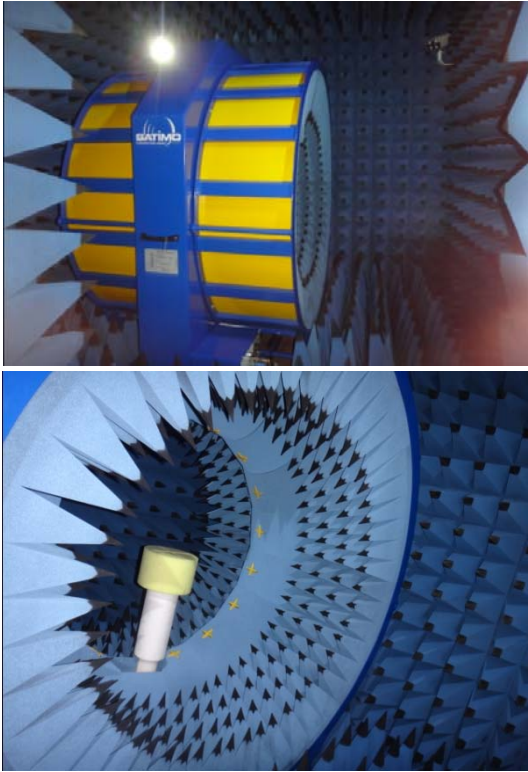


Antenna Test Report

Customer Name	POLARIS	Project name	G1
Debugging frequency band	2G/3G/4G	Structural approach	LDS
RF Engineer	Bo Liu	Structural engineer	Qiang Du
Antenna type	PIFA	Date	2023-03-10

深圳市安弗特电子有限公司

AFT tech Electronic Co., Ltd. (Shenzhen)



The StarLab 3D laboratory of SATIMO company, originally imported from France, can accurately and quickly test the TRP, TIS, efficiency, gain, Apple image, directional image and other parameter data of communication terminal products such as mobile phones, tablets, and laptops.

Report Version Summary

Matching circuit and passive parameters of each antenna

Conducting data

Main antenna OTA test data

GPS measurement effect

Overall environmental treatment

Risk reminder during debugging process

Summary

深圳市安弗特电子有限公司
AFT tech Electronic Co., Ltd. (Shenzhen)

Report Version Summary

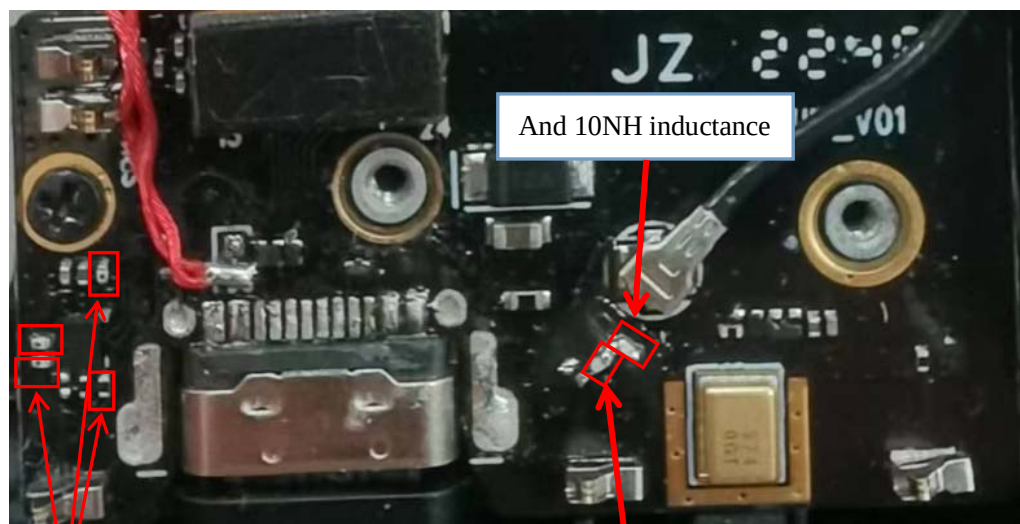
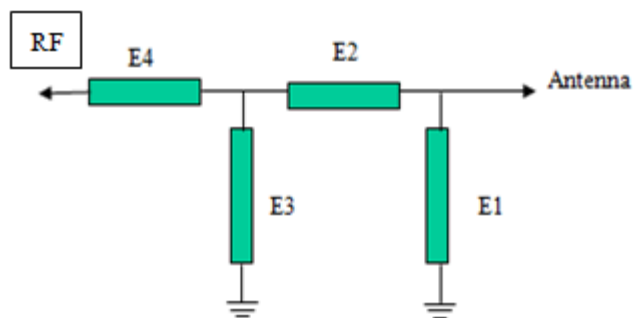
Version	Date	Content Overview
V1.0	2022-12-21	Preliminary Antenna Test Report
V2.0	2023-01-06	Sample Antenna Test Report
V3.0	2023-03-06	Trial production machine antenna test report
V4.0	2023-03-10	Trial production machine antenna test report

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Main antenna matching circuit:

Element	E1	E2	E3	E4
Value		3 NH	10 NH	

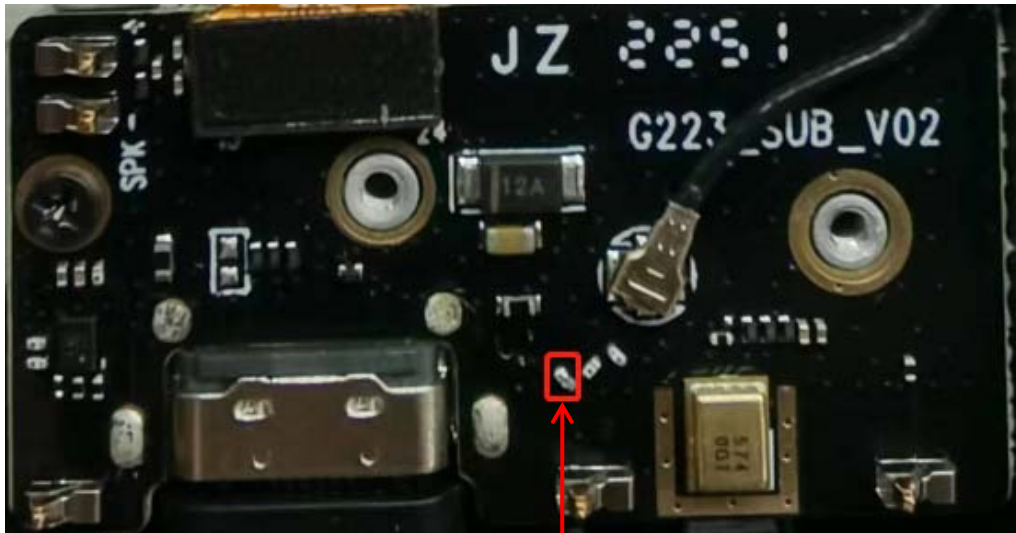
Our company has made changes to the main antenna matching circuit!



Switch matching not
changed

Series 3NH inductance

And 10NH inductance

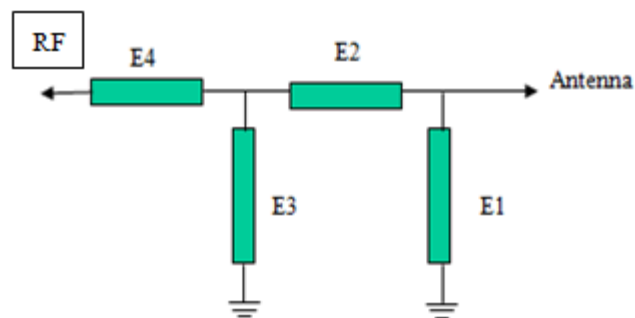


Remove 0.8PF capacitor here

Diversity antenna matching circuit

Element	E1	E2	E3	E4
Value				

Our company has not made any changes to the diversity antenna matching circuit!



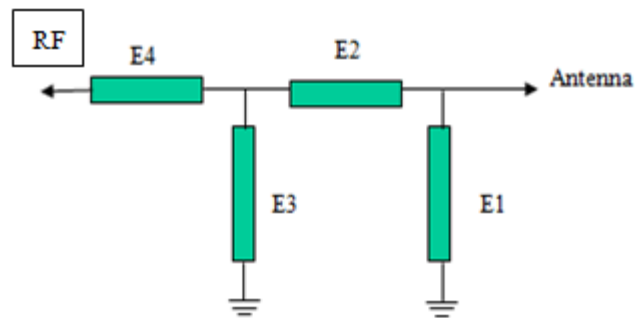
深圳市安弗特电子有限公司

AFT tech Electronic Co., Ltd. (Shenzhen)

GPS/WIFI antenna matching circuit:

Element	E1	E2	E3	E4
Value				

Our company has not made any changes to the diversity antenna matching circuit!



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Main antenna Fs OTA data: 1#

Band	Channal	TRP(dBm)	TIS(dBm)	Band	Channal	TRP(dBm)	TIS(dBm)
GSM 900	L	28.5		DCS 1800	L	26.1	
	M	28.1			M	26.7	
	H	27.6	-103.0		H	26.1	-104.4
GSM 850	L	28.1		PCS 1900	L	26.4	
	M	28.2			M	25.9	
	H	28.1	-104.4		H	25.2	-104.5
WCDMA 850	L	18.0		WCDMA 900	L	19.0	
	M	16.5			M	19.4	
	H	16.5	-105.6		H	19.8	-104.5
WCDMA 1900	L	18.7		WCDMA 2100	L	19.2	
	M	18.0			M	19.6	
	H	18.8	-105.7		H	19.5	-105.5
LTE-B1 (10M)	L	18.7		LTE-B2 (10M)	L	18.3	
	M	19.2			M	18.8	
	H	19.5	-93.9		H	18.7	-92.2
LTE-B3 (10M)	L	18.8		LTE-B4 (10M)	L	18.8	
	M	18.5			M	18.8	
	H	18.2	-94.2		H	18.3	-91.5
LTE-B5 (10M)	L	18.8		LTE-B7 (10M)	L	15.6	
	M	18.0			M	16.4	
	H	17.7	-91.3		H	16.8	-90.1
LTE-B8 (10M)	L	19.7		LTE-B12 (10M)	L	17.3	
	M	19.8			M	17.7	
	H	19.5	-90.6		H	17.4	-91.5
LTE-B17 (10M)	L	17.7		LTE-B18 (20M)	L	17.1	
	M	17.8			M	17.6	
	H	17.5	-92.5		H	17.8	-92.9
LTE-B19 (10M)	L	18.2		LTE-B20 (10M)	L	18.8	
	M	18.0			M	18.2	
	H	17.6	-93.1		H	18.5	-91.5
LTE-B21 (10M)	L	13.4		LTE-B26 (10M)	L	18.2	
	M	13.5			M	18.6	
	H	14.1	-90.0		H	17.2	-93.1

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AFT tech Electronic Co., Ltd. (Shenzhen)

LTE-B38 (20M)	L	17.1		LTE-B39 (20M)	L	18.2	
	M	17.6			M	18.3	
	H	17.8	-92.5		H	18.4	-92.1
LTE-B40 (20M)	L	16.7		LTE-B41 (20M)	L	17.0	
	M	16.6			M	17.3	
	H	16.4	-92.2		H	17.5	-88.2

WIFI antenna Fs OTA data

Agreement	Channel	TRP (dBm)	TIS (dBm)
2.4G-B(11M)	1	14.8	-83.0
	6	14.5	-83.4
	13	14.4	-82.7

Agreement	Channel	TRP (dBm)	TIS (dBm)
5G-A(54M)	36	12.0	-71.9
	64	11.4	-71.2
	165	10.0	-70.6

深圳市安弗特电子有限公司

AFT tech Electronic Co., Ltd. (Shenzhen)

Main antenna Fs OTA data: 2#

Band	Channal	TRP(dBm)	TIS(dBm)	Band	Channal	TRP(dBm)	TIS(dBm)
GSM 900	L	27.1		DCS 1800	L	26.5	
	M	26.4			M	26.7	
	H	25.6	-102.0		H	26.5	-104.5
GSM 850	L	27.9		PCS 1900	L	26.4	
	M	27.5			M	25.9	
	H	26.8	-104.3		H	25.1	-104.2
WCDMA 850	L	18.7		WCDMA 900	L	18.7	
	M	17.0			M	18.9	
	H	16.5	-105.3		H	19.5	-103.8
WCDMA 1900	L	17.8		WCDMA 2100	L	19.7	
	M	18.3			M	19.8	
	H	18.7	-105.8		H	19.9	-105.5
LTE-B1 (10M)	L	18.5		LTE-B2 (10M)	L	18.3	
	M	19.0			M	18.1	
	H	19.0	-92.5		H	18.1	-92.5
LTE-B3 (10M)	L	18.6		LTE-B4 (10M)	L	18.4	
	M	18.7			M	18.5	
	H	18.3	-94.1		H	18.3	-92.1
LTE-B5 (10M)	L	18.8		LTE-B7 (10M)	L	16.0	
	M	18.4			M	17.5	
	H	17.5	-91.2		H	17.4	-91.1
LTE-B8 (10M)	L	19.9		LTE-B12 (10M)	L	17.4	
	M	19.1			M	17.5	
	H	18.7	-89.8		H	17.2	-91.4
LTE-B17 (10M)	L	17.0		LTE-B18 (20M)	L	18.2	
	M	17.0			M	18.2	
	H	17.2	-92.8		H	18.8	-92.6
LTE-B19 (10M)	L	18.8		LTE-B20 (10M)	L	17.6	
	M	18.6			M	17.1	
	H	17.8	-93.2		H	17.3	-91.4
LTE-B21 (10M)	L	13.5		LTE-B26 (10M)	L	18.2	
	M	13.5			M	18.5	
	H	14.2	-90.0		H	17.4	-93.1

深圳市安弗特电子有限公司 **AFT tech Electronic Co., Ltd. (Shenzhen)**

LTE-B38 (20M)	L	16.8		LTE-B39 (20M)	L	18.0	
	M	17.4			M	18.2	
	H	17.6	-91.5		H	18.5	-92.5
LTE-B40 (20M)	L	16.6		LTE-B41 (20M)	L	17.2	
	M	16.7			M	17.5	
	H	16.9	-92.4		H	17.7	-89.8

WIFI antenna Fs OTA data

Agreement	Channel	TRP (dBm)	TIS (dBm)
2.4G-B(11M)	1	14.1	-83.3
	6	14.3	-83.5
	13	14.2	-82.8

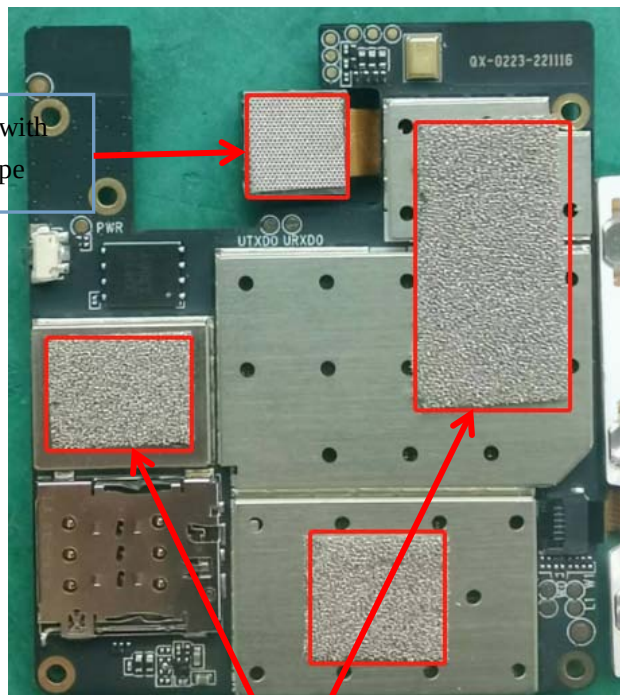
Agreement	Channel	TRP (dBm)	TIS (dBm)
5G-A(54M)	36	12.0	-72.2
	64	11.2	-71.5
	165	10.0	-70.7

[illegible]

Environmental treatment:



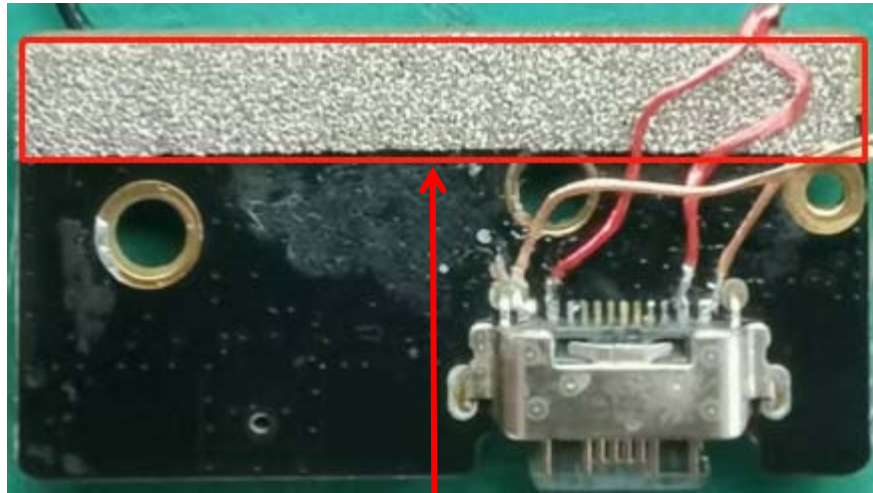
Wrap the screen with conductive cloth for processing



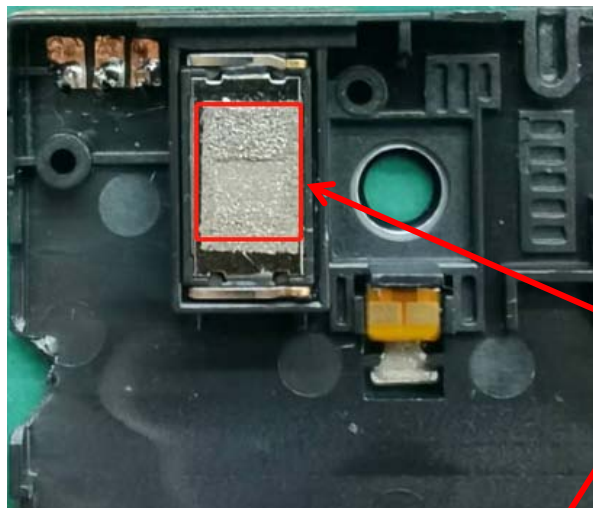
The camera is grounded with double-sided adhesive tape

The motherboard is grounded with conductive cotton

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Small board grounding treatment



Grounding treatment with
conductive cotton for speakers





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Precautions:

1. This antenna is a mold like antenna. Any changes to the SPCB or RF circuit materials on the motherboard, as well as changes to phone accessories such as cameras, screens, speakers, motors, batteries, and case technology, must be tested and verified by our company before use.
2. If your company needs to conduct third-party or solution company verification for this project, please provide the prototype to our company for retesting at least one working day in advance and then send it for testing. This is because the motherboard and environmental treatment will have an impact on antenna performance, to avoid delaying the project progress by sending the prototype twice or multiple times!

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Antenna gain value

	Band	Gain
GSM	GSM1800 (1710~1785 MHz)	0.98dbi
	GSM1900 (1850-1910 MHz)	1.12dbi
	GSM850 (824-849 MHz)	0.32dbi
	GSM900 (880-915 MHz)	0.44dbi
WCDMA	WCDMA2100 B1 (1920-1980 MHz)	1.24dbi
	WCDMA1900 B2 (1850-1910 MHz)	1.12dbi
	WCDMA900 B8 (880-915 MHz)	0.44dbi
	WCDMA850 B5 (824-849 MHz)(B6,B19)	0.32dbi
LTE	FDD 1:(1920-1980MHz)	1.24dbi
	FDD 2: (1850 -1910)	1.12dbi
	FDD 3:(1710-1785MHz)	0.98dbi
	FDD 4: (1710-1755MHz)	0.98dbi
	FDD 5: (824-849)	0.32dbi
	FDD 7: (2500-2570MHz)	1.46dbi
	FDD 8: (880-915MHz)	0.44dbi
	FDD 12: (699-716MHz)	0.12dbi
	FDD 17: (704-716MHz)	0.12dbi
	FDD 18:(815-830MHz)	0.32dbi
	FDD 19:(830-845MHz)	0.32dbi
	FDD 20:(832-862MHz)	0.32dbi
	FDD 21:(1448-1463MHz)	0.83dbi
	FDD 26:(814-849MHz)	0.32dbi
	TDD 38: (2570-2620MHz)	1.46dbi
	TDD 39: (1880-1920MHz)	1.12dbi
	TDD 40: (2300-2400MHz)	1.44dbi
	TDD 41:(2496-2690MHz)	1.46dbi
2.4G BT	2.4~2.4835GHz	1.3dbi
2.4G WLAN	2400MHz	1.3dbi
	2450MHz	1.3dbi
	2500MHz	1.3dbi
5G WLAN	5.15GHz	1.7dbi
	5.47GHz	1.7dbi
	5.85GHz	1.7dbi
GPS	1575.42MHz	0.87dbi