



# 深圳市千目通讯科技有限公司

Shenzhen Qianmu Communication Technology Co., Ltd.

专注天线方案、设计与生产

客 户：联合天通

项 目：K230

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版 本：A1

射 频：ZHANG LI



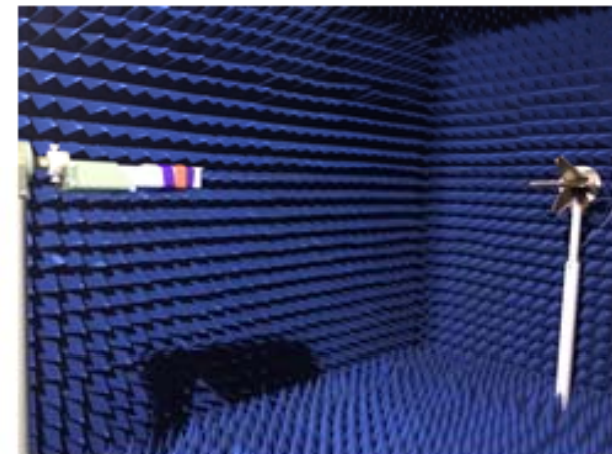
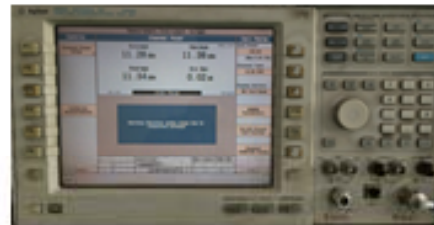
# Orders

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# test environment

	测试项目	设备
1. S参数 (S-parameter)	1. 回波损耗 (Return Loss) 2. 电压驻波比 (VSWR)	网络分析仪: Agilent E5071B HP 8753D
2. 有源测试 (Active)	1. 发射功率 (TRP) 2. 接收灵敏度 (TIS) 3. 频率误差 4. 屏灭、屏亮	1. 暗室: ETS 7x4x3 m (3D) Chamber ETS 5x3x3 m (3D) Chamber 2. 综合测试仪: Agilent 8960 E5515B × 2 StarPoint SP6011
3. 无源测试 (Passive)	1. 天线增益 (Gain) 2. 天线效率 (Efficiency)	1. 暗室: ETS 7x4x3 m (3D) Chamber ETS 5x3x3 m (3D) Chamber 2. 网络分析仪: Agilent E5071B HP 8753D

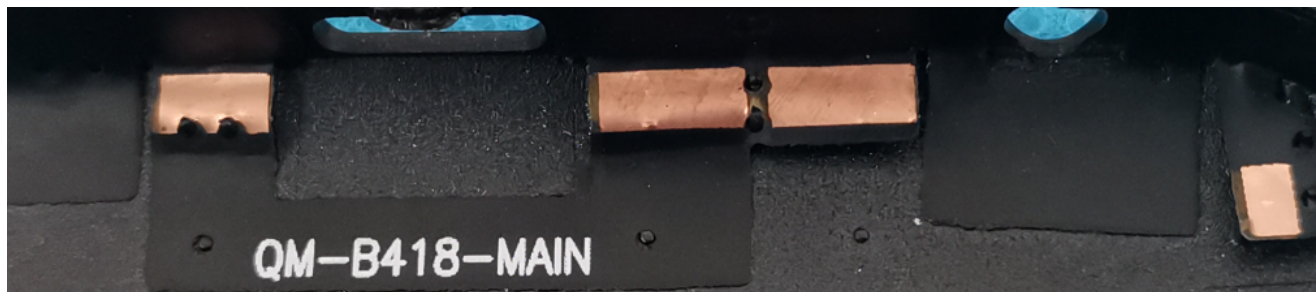
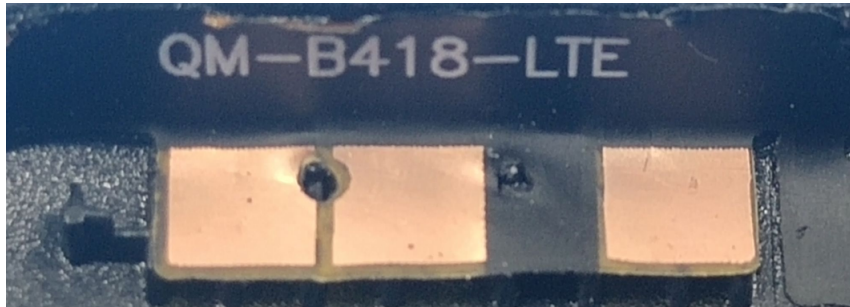




# All previous testing record

Data	version	Debugging record
2022-12-02	T:A	FPC Sample

Antenna:





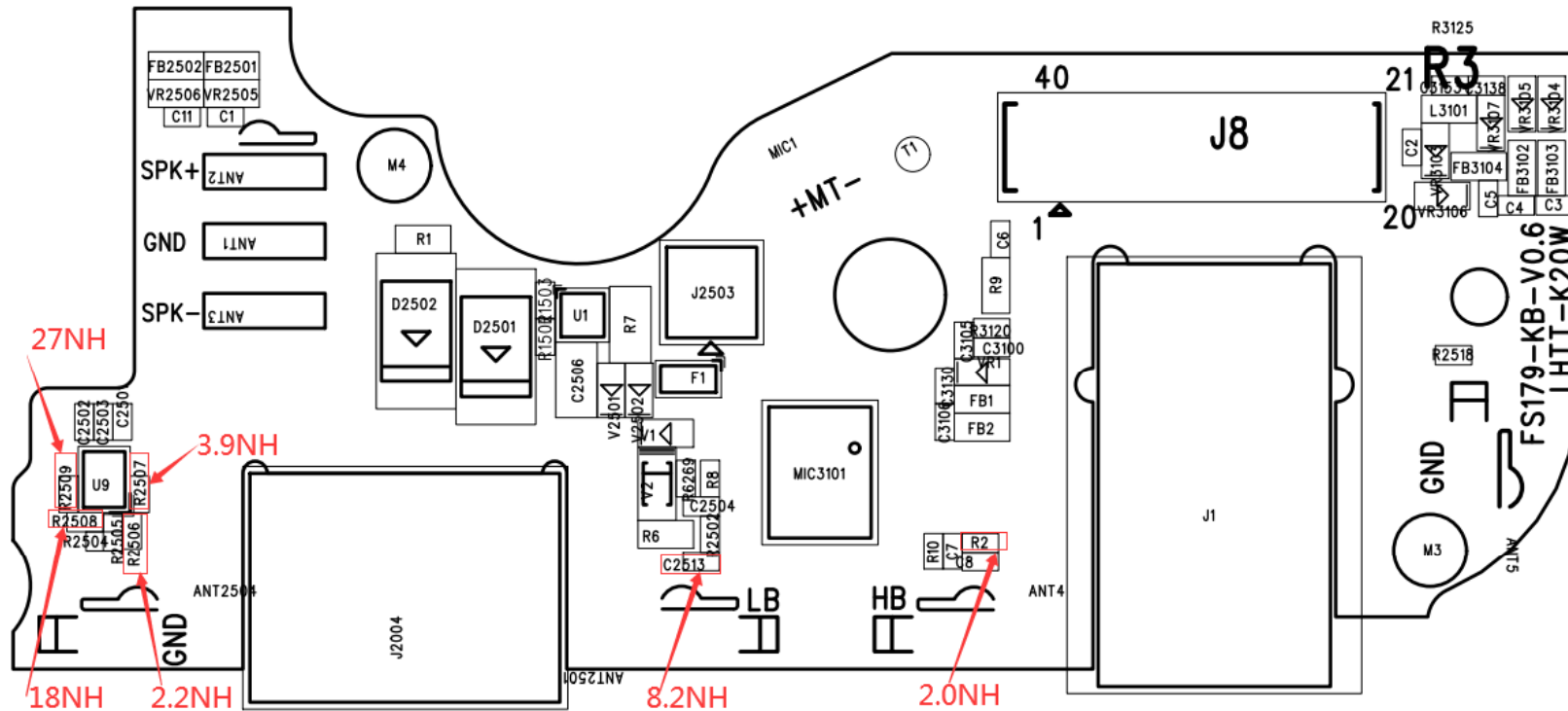
# whole machine commissioning instructions

models	smartphones						
Version	Motherboard + small plate plate						
Antenna profile	main antenna	Antenna profile		Antenna profile	Antenna form	Design area	changes
		2G	900/850/1800/1900	FPC Sample	LOOP	Shell material	Y
		3G	B2/4/7				
	4G	B2/4/5/12/17/28AB/38/41/66/71					
	Other antenna	WIFI/BT	2.4GHz	FPC Sample	PIFA	Shell material	N
		GPS	1575.42MHz	FPC Sample	PIFA	Shell material	N
		Diversity antenna	1710MHz~2690MHz	FPC Sample	PIFA	Shell material	N
State of the prototype	Sample						



Small plate switch logic and matching and motherboard details:

switch	number	值	Application spectrum
RF1	R2506	2.2NH	GSM900
RF2	R2507	3.9NH	GSM850+W5+FDD B5
RF3	R2508	18NH	FDD B12/17/28
RF4	R2509	27NH	FDD B71
LB	C2513	8.2NH	main set
	R2502/R8	0欧	
HB	R2	2.0NH	diversity
	R10	0欧	
main board			DCS1800/PCS1900+W1/2/4+FDD B2/4/66+TDD B41





# test data

antenna	FPC sample			sample		
	GSM 850			GSM 900		
Channel	128	190	251	1	62	124
TRP	25.52	25.73	26.36	24.57	25.67	26.15
TIS			-101.65			-101.17
	DCS 1800			PCS 1900		
Channel	512	698	885	512	661	810
TRP	25.36	25.82	25.37	25.63	26.12	26.55
TIS			-103.18			-103.72



# test data

antenna	FPC sample			sample		
	WCDMA 1900			WCDMA 1700		
Channel	9662	9700	9938	1537	1638	1738
TRP	18.55	18.83	19.19	18.44	19	18.87
TIS			-103.32			-103.45
	WCDMA 850					
Channel	4357	4408	4458			
TRP	16.08	15.44	15			
TIS			-101.4			





# test data

antenna	FPC sample				sample		
	LTE 2				LTE 4		
Channel	18650	18900	19150		20000	20175	20350
TRP	18.16	18.27	18.5		18.64	18.83	19.09
TIS			-91.12				-91.36
	LTE-FDD B5				LTE-FDD B12		
Channel	20450	20550	20600		23060	23095	23130
TRP	15.37	15.57	15.28		15.72	15.37	16.63
TIS			-87.66				-90.21



# test data

antenna	FPC sample			sample			
	LTE-FDD B17						
Channel	23780	23790	23800				
TRP	16.14	16.27	16.35				
TIS			-90.19				
	B28AB						
Channel	27260	27433	27435	27510	27610		
TRP	15.35	16.02	15.34	16.18	16.17		
TIS			-87.78		-87.35		



# test data

antenna	FPC sample				sample		
	B41				B66		
Channel	40340	40740	41140		132022	132422	132822
TRP	19.16	18.65	17.53		18.46	18.67	18.89
TIS			-90.26				-90.26
	B71						
Channel	133172	133297	133372				
TRP	15.13	15.27	15.62				
TIS			-87.26				



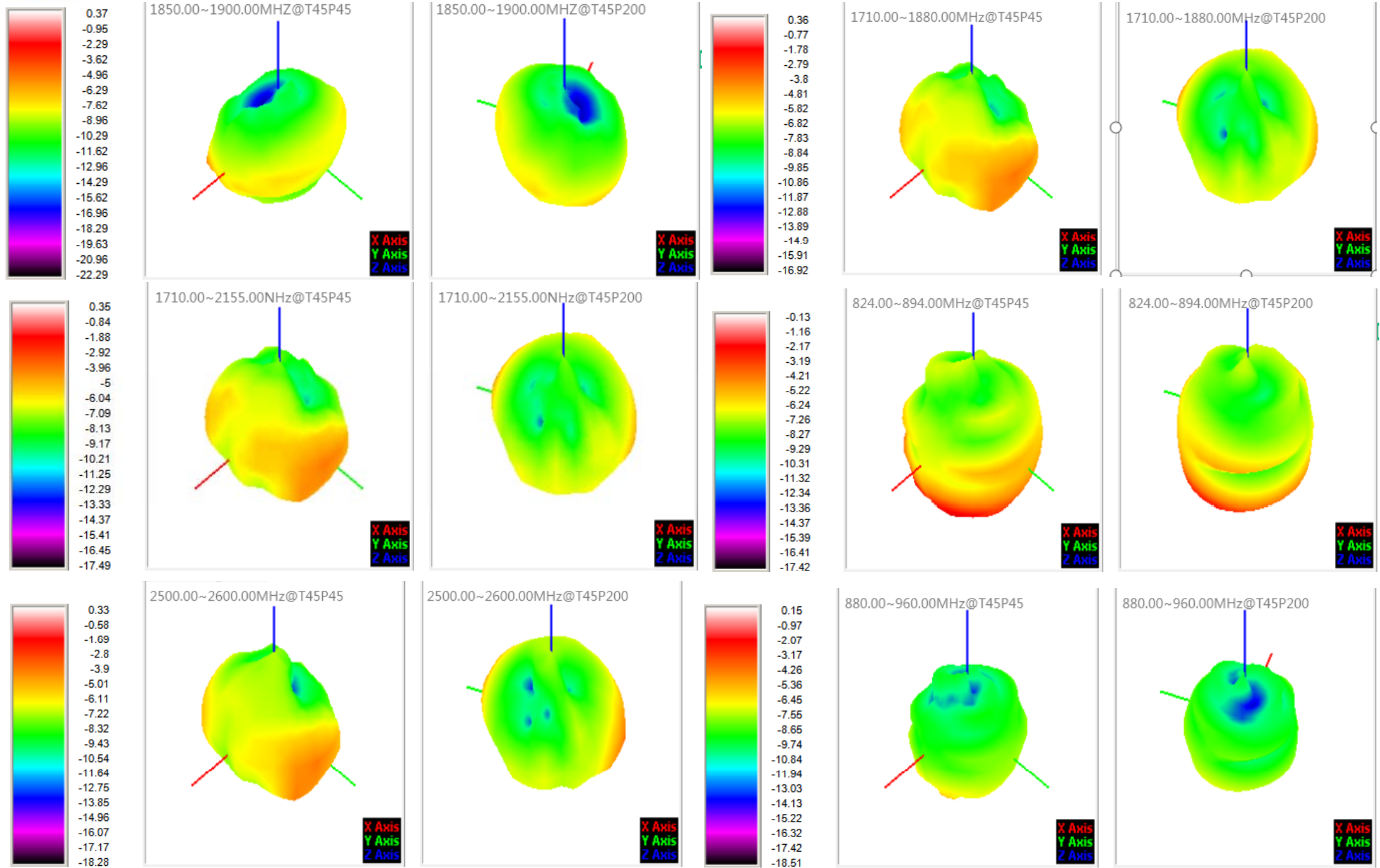
## Gain:

main antenna	frequency	Gain (dBi)
B2	1850-1900MHZ	0.37
B3	1710-1880MHZ	0.36
B4	1710-2155	0.35
B5	824-894MHZ	-0.13
B7	2500-2600MHZ	0.33
B8	880-960MHZ	-0.15
B12	699-746MHZ	-0.12
B17	704-746MHZ	-0.12
B28	703-803MHZ	-0.12
B38	2570-2620MHZ	0.36
B41	2496-2690MHZ	0.37
B66	1710-2180MHz	0.35
B71	663-652MHZ	-0.13

antenna	frequency	Gain (dBi)
wifi/BT	2400-2500MHZ	0.46
GPS	1575.42MHZ	0.37

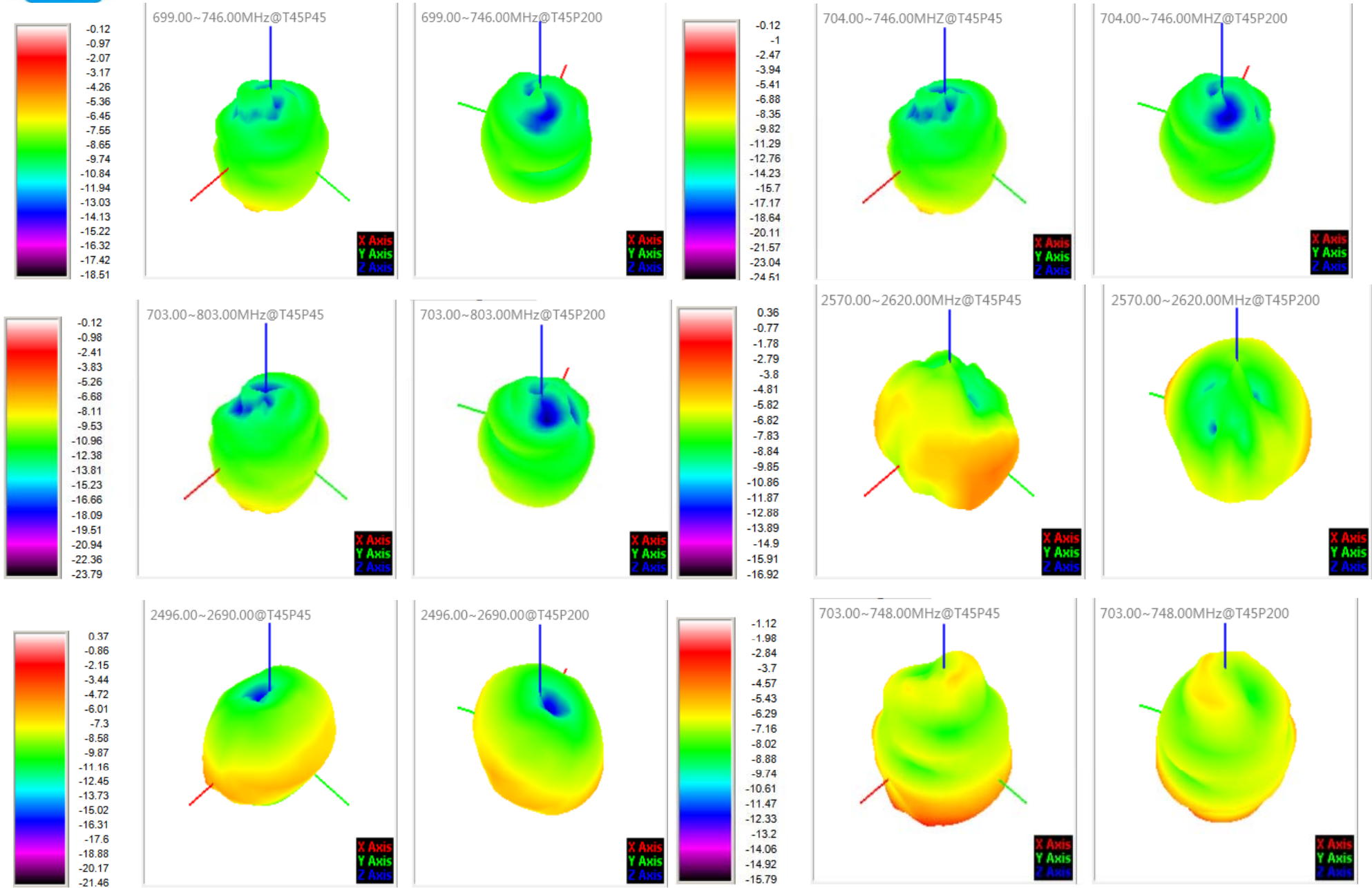


# The main antenna pattern:



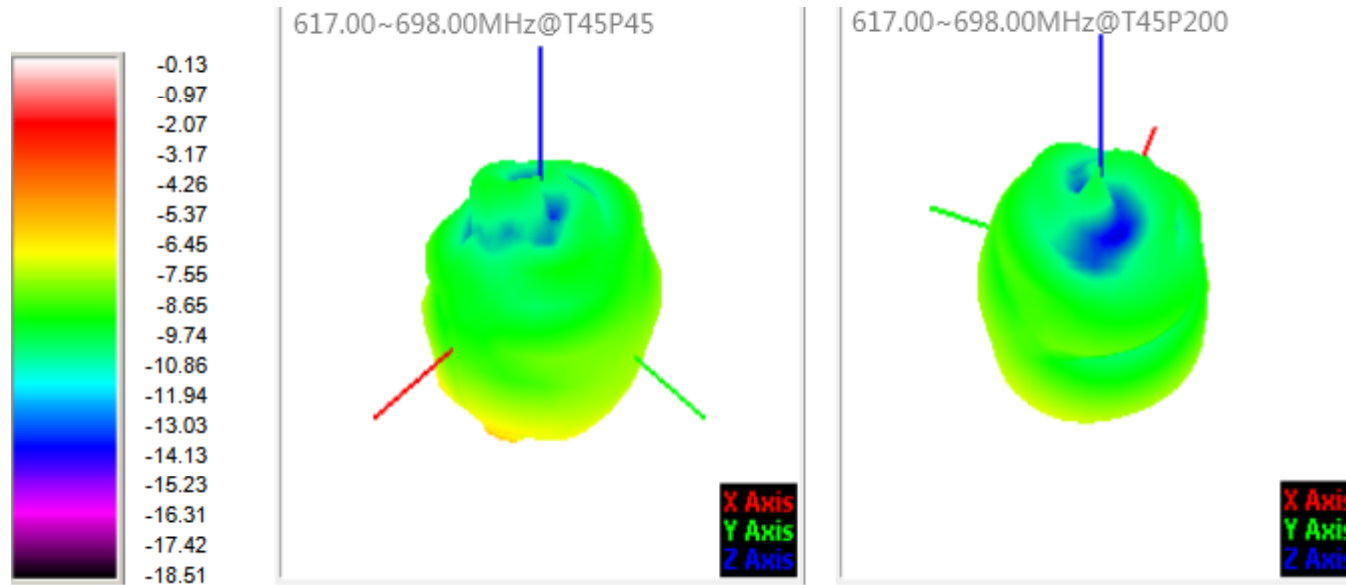


# The main antenna pattern:



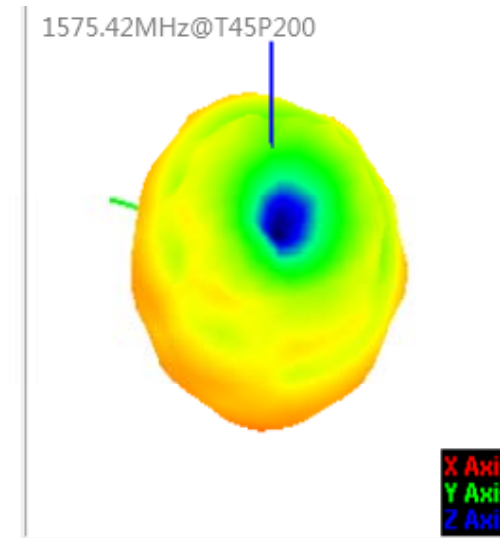
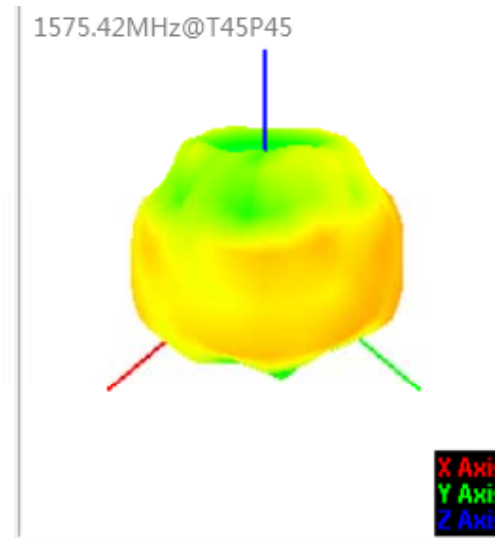
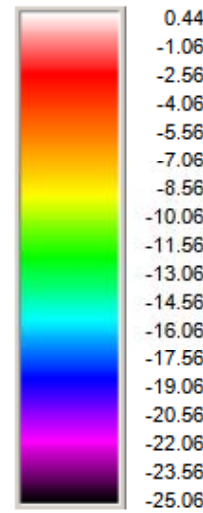
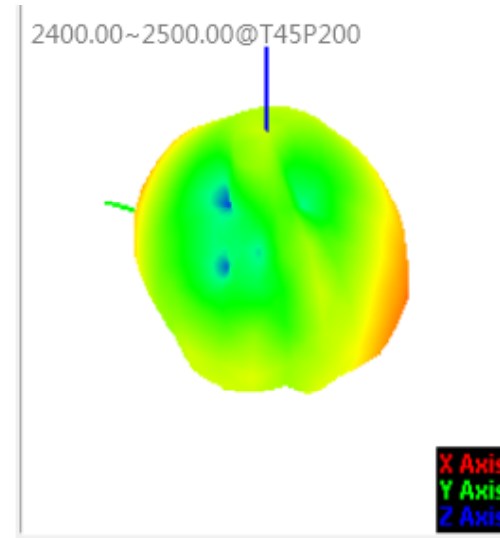
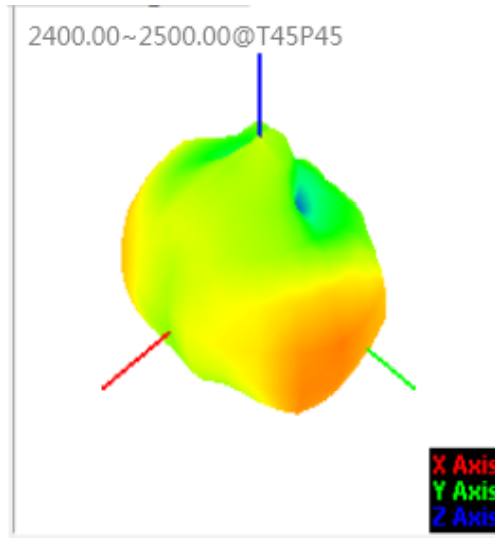
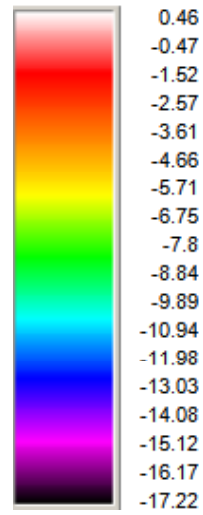


The main antenna pattern:





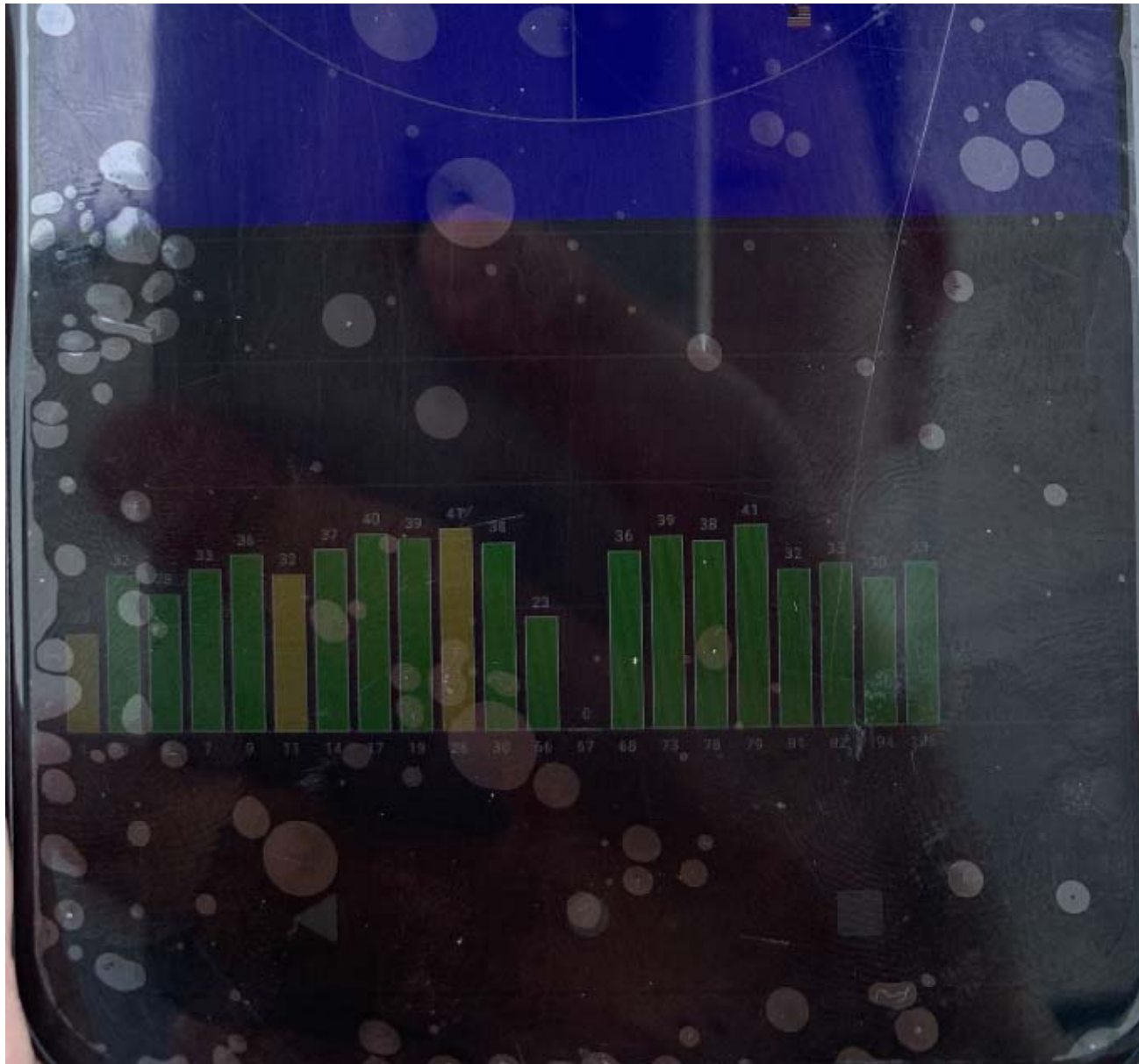
# WIFI/BT/GPS pattern:







GPS test:



GPS: Cold start positioning within a minute, six more than 36 CN value

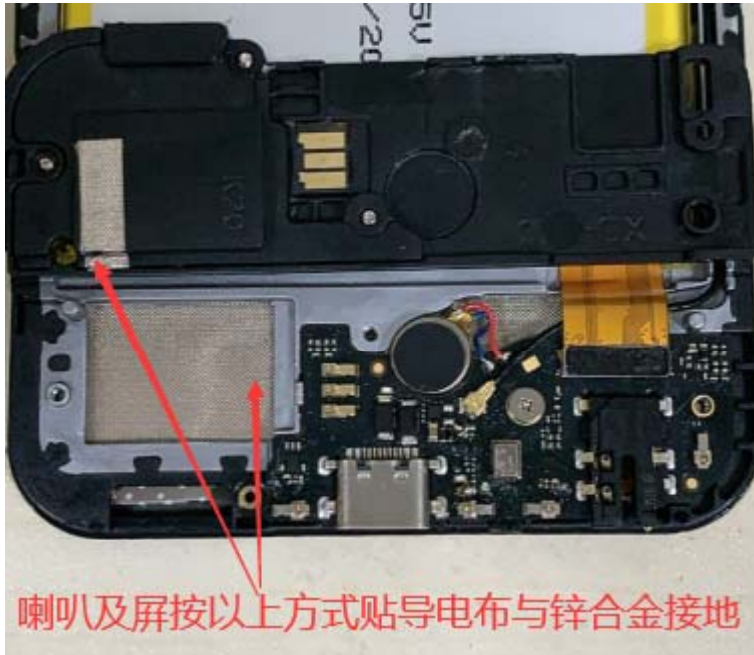


## WiFi Test:





## Environmental treatment instructions:





## Environmental treatment instructions:





1. This data is only for the customer to provide data generated by the prototype, not on behalf of clients, the final production status

2. Please confirm our customer carefully report, the matching circuit changes and environmental treatment instructions

3. The amount of prenatal please cooperate with provide preproduction prototype to our secondary validation; If there is any replacement material, update software and environment Processing, etc., please inform me in advance

4. if the customer need the third party survey, or to send customer tests, please send again after to verify our company prototype; To prevent the machine

And there are differences between the adjustment of commissioning

5. we don't accept, we debug the machine data and other dark room test data, but you can refer to,

There are differences between the authentication except a dark room, such as data, all will be subject to adjustment of commissioning to find the reason.



谢谢!

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