

Antenna Test Report

Customer name: bmorn

Project Name: MK1201 (12.5-inch metal shell)

Day period: 2024. 10. 22

Project contact information

Customer contact:
Mobile phone:
Mail box:

Soward structure:

Mobile phone:

Tel: 0755-29985185

Mail box: yangwende@szsward.com

Soward Radio frequency: Xiao Chunyan

Mobile phone:

Tel: 0755-29985185

Mail box: swdrd005@szsward.com

Project profile

1. Project description

Item antenna number	Machine type
1	tablet
Shell material: 12.5-inch metal shell (plastic part for antenna)	

2. Antenna brief

Antenna number	name	Operating frequency band/MHZ	Material/Structure
1	WIFI&GPS&BT&5Gwifi	2400MHZ/2500MHZ & 1575GHz &5.8GHz	FPC

WIFI&GPS&BT antenna S11



WiFi Handling capacity

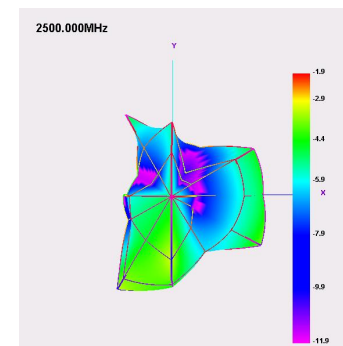
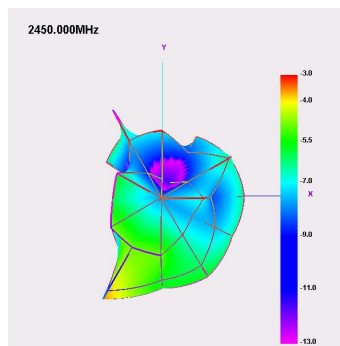
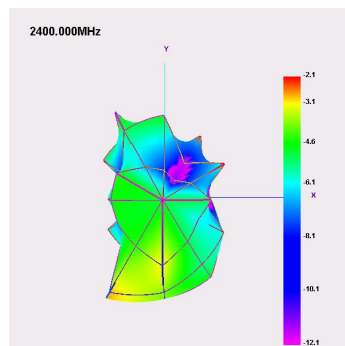
Iperf throughput test						
Machine type	MK1201 - Microstep motherboard	module	Slave board	Software version	Magic_Iperf	
Model number	Frequency band	distance	Test Angle	Test data (TX) lmin mean value	Test data (RX) lmin mean value	Remarks (Number of switching)
1	2.4G	2.4G WIFI (R&D environment 15m)	0°	47.2 Mbps	39.5 Mbps	0
			90°	36.6 Mbps	33.9 Mbps	0
			180°	34.8 Mbps	37.4 Mbps	0
			270°	30.5 Mbps	45.2 Mbps	0
	5G	5F WIFI (R&D environment 15m)	0°	228 Mbps	320 Mbps	0
			90°	198 Mbps	338 Mbps	0
			180°	194 Mbps	323 Mbps	0
			270°	227 Mbps	343 Mbps	0

Measured distance of BT antenna

Measured effect	
Model number	1
Test environment	Soward Research and Development Center
Test equipment	Huawei AM08
Test distance	> 10 m

WIFI&BT Antenna efficiency

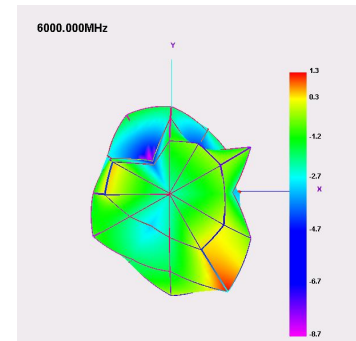
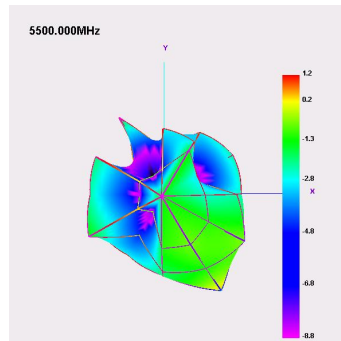
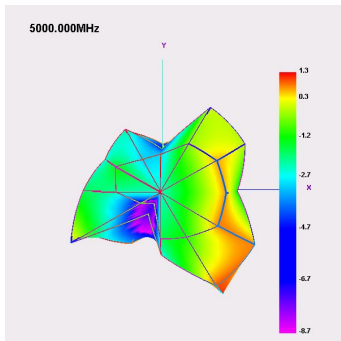
Passive Test For 2.4Gwifi								
Freq	Effi	Effi	Gain	Gain	UHS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
2400	22.87	-6.41	-2.12	-4.27	11.791	11.075	-2.12	-13.25
2410	22.38	-6.5	-2.17	-4.32	11.557	10.818	-2.17	-13.72
2420	24.63	-6.09	-1.7	-3.85	12.587	12.039	-1.7	-13.15
2430	23.04	-6.37	-1.99	-4.14	11.524	11.519	-1.99	-13.24
2440	22.15	-6.55	-2.19	-4.34	10.964	11.187	-2.19	-13.32
2450	18.84	-7.25	-2.98	-5.13	9.235	9.607	-2.98	-13.98
2460	19.57	-7.08	-2.86	-5.01	9.491	10.082	-2.86	-13.56
2470	20.26	-6.93	-2.57	-4.72	9.824	10.438	-2.57	-13.66
2480	22.9	-6.4	-1.84	-3.99	11.174	11.731	-1.84	-12.81
2490	23.2	-6.34	-1.67	-3.82	11.39	11.811	-1.67	-12.25
2500	22.79	-6.42	-1.88	-4.03	11.334	11.459	-1.88	-12.82



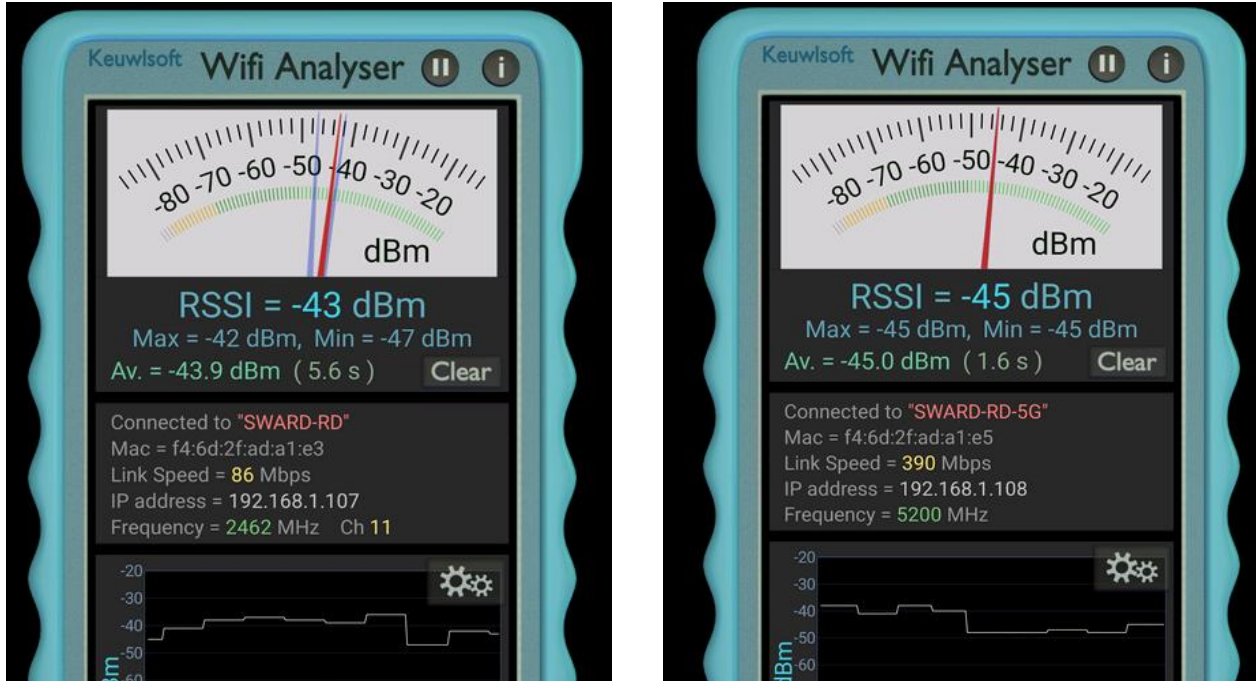
5GWIFI Antenna efficiency

Passive Test For 5Gwifi

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)
5000	38.55	-4.14	1.33	-0.82	25.273	13.277	1.33	-14.59
5100	35.49	-4.5	1.31	-0.84	23.648	11.838	1.31	-25.85
5200	29.64	-5.28	0.89	-1.26	18.094	11.55	0.89	-17.09
5300	28.46	-5.46	0.76	-1.39	15.981	12.482	0.76	-28.63
5400	34.98	-4.56	1.58	-0.57	18.886	16.098	1.58	-15.53
5500	32.76	-4.85	1.25	-0.9	17.659	15.103	1.25	-14.01
5600	34.46	-4.63	0.66	-1.49	19.442	15.021	0.66	-16.19
5700	32.68	-4.86	-0.08	-2.23	19.584	13.094	-0.08	-18.94
5800	37.6	-4.25	1.1	-1.05	22.403	15.194	1.1	-22.33
5900	32.36	-4.9	-0.2	-2.35	19.946	12.418	-0.2	-16.23
6000	35.82	-4.46	1.3	-0.85	22.302	13.523	1.3	-16.71



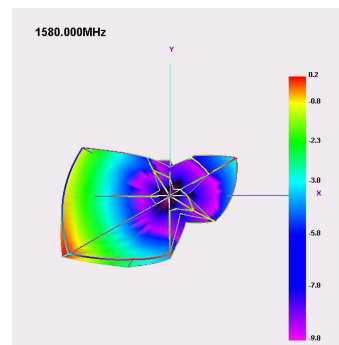
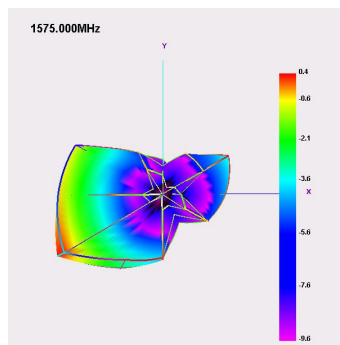
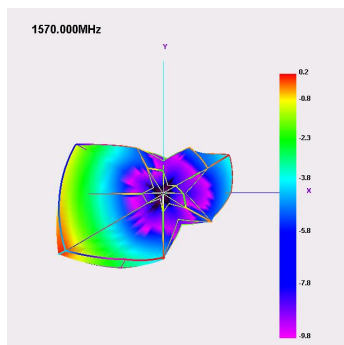
WIFI antenna signal strength measurement picture (data)



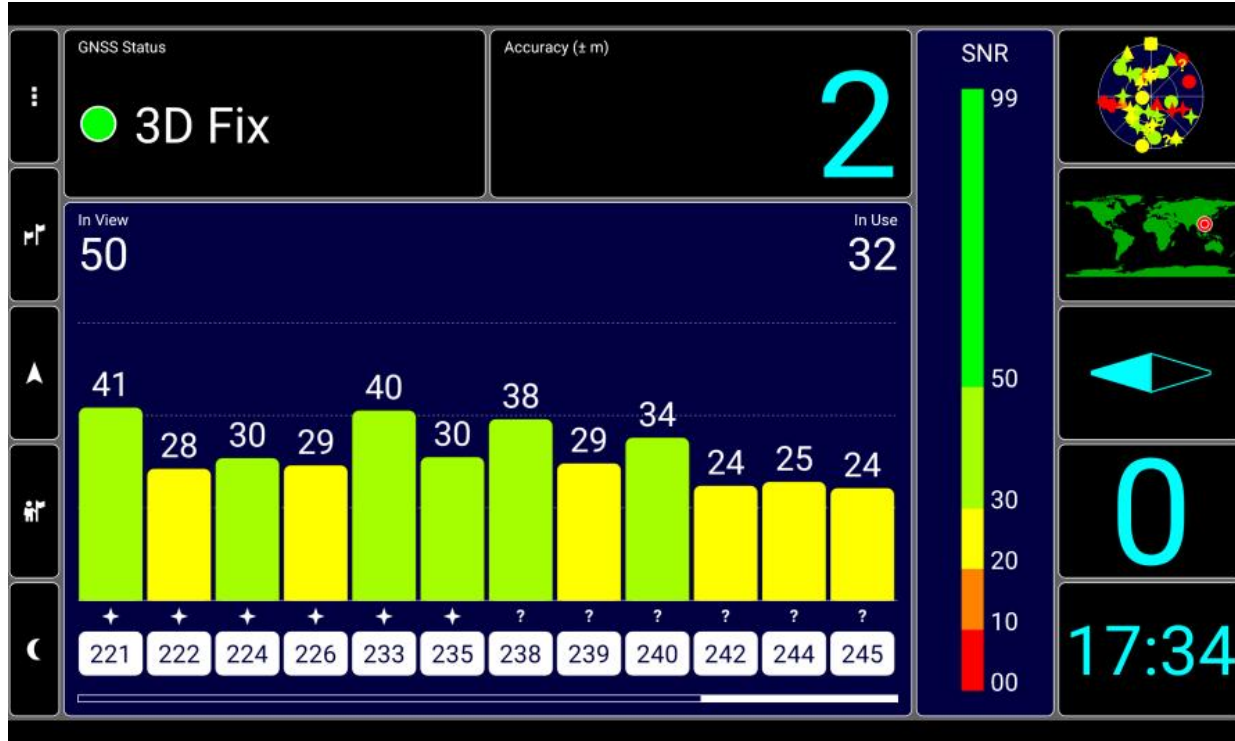
Test site	Our R & D Office					
Test group	2.4G/5G-Distance 15 meters		2.4G/5G-Distance 10 meters		2.4G/5G-Distance 5 meters	
Test frequency band	2.4Gwifi	5Gwifi	2.4Gwifi	5Gwifi	2.4Gwifi	5Gwifi
Signal strength	-43 dBm	-45 dBm	-38 dBm	-38 dBm	-33 dBm	-31 dBm

GPS Antenna efficiency

Passive Test For GPS2								
Freq	Effi	Effi	Gain	Gain	UHS	DHS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
1570	29.3	-5.33	0.23	-1.92	14.098	15.2	0.23	-13.31
1571	29.33	-5.33	0.25	-1.9	14.126	15.209	0.25	-12.88
1572	29.66	-5.28	0.23	-1.92	14.277	15.388	0.23	-12.83
1573	29.76	-5.26	0.29	-1.86	14.284	15.476	0.29	-12.5
1574	30.1	-5.22	0.3	-1.85	14.463	15.632	0.3	-12.18
1575	30.3	-5.19	0.36	-1.79	14.622	15.674	0.36	-12.47
1576	30.14	-5.21	0.31	-1.84	14.512	15.629	0.31	-12.35
1577	30	-5.23	0.26	-1.89	14.522	15.478	0.26	-12.01
1578	29.88	-5.25	0.29	-1.86	14.433	15.445	0.29	-12.14
1579	29.53	-5.3	0.27	-1.88	14.297	15.232	0.27	-12.12
1580	29.31	-5.33	0.2	-1.95	14.244	15.07	0.2	-12.17

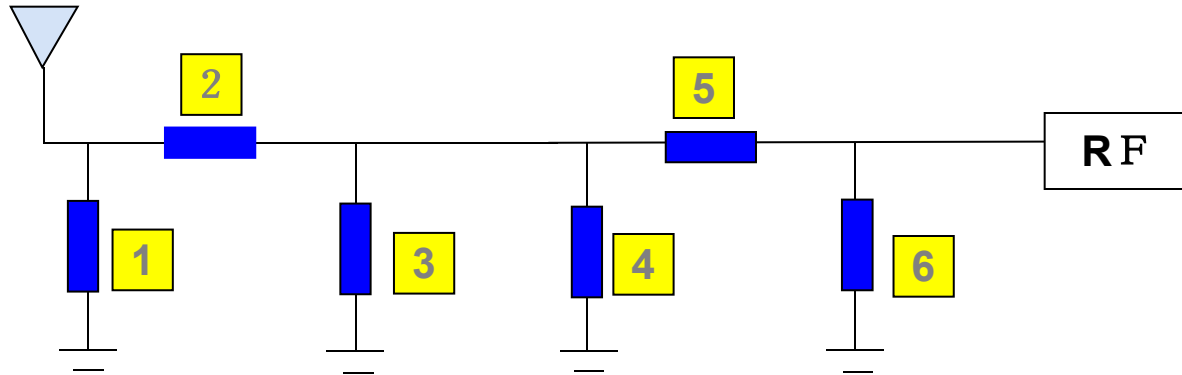


GPS Actual pictures (data)



Test location: The roof of our company
Test time: 15:20 to 15:50
Test direction: East, South, West, North
Cold start positioning time: < 60sec

Antenna matching



Antenna matching is not changed.

Main antenna	1	2	3	4	5	6	remark
Original matching							
Change matching							