样品承认书

Part Approved Sheet

深圳市三好无线通信有限公司

Shenzhen Sanhao Wireless Communication Co., Ltd

客 户 Customer Name	INVENTUS GROUP LTD
客户型号 Customer Model	**CT1**
物料编码 Material code	
主天线编码 main antenna	**H89A-MAIN-V2**
分集天线编码 diversity antenna	**H89A-DIV-V5.0**
LTE 天线编码 LTE antenna	**H89A-LTE-V5.0**
三合一天线编码 Three in one antenna	**H89A-GWB-V5.0**
NFC天线编码 NFC antenna	**H89A-NFC-V1**
版 本 version	
制作日期 date	**2024.03.15**

编 制 staffing	RF 审核 Reviewer	结构审核 Structure of the audit	核准/盖章 Approved
朱坤	熊忠贵	李和盛	周武

客户确认签章 **customer signature:**

公司地址 Add：深圳市宝安区大宝路 49-1 号金富来大厦 501-508
501-508, Jinfulai Building, No. 49-1 Dabao Road, Bao 'an District, Shenzhen
电话Tel：0755-23949781 传真Fax：0755-82579569

目录

1. Basic information and pictures of the project
项目基本信息和图片 3

1.1 Project Information 项目基本信息 3

1.2 Sample diagram of cell phone and antenna
样机和天线样品图. 3

2. electric performance test 电性能测试项目 4

2.1 Electrical performance items
电性能项目. 5

2.2 Test methods and equipment
测试方法和设备. 6

3. 整机环境处理和天线匹配电路
Environmental processing and antenna matching circuits
. 7

3.1 整机环境处理 Environmental treatment
. 7

3.2 Match circuit 天线匹配电路 7

4. Testing Data 测试数据 8

4.1 增益测试数据
Gain test data
. 8

4.2 GPS/WIFI/BT. 9

4.3 测试结论 Test Verdict 9

5. 工程图纸 Drawing Sheets 9

6. BT WIFI 方向性测试报告 BT WIFI directionality test report page 10

公司地址 Add：深圳市宝安区大宝路 49-1 号金富来大厦 501-508
Dabao Road, Bao 'an District, Shenzhen
电 话 Tel：0755-23949781 传 真 Fax：0755-82579569

1. 项目基本信息和图片：

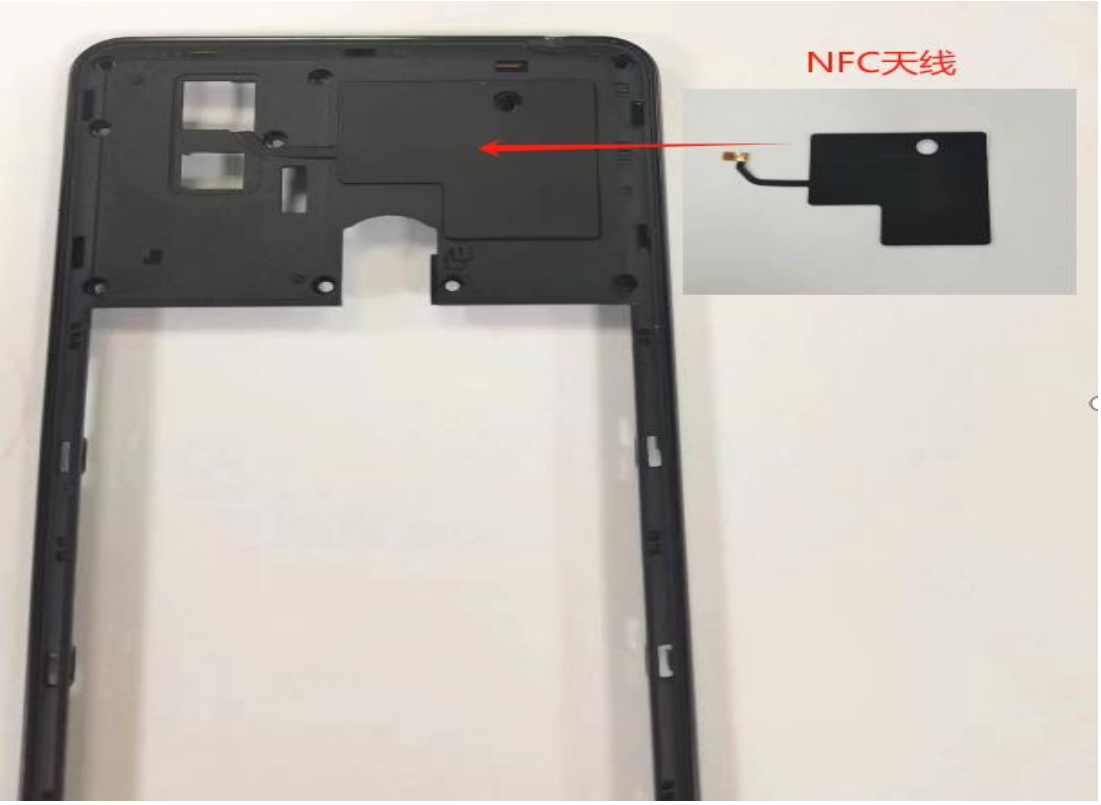
Basic information and pictures of the project

1.1项目基本信息 Project Information

整机类型 **product type**	智能手机 Smart Phone
天线材质 The antenna material	WWAN: LDS/FPCB Antenna Wi-Fi/BT: FPCB Antenna
频段 Antenna band	GSM850/900/1800/1900 WCDMA1/2/4/5/8 LTE 1/2/3/4/5/7/8/11/12//13/ 17/18/19/20/21/25/26 /28/30/38/39/40/41/66/71 WIFI 2.4G 5G GPS BT
工作频率 **frequency**	617Mhz-960Mhz 1710Mhz-2690Mhz 1575.42 Mhz 2400Mhz-2500Mhz 5150Mhz-5850Mhz

- 1.2 手机外观及天线样品图

Cell phone appearance and antenna sample diagram



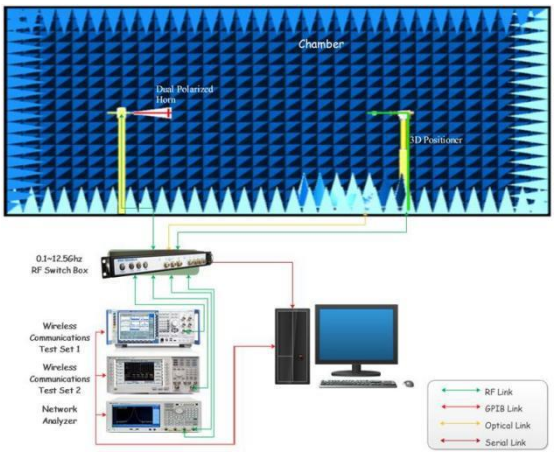
2. 电性能 Electrical Properties

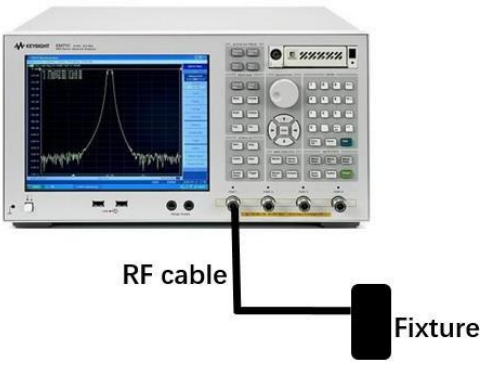
2.1 电性能项目 Electrical Properties

Passive Test	S11	VSWR/R.L/Simth Chart
	S21	Isolation
	S21	Effi./Gain
Active Test	TRP	Total Radiated Power
	TIS	Total Istropic Sensitivity

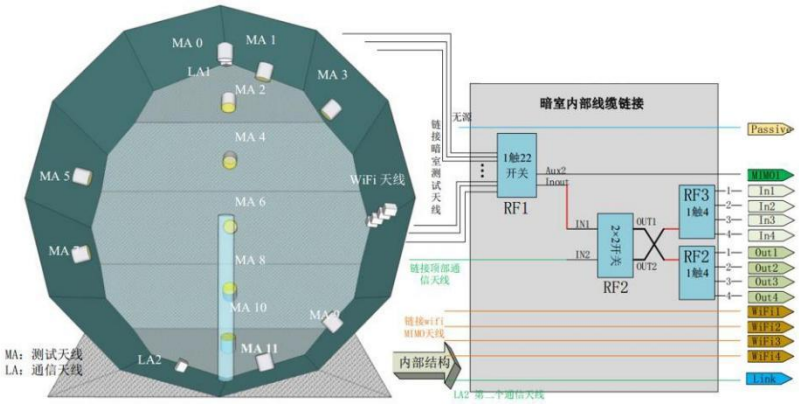
2.1.1 测试方法和测试设备 Test methods and test equipment

2.1.2 S11 TEST 测试



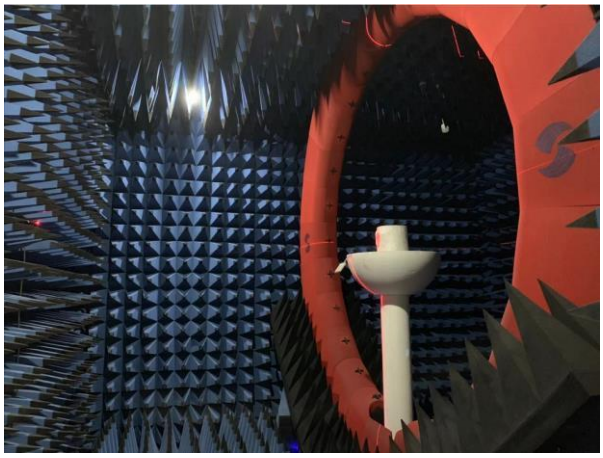


单探头测量系统 Single probe measuring system

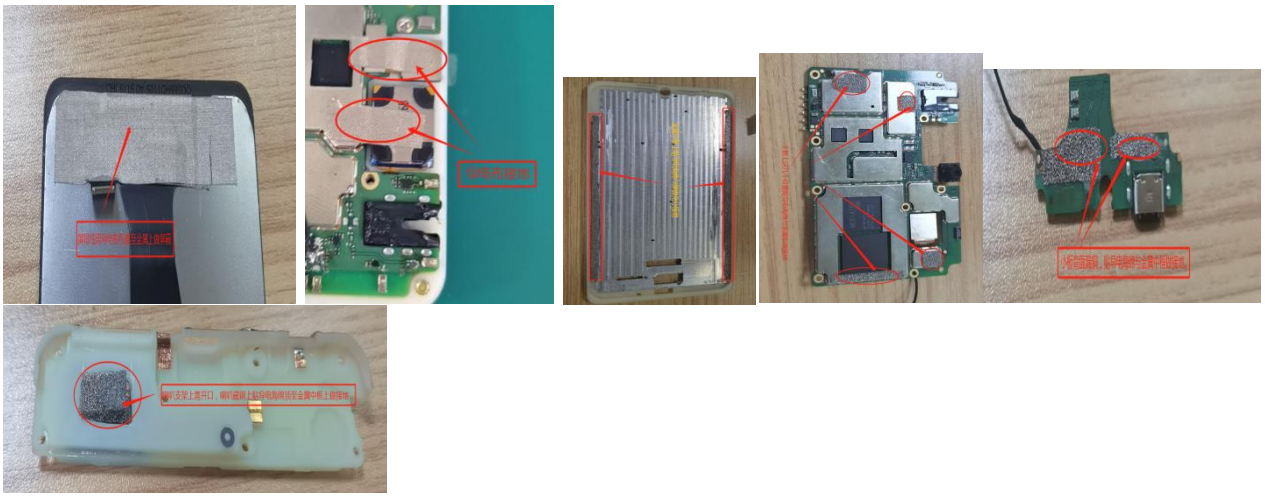


2.1.3 测试暗室图片 Test darkroom pictures

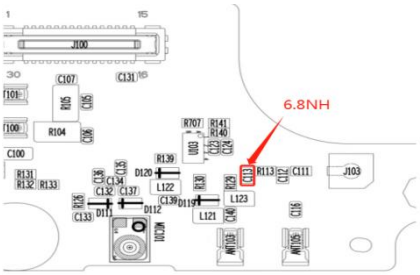
微波暗室外部图（暗室+机柜设备）External picture of microwave anechoic chamber (anechoic chamber + cabinet equipment)

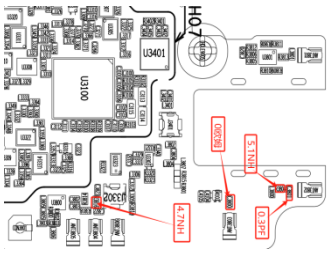


3. 整机环境处理和天线匹配电路 Environment handling and antenna matching circuit



3.1 天线匹配电路 Antenna matching circuit





开关逻辑switch logic

H89 project

The lower antenna switch is configured as follows:

RF1	0Ω	controls the working band GSM900/1900+WCDMA band2/8+LTE-band2/7/8/25/30/38/40/41（TX&RX)
RF2	7.5NH	controls the working band GSM850+WCDMA band5+LTE band5/13/18/19/20/26（TX&RX)
RF3	18NH	controls the working band LTE band12/17/28（TX&RX)
RF4	22NH	controls the working bandLTE band71（TX&RX)

The upper antenna switch is configured as follows:

RF1	0Ω	controls the working band GSM1800+WCDMA band4/1+LTE-band1/3/4/39/66（TX&RX)
RF2	5.1NH	controls the working band LTE band5/18/19/20/26（RX)
RF3	20NH	controls the working band LTE band12/13/17/28（RX)
RF3	39NH	controls the working band LTE band71（RX)

4. 测试数据 Test data

4.1 无源测试 Passive testing

4.1.1 S11(VSWR/RL/Simth Chart) test data

NC

4.1.2 S21 (Effi./Gain) test data

Band	GSM850	GSM900	DCS1800	PCS1900	W1	W2	W4	W5	W8
Gain	-1.29	-2.49	-0.68	-0.9	-1.5	-0.9	-0.68	-1.29	-2.49
Band	FDD 1	FDD 2	FDD 3	FDD 4	FDD 5	FDD 7	FDD 8	FDD 11	FDD 12
Gain	-1.5	-0.9	-0.68	-0.68	-1.29	0.07	-2.49	-0.48	-3.07
Band	FDD 13	FDD 17	FDD 18	FDD 19	FDD 20	FDD 21	FDD 25	FDD 26	FDD 28
Gain	-1.58	-3.67	-1.24	-1.34	-1.4	-0.48	-0.9	-1.4	-3.64
Band	FDD 30	TDD 38	TDD 39	TDD 40	TDD 41	FDD 66	FDD 71		
Gain	-3.2	0.07	-2.2	-3.1	0.07	-0.68	-3.89		
Band	BT	2.4G WIFI	GPS	5G wifi					
Gain	1.5	1.5	-0.57	-0.21					

4.2 GPS/WIFI/BT

4.3 测试结论 Test Verdict

指标满足 GSM850/900/1800/1900 WCDMA2100/1900/1700/850 LTE2/4/5/12/17/30/66 正常天线指标

GPS/WIFI/BT 实际测试性能 OK

注意：本天线只适用于调试样机，任何主板版本有变更或者射频物料更改，手机配件（如麦克，屏，喇叭，马达等）有变动，都必须经过我司测试验证后方可使用

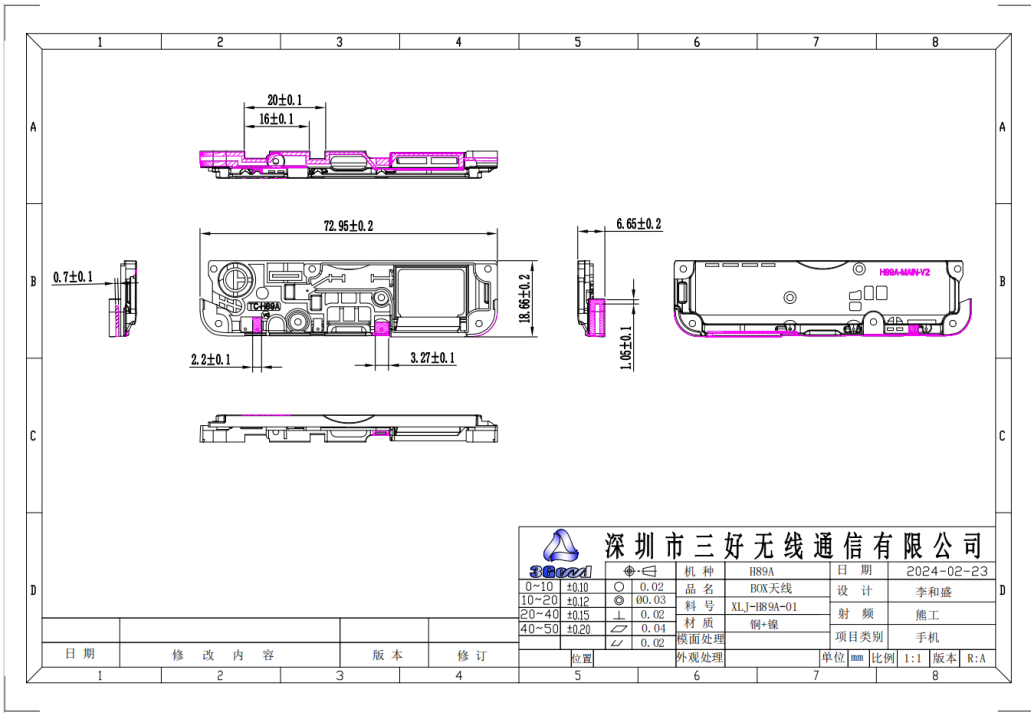
The specifications meet GSM850/900/1800/1900 WCDMA2100/1900/1700/850 LTE2/4/5/12/17/30/66 Normal antenna specifications

The actual GPS/WIFI/BT test performance is OK

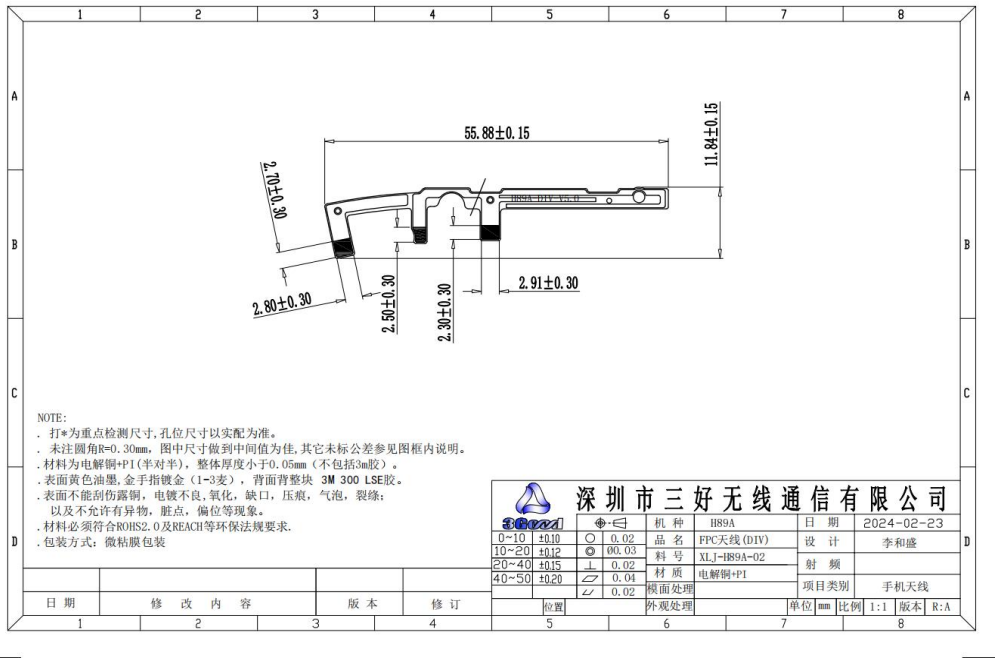
Note: This antenna is only suitable for debugging the prototype. Any changes in the motherboard version or RF material or mobile phone accessories (such as microphone, screen, speaker, motor, etc.) must be tested and verified by our company before use

5. 工程图纸 Engineering drawings

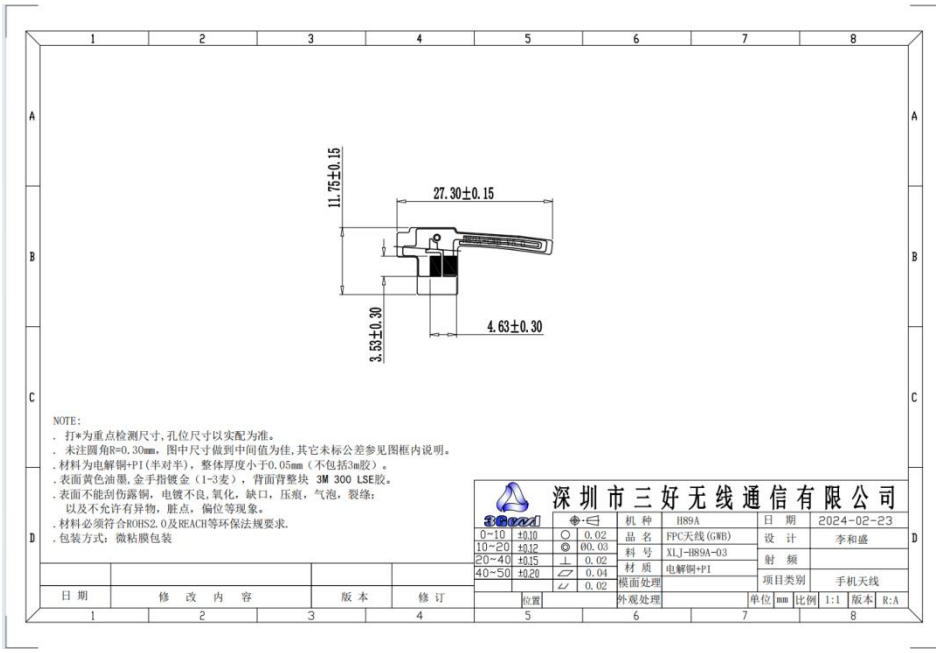
5.1 The main antenna



5.2 分集天线 Diversity antenna

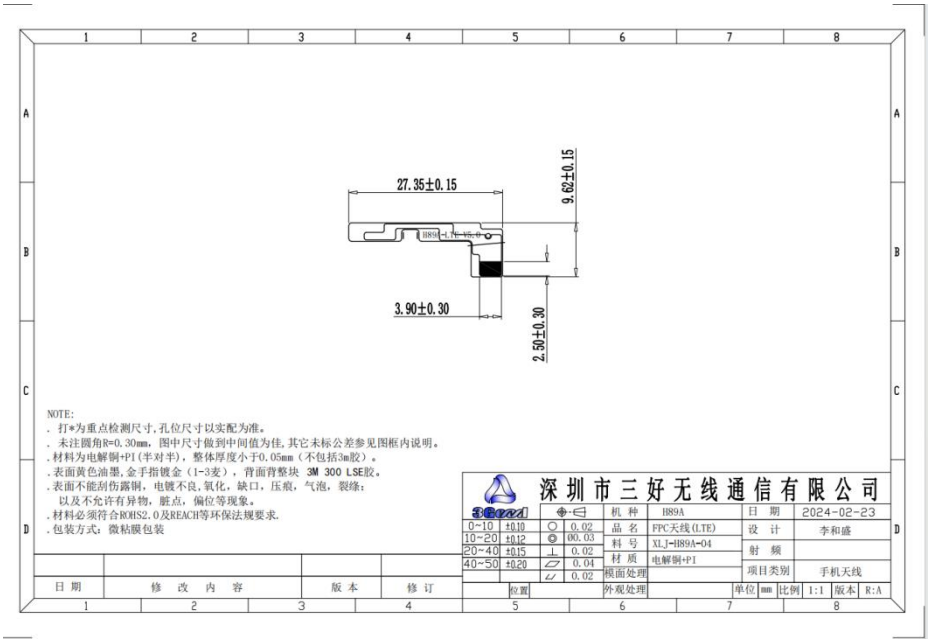


5.3 三合一天线 Three-in-One antenna

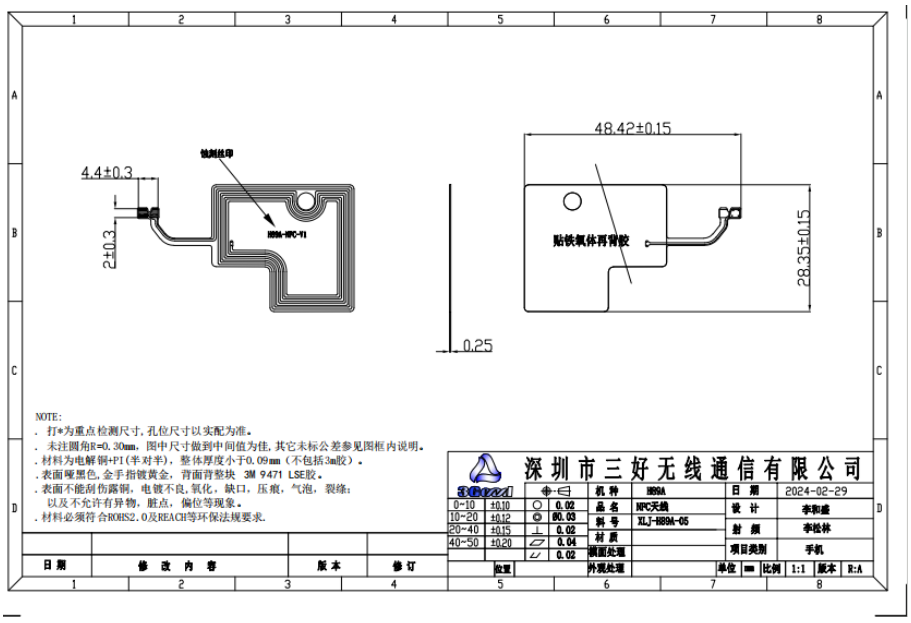


公司地址 Add：深圳市宝安区大宝路 49-1 号金富来大厦 501-508
501-508, Jinfulai Building, No. 49-1 Dabao Road, Bao 'an District, Shenzhen
电话Tel：0755-23949781 传真Fax：0755-82579569

5.4 LTE 天线 LTE antenna



5.5 NFC 天线 NFC antenna



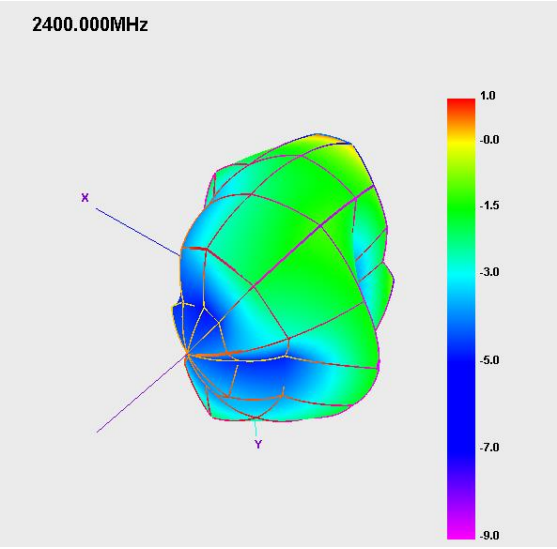
6. BT WIFI 方向性测试报告 BT WIFI directionality test report

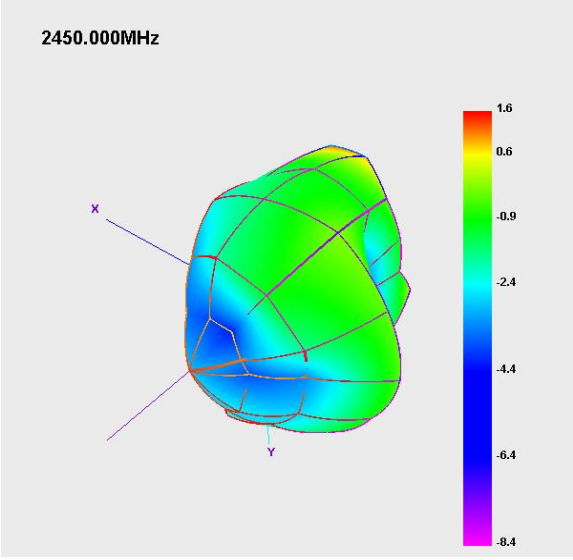
Please see the attachment inserted

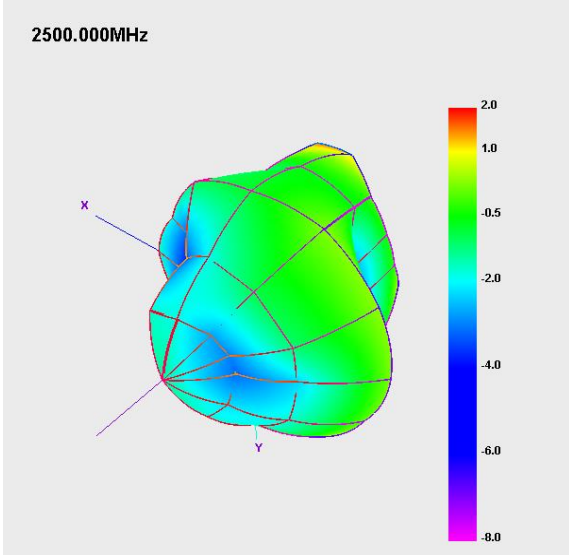
公司地址 Add：深圳市宝安区大宝路 49-1 号金富来大厦 501-508
501-508, Jinfulai Building, No. 49-1 Dabao Road, Bao 'an District, Shenzhen
电话Tel：0755-23949781 传真Fax：0755-82579569

RF Tech	BT	2.4G Wi-Fi	GPS	5G Wi-Fi
Max Peak Gain (dBi)	1.5dBi	1.5dBi	-0.57dBi	-0.21dBi

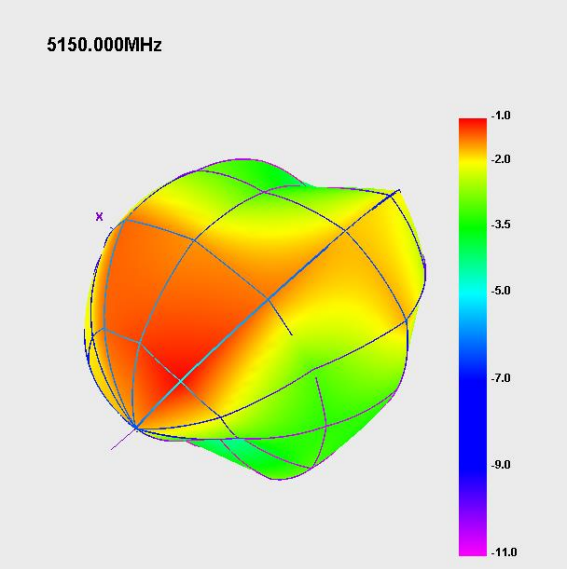
2.4GWIFI/BT

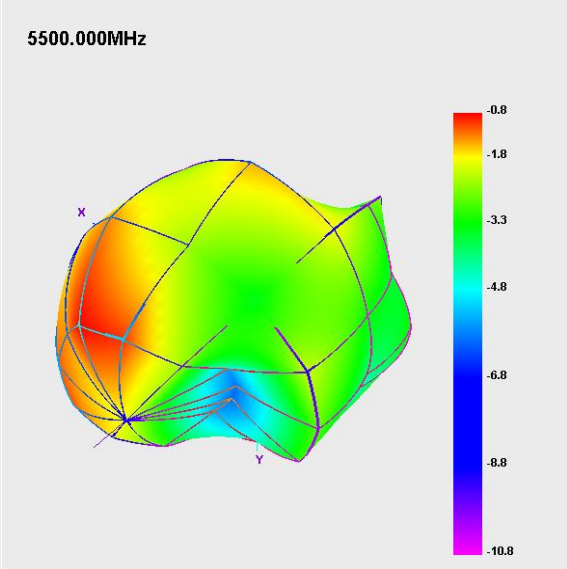


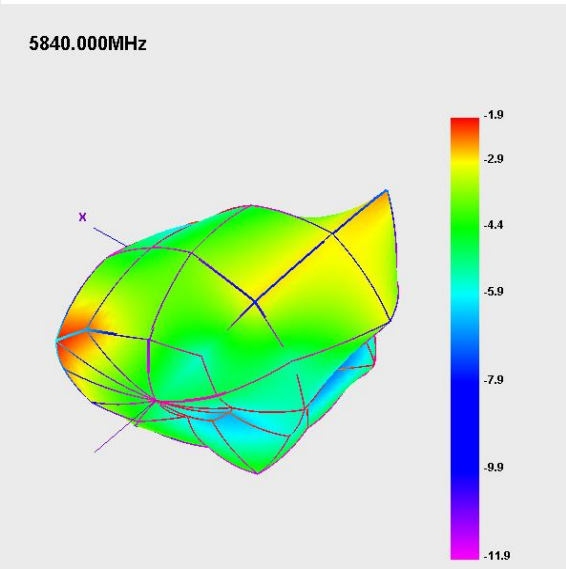
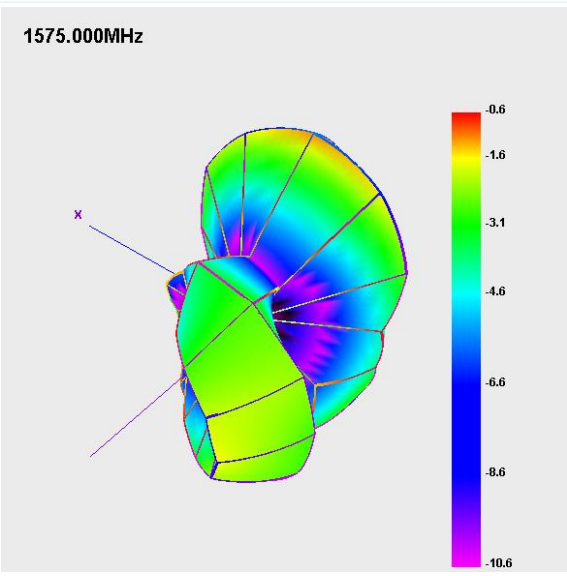




5G WIFI







GPS