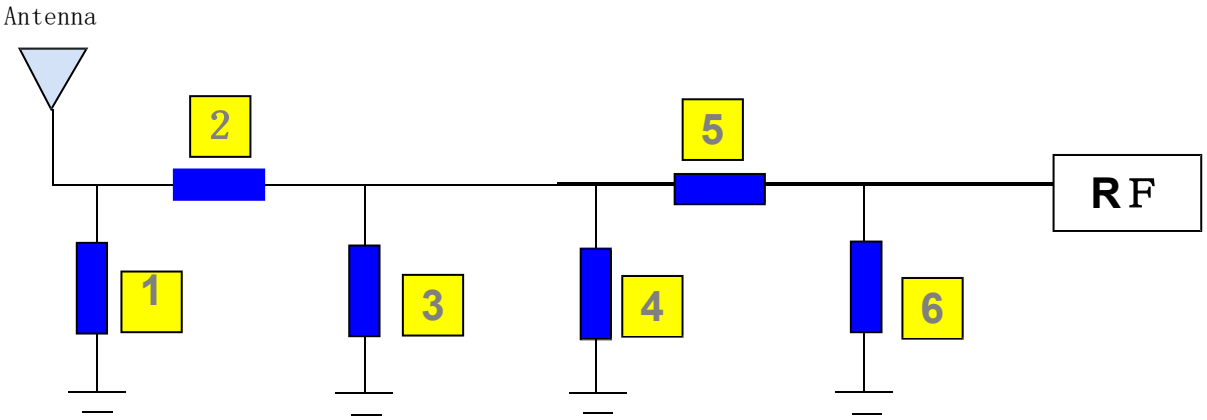
GPS measured pictures (data)



Test location: our rooftop

Test time: 16:00 to 16:30 Test direction: East, South, West, North Cold start positioning time: 60 seconds

Antenna match



Main antenna	1	2	3	4	5	6	Note
Original match							
Changed match							

Unchanged antenna match

Note: 1. This report is based on the actual debugging and testing of the debugging prototype. The environmental treatment, antenna position and assembly position of each component cannot be changed at will;

2. If there is any change in the materials used in the prototype, it is necessary to promptly feedback to our company for re-verification;

3. List of sensitive components: TP (material, coating, routing, etc.)
Screen (amplifier circuit, LED, cable design, etc.)
Shell material (antenna assembly method, structural interference, shell material, antenna position height and area, etc.)
Mainboard (mainboard conduction, RF circuit matching, PA, duplexer, filtering, LNA, power circuit, etc.) Camera, battery, motor, MIC, fingerprint recognition module, etc.

4. Due to the small number of debugging prototypes or only one, some probabilistic problems cannot be completely found. It is recommended to conduct a small batch trial production before mass production to check for problems (such as screen flashing, speaker noise, TP jump point, black screen crash, signal diving, etc.)