



深圳市昱晟通讯设备有限公司

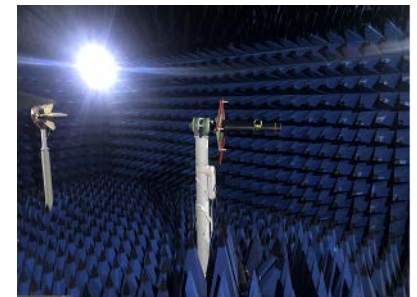
Yusheng Communications-equipment Co.,LTD

Zeolite Technology M45067BM Antenna Test Report

RF: He Lei

Date: 2021-12-17

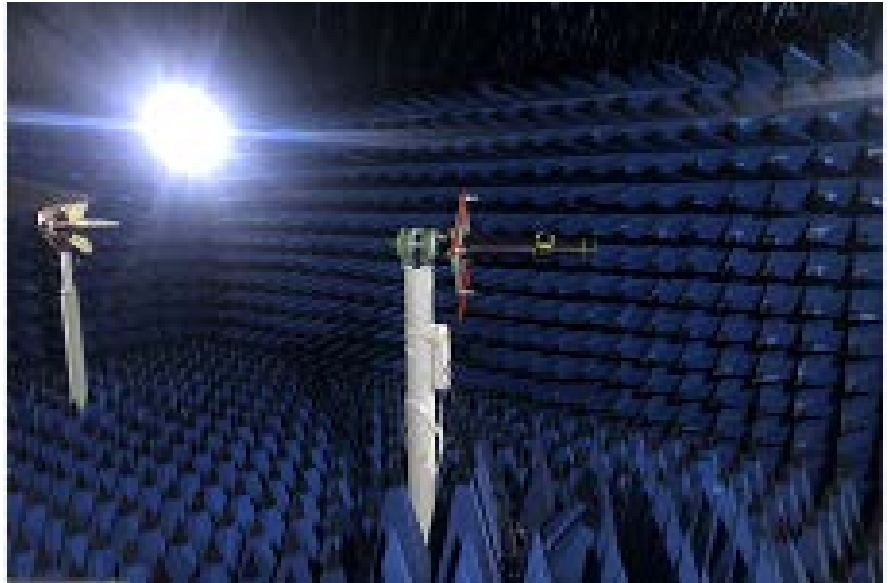
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Project development environment

We are moving from the Internet era to the intelligent era, and the country is building a digital society and a smart city. In the next 5-10 years, both the consumer electronics market and the Internet of Things market have huge potential for development. The field of wireless communication is very diversified. In the future, Yusheng will rely on the customer platform advantages of the main antenna business and its own comprehensive strength, and strive to provide customers with professional product solutions with market competitiveness.



Yusheng Communication's products cover almost all antenna applications of wireless terminal equipment, including automotive antennas, high-precision surveying and mapping antennas, UAV ground and satellite data navigation, high-precision positioning antennas, wireless transmission of medical equipment, and consumer antennas (mobile phone antennas), PAD, laptop antenna), base station/indoor distribution antenna, smart wearable antenna (smart watch, TWS headset), security home antenna and a variety of wireless data transmission and wireless control smart device antennas, etc.

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Summary & Additional Notes

Introduction
to project

machine type	cell phone			
plate type	motherboard			
Frequency band and antenna material	main antenna	frequency part		material quality
		2G	GSM850/900/1800/1900	FPC
		3G	WCDMA B 2/5	
	4G	LTE : FDD: 2/4/5/7/28AB/38		
	other antennas	GWB	1575.42MHz/2.450G	FPC
		DRX	1.7GHz-2700GHz	FPC
performance requirements	Execute according to customer requirements			

**Outline of the
report version**

report version	report time	Problems solved by this antenna research and development
V0.4	2021-12-15	Scripted Antenna Whole Machine OTA Test Report
V0.5	2021-12-17	Add Antenna Gain

Antenna Active Parameters

Test	GSM 850			PCS 1900		
Result	128	190	251	512	661	810
TRP (dBm)	26.25	26.44	27.13	25.42	25.37	25.19
TIS (dBm)			-102.09			-102.73

Test	EGSM 900			DCS 1800		
Result	1	62	124	512	698	885
TRP (dBm)	24.75	24.56	24.31	24.15	23.89	23.14
TIS (dBm)			-102.26			-102.87

Antenna Active Parameters

Test	WCDMA_I I			WCDMA_V		
Result	9662	9800	9938	4357	4408	4458
TRP (dBm)	17.67	18.13	17.42	15.79	16.25	16.44
TIS (dBm)			-103.39			-101.87

Multi-Antenna

Active

Test	FDD B2			FDD B4		
Result	18700	18900	19100	20050	20175	20350
TRP (dBm)	17.85	18.12	17.45	17.11	17.16	17.35
TIS (dBm)			-92.26			-92.43

Test	FDD B5			FDD B7		
Result	20450	20525	20600	20800	21100	21400
TRP (dBm)	16.26	16.57	16.88	16.39	16.78	16.59
TIS (dBm)			-91.41			-90.22

Test	FDD B28A			FDD B28B		
Result	9260	9435	9610	9260	9435	9610
TRP (dBm)	16.47	16.85	16.62	16.24	16.51	16.73
TIS (dBm)			-90.12			-90.04

**Antenna Active
Parameters**

Test	TDD B38		
Result	37850	38000	38150
TRP (dBm)	16.15	16.47	16.52
TIS (dBm)			-89.14

GPS test data

ID	CNR	ID	CNR	ID	CNR	ID	CNR
G1	0.0/-	G9	42.6/-	G16	28.4/-	G26	42.2/-
G27	39.7/-	R80	31.5/-	Q1	26.0/-	Q2	32.0/-
Q3	38.0/-	Q7	0.0/-	S50	25.0/-		

Antenna environment
processing and improvement



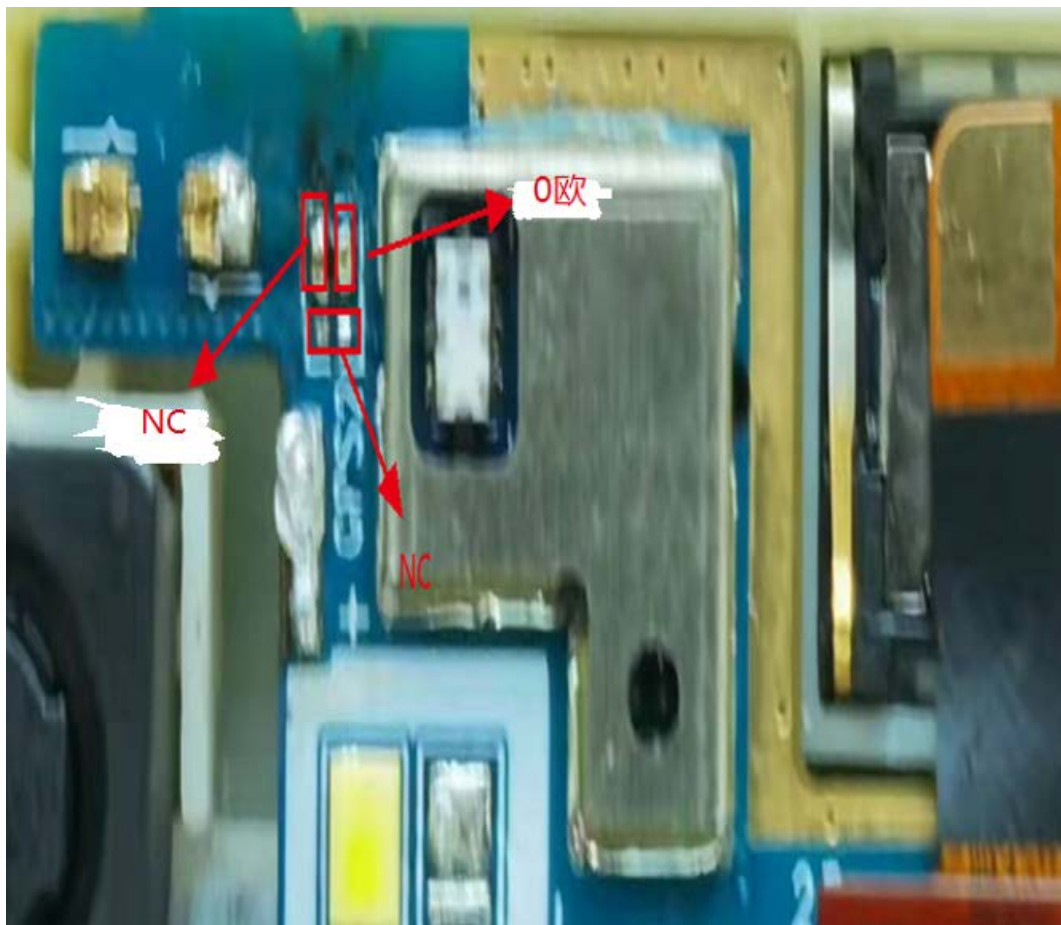
1. The motherboard and the screen are grounded, please increase the thickness of the sponge, all the trial production machines are not Connect to the ground, so the GPS will be very poor.

Antenna environment
processing and improvement



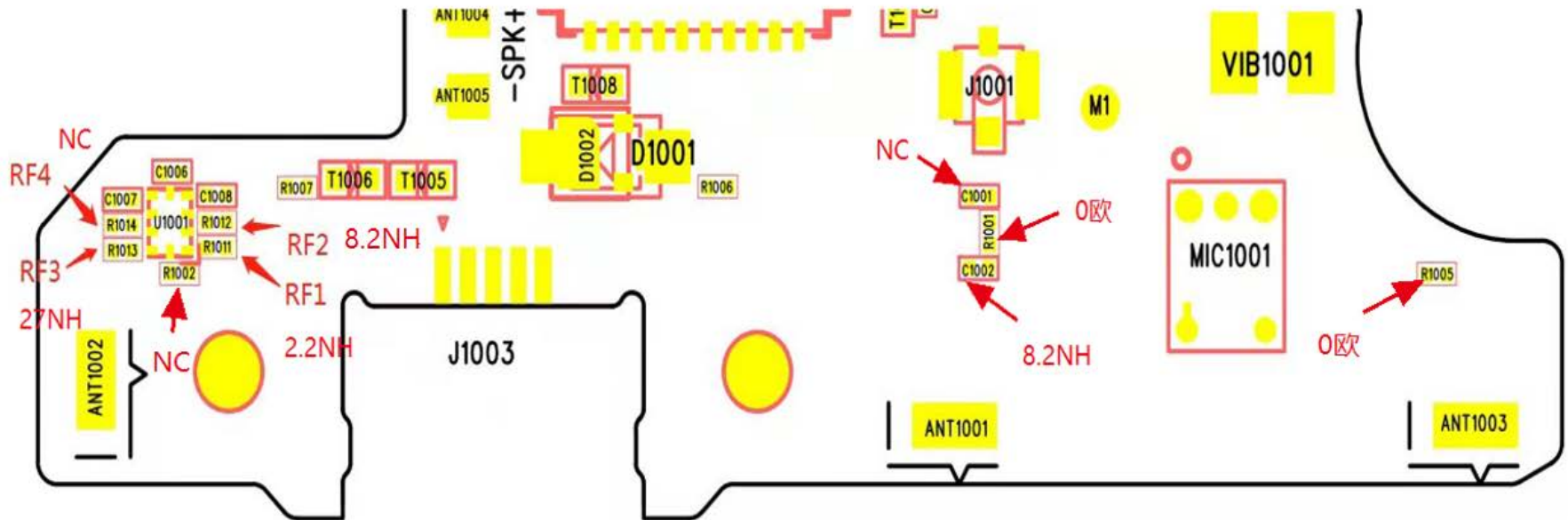
1. The small board is grounded, and the motor is grounded
2. Please stick a square sponge on the small plate grounding sponge to ensure the consistency of subsequent machines

Three-in-one main
road matching



1. Parallel NC _ Serial 0 ohms, as shown in the figure

Small board main circuit
and switch matching



Main Road Match: And 8.2NH

- RF1 : 2.2NH
- RF2 : 8.2NH
- RF3 : 27NH
- RF4 : NC

switch logic

RF1	GSM	900/1900
	WCDMA	B2
	LTE	B2
RF2	GSM	850
	WCDMA	B5
	LTE	B5
RF3	LTE	28AB
RF4	GSM	1800
	WCDMA	
	LTE	B4/7/38

switch logic

Band	Gain (MAX)		
GSM850	0.65	GPS	1.19
EGSM900	0.43	WiFi	1.24
DCS1800	0.58	BT	1.24
PCS1900	0.77		
WCDMA1900	0.77		
WCDMA850	0.65		
Band2	0.77		
Band4	0.68		
Band5	0.65		
Band7	0.69		
Band28A	0.59		
Band28B	0.59		
Band38	0.66		

Summarize

1. According to the report, the American frequency band can be fully covered, and the performance of the American frequency band antenna is better, because only 850/1900 needs to be considered in the Americas , so 900/1800 can be completely sacrificed.
2. The problem of grounding has been discussed with your company's structural engineer today. The grounding area of the motherboard and the screen will increase, and the sponge will thicken.
3. Considering the M45067DG antenna sharing problem, our company recommends doing it separately, because the frequency band of the M45067DG is in Europe. If you debug it separately, it will better control the performance, so as to avoid the frequency offset problem of the subsequent trial production machine.

Summary &
Additional Notes

Summarize

Script Antenna OTA Machine Test Report

illustrate

Please carefully confirm whether the matching mentioned in the report is modified and whether the environment is imported, which will directly affect Antenna performance.

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The parameters provided in this report are only the parameters that your company gave to our company for commissioning and testing, and do not represent the final project of your company production status.

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If your company has a prototype with updated status (replacement of materials, software, environmental treatment, etc.), please submit it to our company as soon as possible
Verify to see if antenna performance is affected.

illustrate

If your company needs to send it to a third party for retesting or sending it to a customer for testing, please be sure to hand over the machine that needs to be tested to me.
The company conducts tests to confirm, because various factors (mainboard, assembly consistency, antenna assembly differences) may lead to deviations in antenna parameters