Debugging Report of SWARD Antenna

Customer name:Estone Technology LTD.,

Project name:A1000-40

Date: April 26, 2022

A, floor 4, building 13, rundongsheng Industrial Zone, Xixiang street, Bao'an District, Shenzhen City, Guangdong Province

Project introduction

1. Brief description of the project

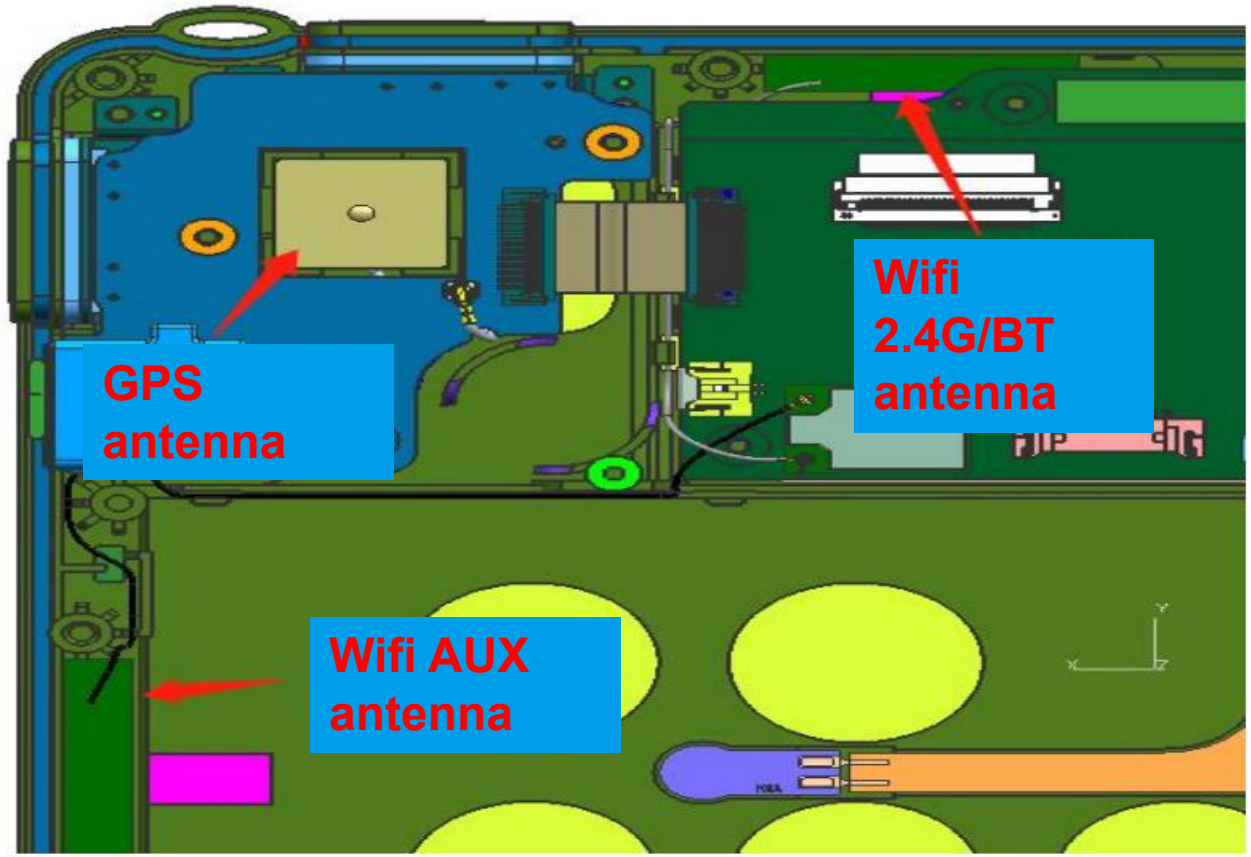
Number of antennas	Machine type
Wifi 2.4G & BT	Tablet
Wifi AUX	Tablet
The back shell is plastic and the front shell is metallic with LCD and TP.	

Project introduction

2. Brief description of antenna

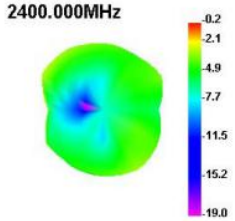
Antenna number	Name	Working frequency band /MHZ	Material/structure
1	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	PCB
2	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	PCB
3	GPS	1575MHz	Ceramic

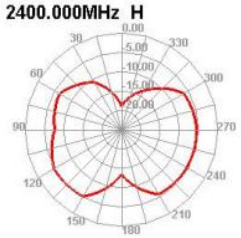
Antenna layout

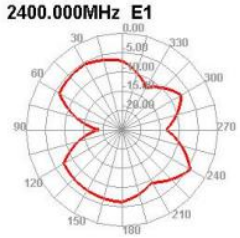


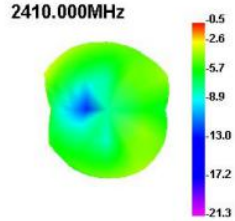
WiFi antenna efficiency --- Main Antenna

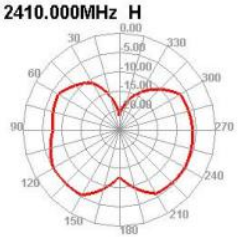
Passive Test For 2.4Gwifi								
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHIS (%)	DHIS (%)	Max (dB)	Min (dB)
2400	26.8	-5.72	-0.24	-2.39	13.893	12.909	-0.24	-18.95
2410	25.26	-5.97	-0.52	-2.67	13.237	12.027	-0.52	-21.35
2420	24.73	-6.07	-0.72	-2.87	13.054	11.672	-0.72	-23.44
2430	23.26	-6.33	-1.02	-3.17	12.329	10.929	-1.02	-21.08
2440	22.44	-6.49	-1.21	-3.36	11.816	10.625	-1.21	-18.24
2450	22.36	-6.5	-1.19	-3.34	11.706	10.658	-1.19	-17.1
2460	22.23	-6.53	-1.34	-3.49	11.619	10.611	-1.34	-17.23
2470	21.96	-6.58	-1.52	-3.67	11.547	10.41	-1.52	-16.5
2480	21	-6.78	-1.91	-4.06	11.102	9.897	-1.91	-15.98
2490	20.46	-6.89	-2.23	-4.38	10.888	9.573	-2.23	-15.96
2500	18.09	-7.43	-2.76	-4.91	9.698	8.392	-2.76	-15.9

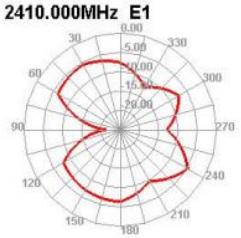






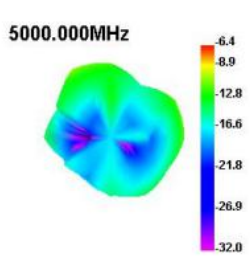


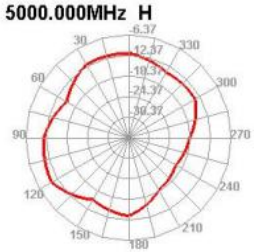


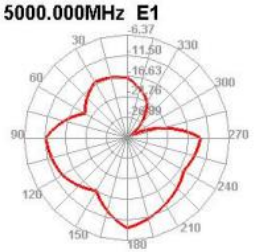


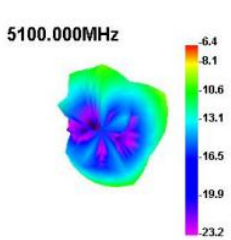
5G wifi Main antenna efficiency

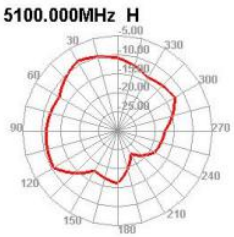
Passive Test For 5Gwifi								
Freq	Effi	Effi	Gain	Gain	UHIS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
5000	4.03	-13.94	-6.37	-8.52	1.391	2.642	-6.37	-32.02
5100	5.1	-12.93	-6.41	-8.56	1.856	3.24	-6.41	-23.24
5200	5.78	-12.38	-5.81	-7.96	2.055	3.73	-5.81	-26.59
5300	6.15	-12.11	-5.97	-8.12	2.141	4.004	-5.97	-21.61
5400	6.83	-11.66	-6.25	-8.4	2.642	4.188	-6.25	-25.49
5500	7.52	-11.24	-5.4	-7.55	2.961	4.561	-5.4	-20.62
5600	10	-10	-3.54	-5.69	4.244	5.753	-3.54	-20.05
5700	15.28	-8.16	-2.09	-4.24	6.465	8.811	-2.09	-21.03
5800	17.72	-7.52	-1.41	-3.56	6.929	10.792	-1.41	-21.08
5900	18.7	-7.28	-1.08	-3.23	6.933	11.765	-1.08	-19.54
6000	23.79	-6.24	-0.72	-2.87	10.902	12.888	-0.72	-17.7

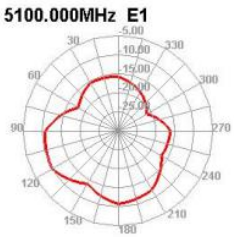






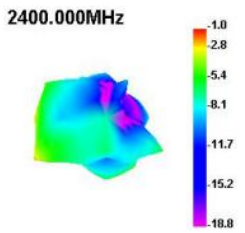


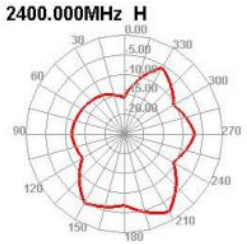


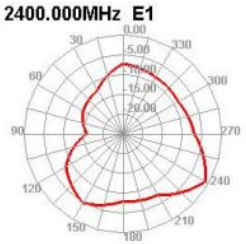


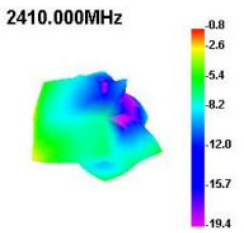
BT antenna efficiency --- AUX antenna

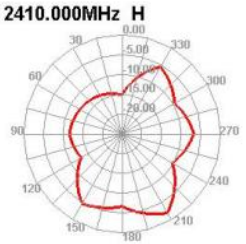
Passive Test For 2.4Gwifi								
Freq	Effi	Effi	Gain	Gain	UHIS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
2400	18.07	-7.43	-0.97	-3.12	6.674	11.394	-0.97	-18.78
2410	19.08	-7.19	-0.77	-2.92	7.148	11.936	-0.77	-19.42
2420	20.76	-6.83	-0.64	-2.79	7.883	12.873	-0.64	-19.97
2430	21.51	-6.67	-0.51	-2.66	8.11	13.4	-0.51	-20.86
2440	22.84	-6.41	-0.48	-2.63	8.676	14.167	-0.48	-21.97
2450	24.39	-6.13	-0.32	-2.47	9.359	15.03	-0.32	-22.53
2460	25.7	-5.9	-0.42	-2.57	10.13	15.574	-0.42	-21.84
2470	26.57	-5.76	-0.37	-2.52	10.647	15.922	-0.37	-20.53
2480	27.78	-5.56	-0.32	-2.47	11.345	16.434	-0.32	-19.43
2490	28.33	-5.48	-0.29	-2.44	11.724	16.609	-0.29	-18.22
2500	26.11	-5.83	-0.67	-2.82	11.066	15.039	-0.67	-18.58

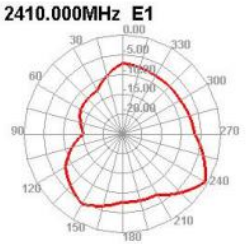






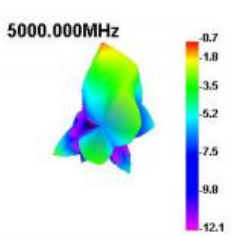


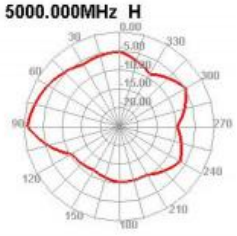


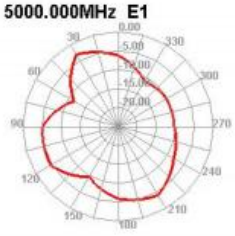


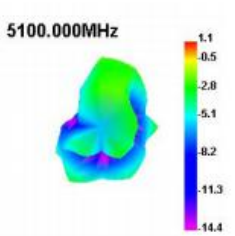
5G antenna efficiency --- AUX antenna

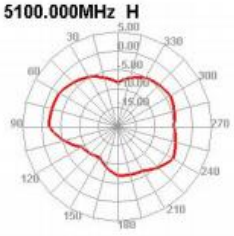
Passive Test For 5Gwifi								
Freq	Effi	Effi	Gain	Gain	UHIS	DHIS	Max	Min
(MHz)	(%)	(dB)	(dBi)	(dBd)	(%)	(%)	(dB)	(dB)
5000	23.62	-6.27	-0.65	-2.8	12.287	11.338	-0.65	-12.12
5100	29.27	-5.34	1.06	-1.09	14.275	14.994	1.06	-14.42
5200	30.02	-5.23	1.96	-0.19	13.165	16.855	1.96	-12
5300	26.62	-5.75	1.7	-0.45	11.528	15.097	1.7	-12.51
5400	28.63	-5.43	1.8	-0.35	13.421	15.212	1.8	-14.01
5500	27.4	-5.62	1.42	-0.73	13.922	13.481	1.42	-14.57
5600	31.1	-5.07	1.49	-0.66	16.589	14.507	1.49	-24.13
5700	40.51	-3.92	2.17	0.02	20.738	19.772	2.17	-13.43
5800	46.8	-3.3	2.09	-0.06	23.224	23.578	2.09	-15.55
5900	42.2	-3.75	2.03	-0.12	21.228	20.972	2.03	-12.97
6000	45.21	-3.45	1.72	-0.43	22.189	23.016	1.72	-16.73

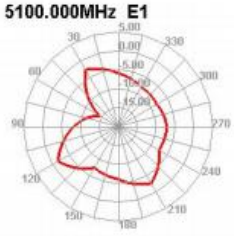








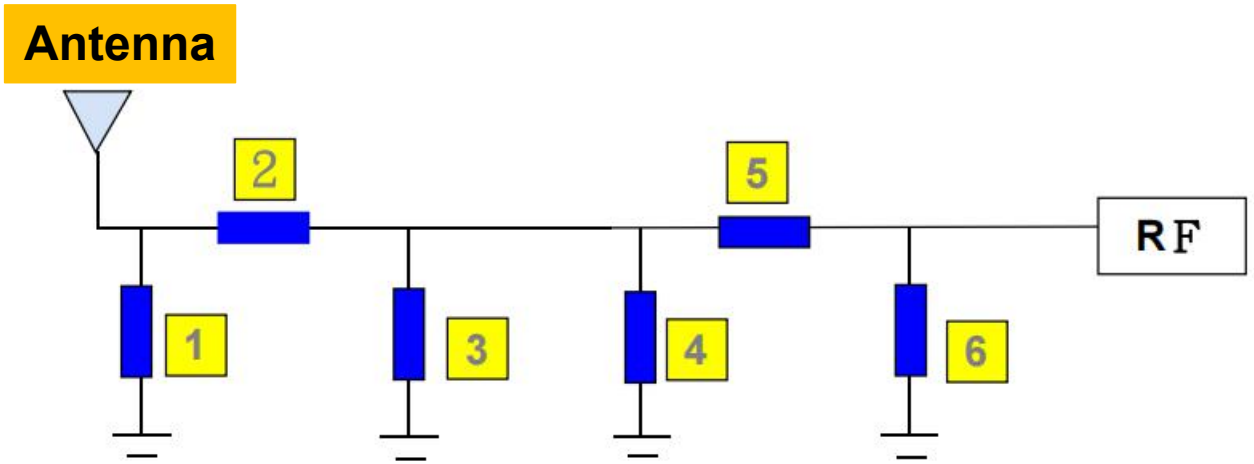




WIFI Antenna active data

机型编号	信道	b模式（11MHz）		g模式（54MHz）		n模式（MCS7）		a模式（54MHz）	
		TRP	TIS	TRP	TIS	TRP	TIS	TRP	TIS
1	1	4.27	-71.48	3.22	-61.65	3.84	-57.08	NA	NA
	7	5.3	-73.83	6.41	-61.31	6.43	-59.17	NA	NA
	13	5.58	-74.85	2.26	-54.52	1.56	-59.89	NA	NA
	36	NA	NA	NA	NA	5.61	-58.4	7.3	-68.84
	100	NA	NA	NA	NA	11.63	-68.15	12.18	-68.33
	136	NA	NA	NA	NA	10.37	-68.01	8.82	-69.72
	165	NA	NA	NA	NA	12.9	-67.7	12.08	-69.58

Antenna matching



Note: 1.This report is based on the actual debugging and testing of prototype, including environmental treatment, antenna position and the assembly position of each device can not be changed at random;

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

3. List of sensitive components:

TP (material, coating, wiring, etc.)

Screen (amplifying circuit, led, layout design, etc.)

Shell material (antenna assembly mode, structure interference, shell material, antenna position, height and area, etc.)

Main board (main board conduction, RF circuit matching, PA, Duplexer, filter, LNA, power circuit, etc.)

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

4. Due to the small quantity or only one sample during debugging machine, some probability problems can not be completely found out. It is suggested to conduct small batch trial production before mass production to find out the problem (such as flashing screen and crashing screen, horn noise, TP jump point, black screen crash, signal diving, etc.)