



深圳市昱晟通讯设备有限公司

Yusheng Communications-equipment Co.,LTD

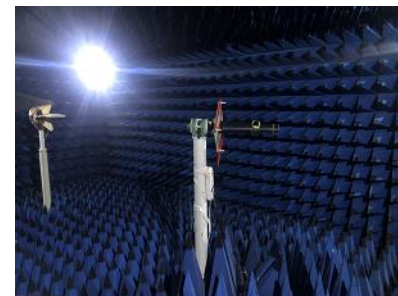
康佳K160天线测试报告

Konka K160 antenna test report

射频：洪远凯

日期：2023-2-2

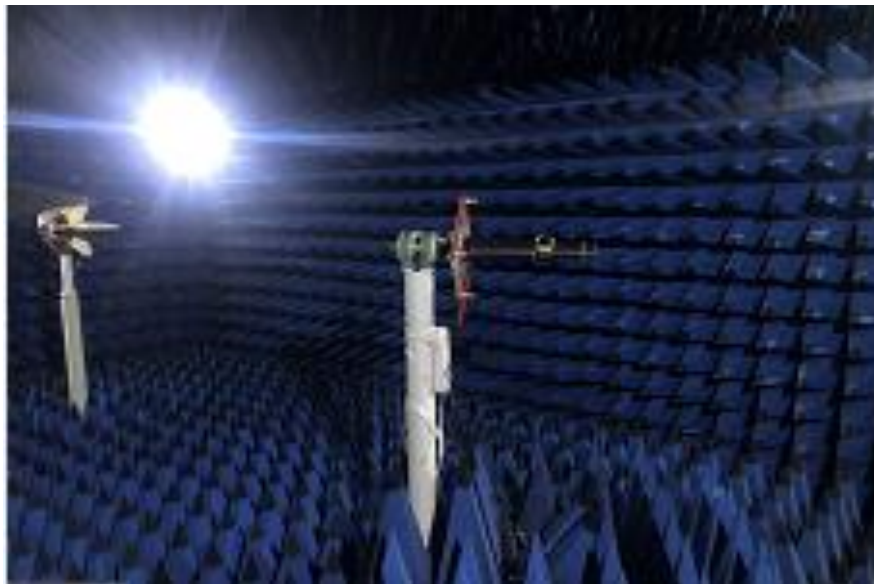
联系方式：15119409299



项目开发环境

Project development environment

我们正在从互联网时代迈向智能时代，国家在构建数字社会与智慧城市。未来的5-10年无论是消费电子市场还是物联网市场都存在着巨大的发展潜力。无线通讯领域是非常多元化的，未来昱晟依托天线主业的客户平台优势和本身的综合实力，力争为客户提供具有市场竞争力的专业级产品解决方案。



昱晟通讯的产品几乎涵盖所有无线终端设备的天线应用，包括汽车天线、高精度测量测绘天线、无人机地面与卫星数据导航、高精度定位天线、医疗设备无线传输、消费类天线(手机天线、PAD、笔记本电脑天线)，基站/室内分布天线，智能穿戴天线(智能手表、TWS耳机)，安防家居天线以及多种无线数据传输及无线控制的智能设备天线等。

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项目调试简介 Introduction to project debugging

机 型 Model	平板 Tablet			
板 型 Technology	主板 Mainboard			
频段及天线材质 Frequency band and antenna material	主天线	频 段		材 质
		2G	GSM850/900/1800/1900	FPC
		3G	WCDMA B1/2/4/5/8	
	4G	LTE B1/2/3/4/5/7/8/20 40/41		
	其他天线	GWB	1575. 42MHz/2. 45GHz/5. 8GHz	FPC
		DRX	\	FPC
性能要求 performance requirement	按客户要求执行			



报告版本提纲 Report version outline

报告版本	报告时间	本次天线研发解决的问题
V1.4	20221221	整机测试报告（试产机11#）
V1.5	20230202	整机测试报告（FCC认证）

主天线有源参数 Active parameters of the main antenna

Test	GSM 850			PCS 1900		
Channel	128	190	251	512	661	810
TRP (dBm)	25.12	25.22	25.29	24.62	24.39	24.15
TIS (dBm)			-99.13			-100.62

Test	EGSM 900			DCS 1800		
Channel	128	190	251	512	661	810
TRP (dBm)	25.26	25.17	25.05	24.06	24.18	24.24
TIS (dBm)			-99.06			-101.64

主天线有源参数 Active parameters of the main antenna

Test	WCDMA_I			WCDMA_II		
Channel	10562	10700	10838	9662	9800	9938
TRP (dBm)	15.51	15.29	15.06	16.11	15.82	15.61
TIS (dBm)			-103.21			-102.13

Test	WCDMA_IV			WCDMA_V		
Channel	1537	1638	1738	4357	4408	4458
TRP (dBm)	16.31	16.75	17.04	15.51	15.64	15.72
TIS (dBm)			-102.13			-100.25

Test	WCDMA_VIII		
Channel	2937	3013	3088
TRP (dBm)	15.52	15.29	15.15
TIS (dBm)			-100.17



主天线有源参数 Active parameters of the main antenna

Test	FDD B1			FDD B2		
Channel	18050	18300	18550	18750	18950	19150
TRP (dBm)	16.09	15.62	15.16	17.08	16.79	16.58
TIS (dBm)			-90.63			-88.75

Test	FDD B3			FDD B4		
Channel	19250	19575	19900	20000	20175	20350
TRP (dBm)	17.15	17.61	18.06	17.55	17.78	18.06
TIS (dBm)			-91.02			-90.09

Test	FDD B5			FDD B7		
Channel	20450	20525	20600	20800	21100	21400
TRP (dBm)	17.05	17.31	17.58	18.23	18.15	18.08
TIS (dBm)			-88.12			-91.01

天线有源参数 Active antenna parameter

Test	FDD B8			FDD B20		
Channel	21500	21650	21750	24200	24300	24400
TRP (dBm)	17.25	17.01	16.77	17.09	17.29	17.55
TIS (dBm)			-87.18			-88.02

Test	TDD B40			FDD B41		
Channel	38750	39150	39550		40620	
TRP (dBm)	17.08	17.56	18.04		18.14	
TIS (dBm)			-90.11		-91.15	

WIFI有源参数 Active parameter

Test	5.8WIFI-A			2.4WIFI-B		
Channel	149	157	165	1	6	11
TRP (dBm)	9.05	9.19	9.11	13.21	13.39	13.53
TIS (dBm)			-70.34			-84.55

Test	2.4WIFI-G			2.4WIFI-N		
Channel	1	6	11	1	7	13
TRP (dBm)	13.12	13.23	13.29	13.01	13.13	13.21
TIS (dBm)			-70.02			-67.62

天线增益 Antenna gain

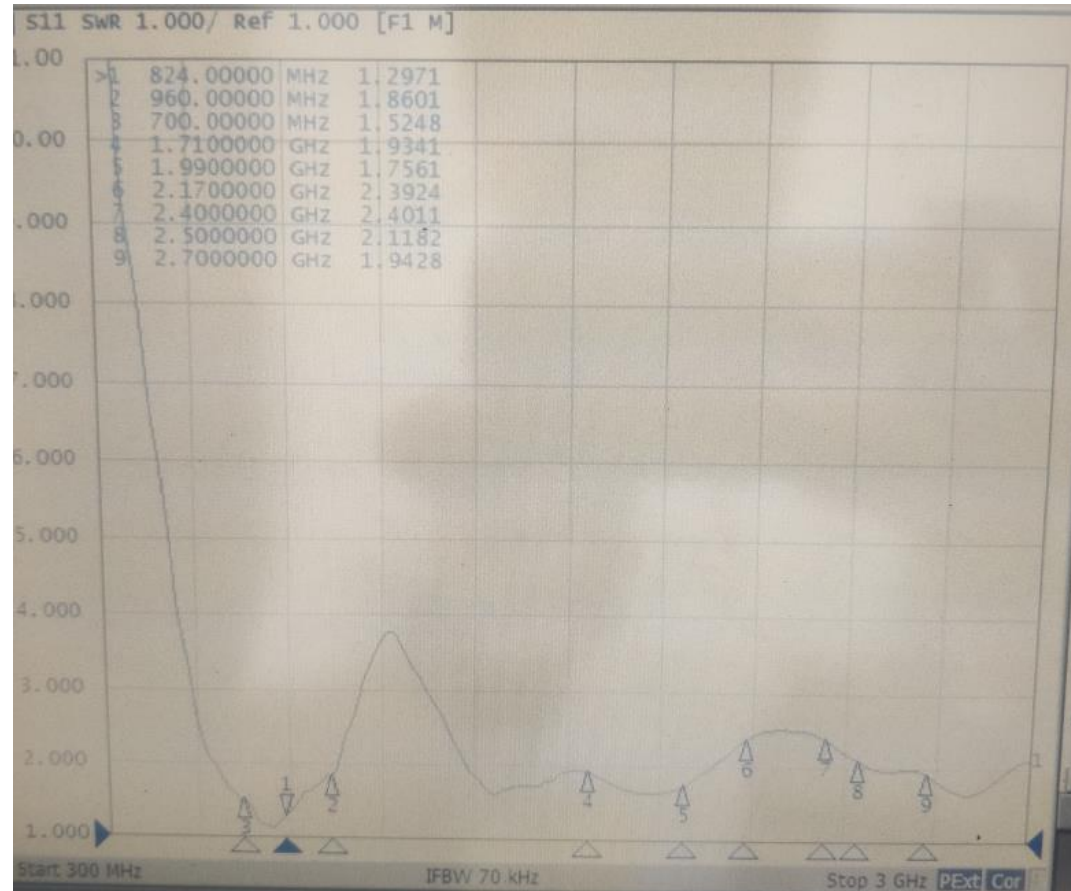
Band	Gain (MAX)
GSM850	0.61
EGSM900	0.65
DCS1800	1.07
PCS1900	1.10
WCDMA B1	1.13
WCDMA B2	1.10
WCDMA B4	1.04
WCDMA B5	0.61
WCDMA B8	0.65
Band1	1.13
Band2	1.10
Band3	1.07
Band4	1.04
Band5	0.61
Band7	1.18
Band8	0.65

Band	Gain (MAX)
Band20	0.61
Band40	1.15
Band41	1.18
GPS	1.01
2.4GWiFi	1.15
BT	1.15
5.8GWiFi	1.26

主天线无源参数 Passive parameters of the main antenna

Passive Test

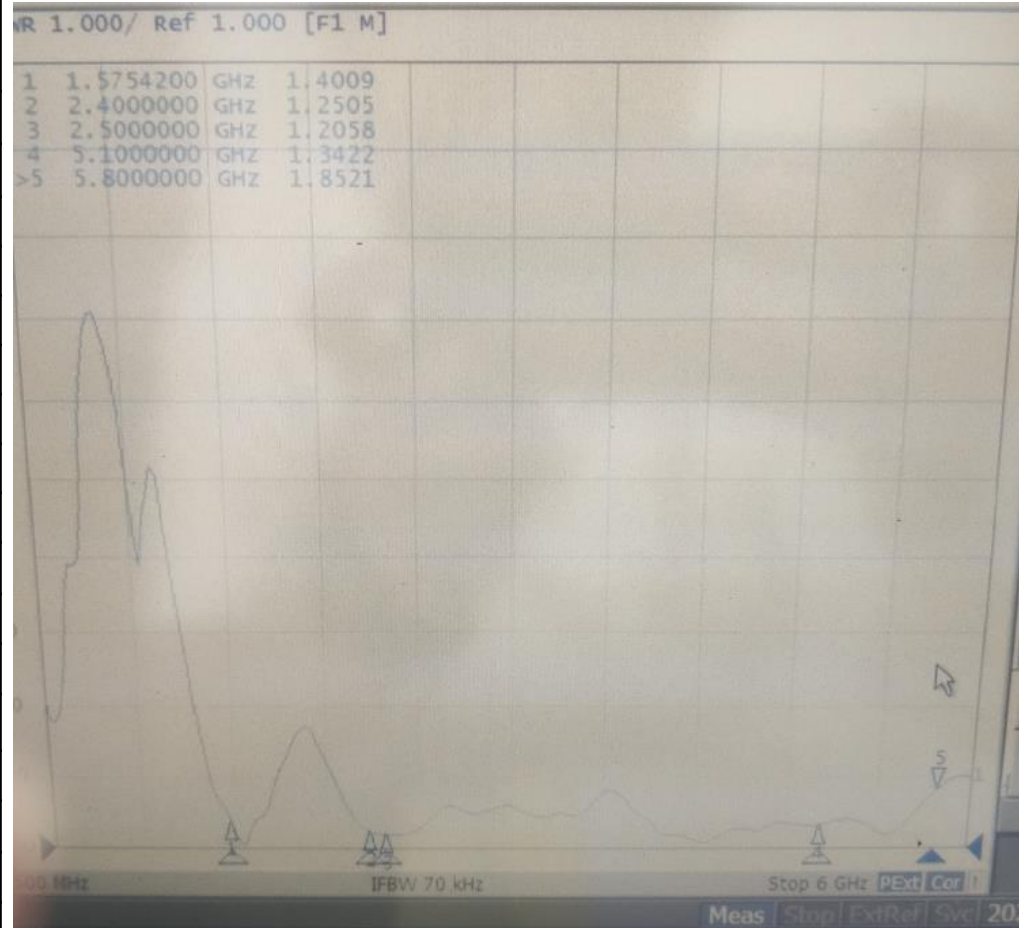
Freq (MHz)	Effi (%)	Freq (MHz)	Effi (%)
820.0	25.1%	2180.0	28.2%
860.0	25.9%	2220.0	29.1%
900.0	26.7%	2260.0	29.9%
940.0	26.0%	2300.0	30.8%
980.0	25.5%	2340.0	33.0%
		2380.0	35.7%
1700.0	35.2%	2420.0	36.5%
1740.0	36.5%	2460.0	37.9%
1780.0	37.6%	2500.0	39.0%
1820.0	38.2%	2540.0	40.1%
1860.0	37.1%	2580.0	40.8%
1900.0	36.4%	2620.0	40.2%
1940.0	35.9%	2660.0	39.5%
1980.0	35.4%	2700.0	38.8%
2020.0	34.1%		
2060.0	32.5%		
2100.0	30.1%		
2140.0	29.0%		



四合一天线无源参数 Passive parameter of 4-in-1 Antenna

Passive Test

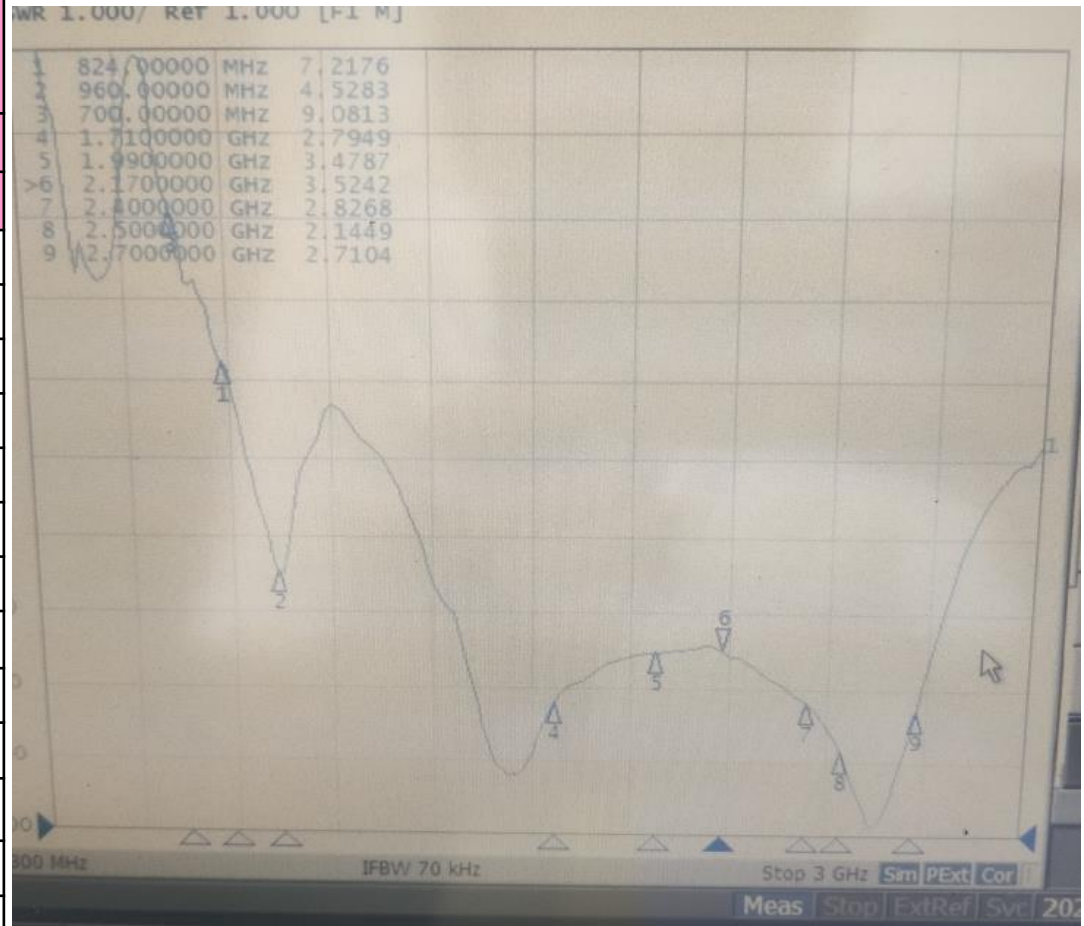
Freq (MHz)	Effi (%)	Freq (MHz)	Effi (%)
1560.0	37.2%	5100.0	45.2%
1565.0	37.8%	5150.0	46.0%
1570.0	38.4%	5200.0	46.7%
1575.0	38.9%	5250.0	47.3%
1580.0	38.2%	5300.0	47.9%
1585.0	37.5%	5350.0	48.1%
1590.0	36.7%	5400.0	48.6%
		5450.0	48.0%
		5500.0	47.2%
2400.0	40.5%	5550.0	46.6%
2420.0	41.1%	5600.0	46.1%
2440.0	41.7%	5650.0	45.2%
2460.0	42.2%	5700.0	45.9%
2480.0	41.6%	5750.0	46.3%
2500.0	40.9%	5800.0	46.8%



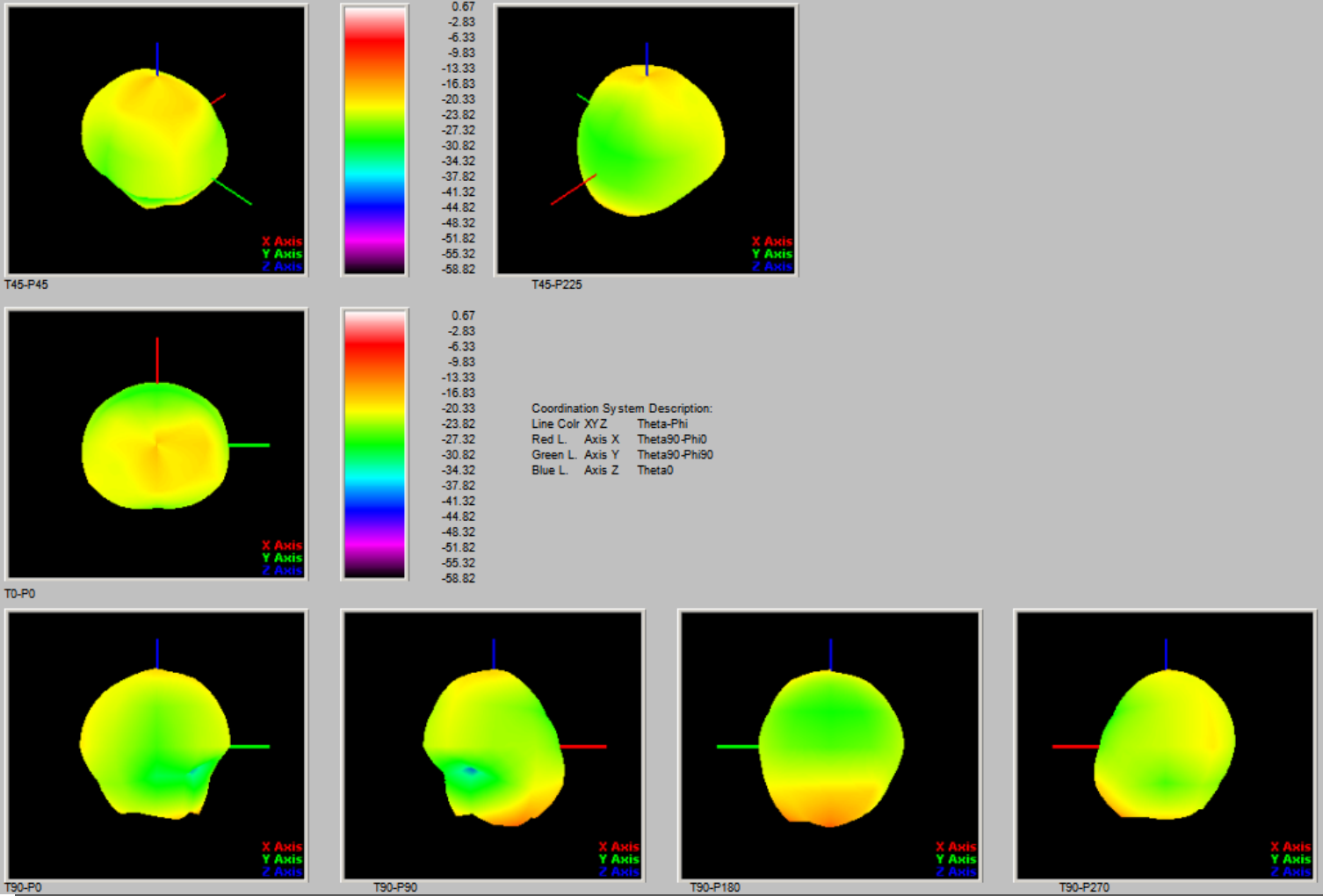
分集天线无源参数 Passive parameter of diversity antenna

Passive Test

Freq (MHz)	Effi (%)	Freq (MHz)	Effi (%)
1700.0	25.5%	2350.0	28.2%
1750.0	26.4%	2400.0	27.5%
1800.0	26.9%	2450.0	26.8%
1850.0	27.7%	2500.0	27.3%
1900.0	27.1%	2550.0	27.9%
1950.0	26.2%	2600.0	28.5%
2000.0	25.8%	2650.0	27.7%
2050.0	25.4%	2700.0	27.0%
2100.0	25.0%		
2150.0	26.1%		
2200.0	27.6%		
2250.0	28.2%		
2300.0	29.1%		

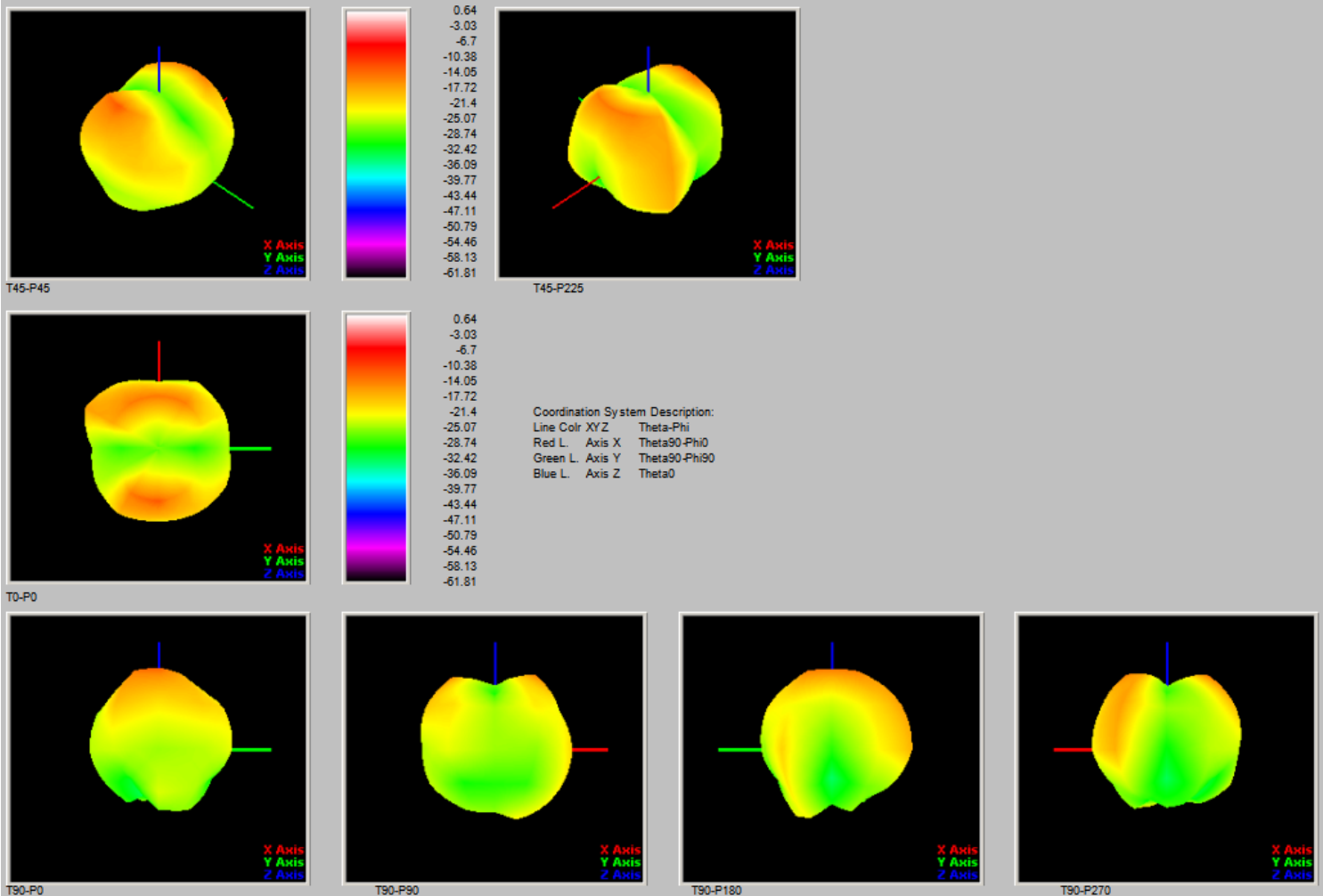


无源参数-苹果图-824MHz-880MHz
Passive Parameter - Apple Map -824MHz-880MHzV



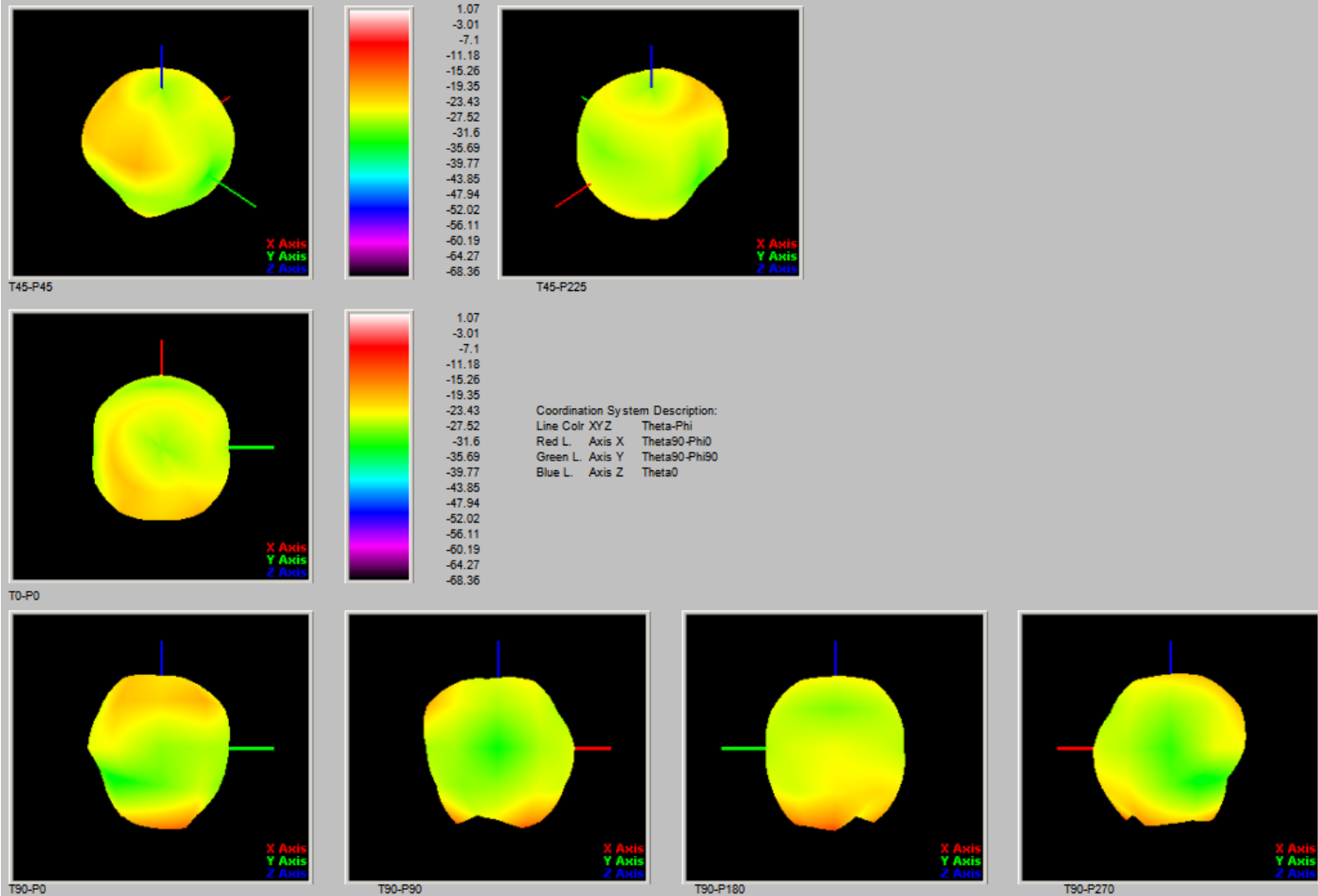
无源参数-苹果图-880MHz-960MHz

Passive Parameter - Apple Map -880MHz-960MHz



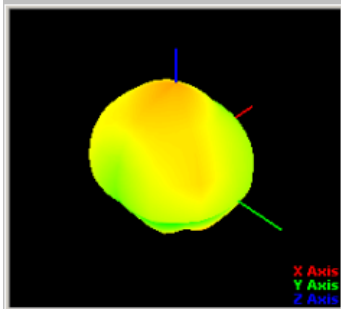
无源参数-苹果图-1710MHz-1880MHz

Passive Parameter - Apple Map -1710MHz-1880MHz

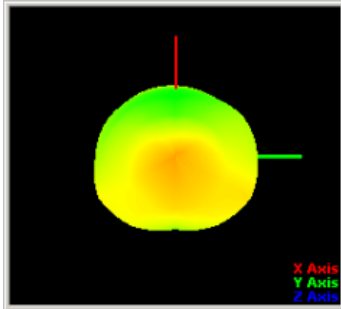
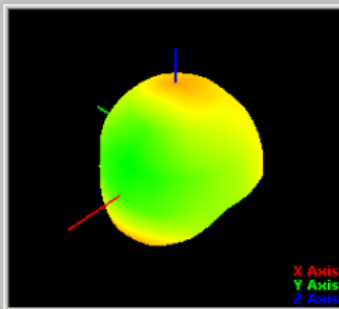


无源参数-苹果图-1880MHz-1990MHz

Passive Parameter - Apple Map -1880MHz-1990MHz

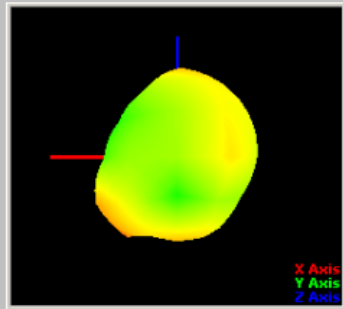
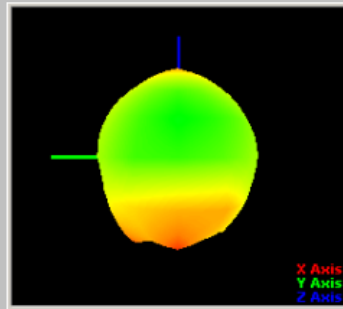
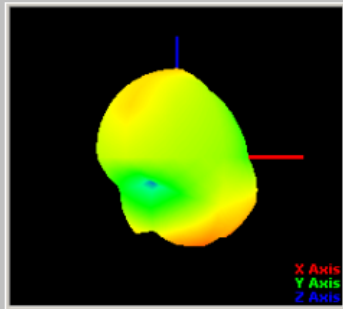
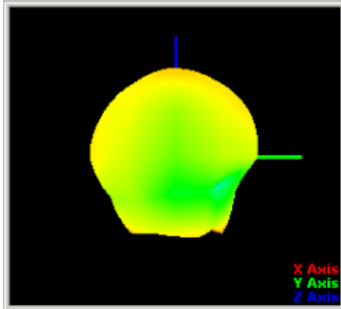


1.17
-2.55
-6.27
-9.99
-13.72
-17.44
-21.16
-24.88
-28.6
-32.32
-36.04
-39.77
-43.49
-47.21
-50.93
-54.65
-58.37
-62.09



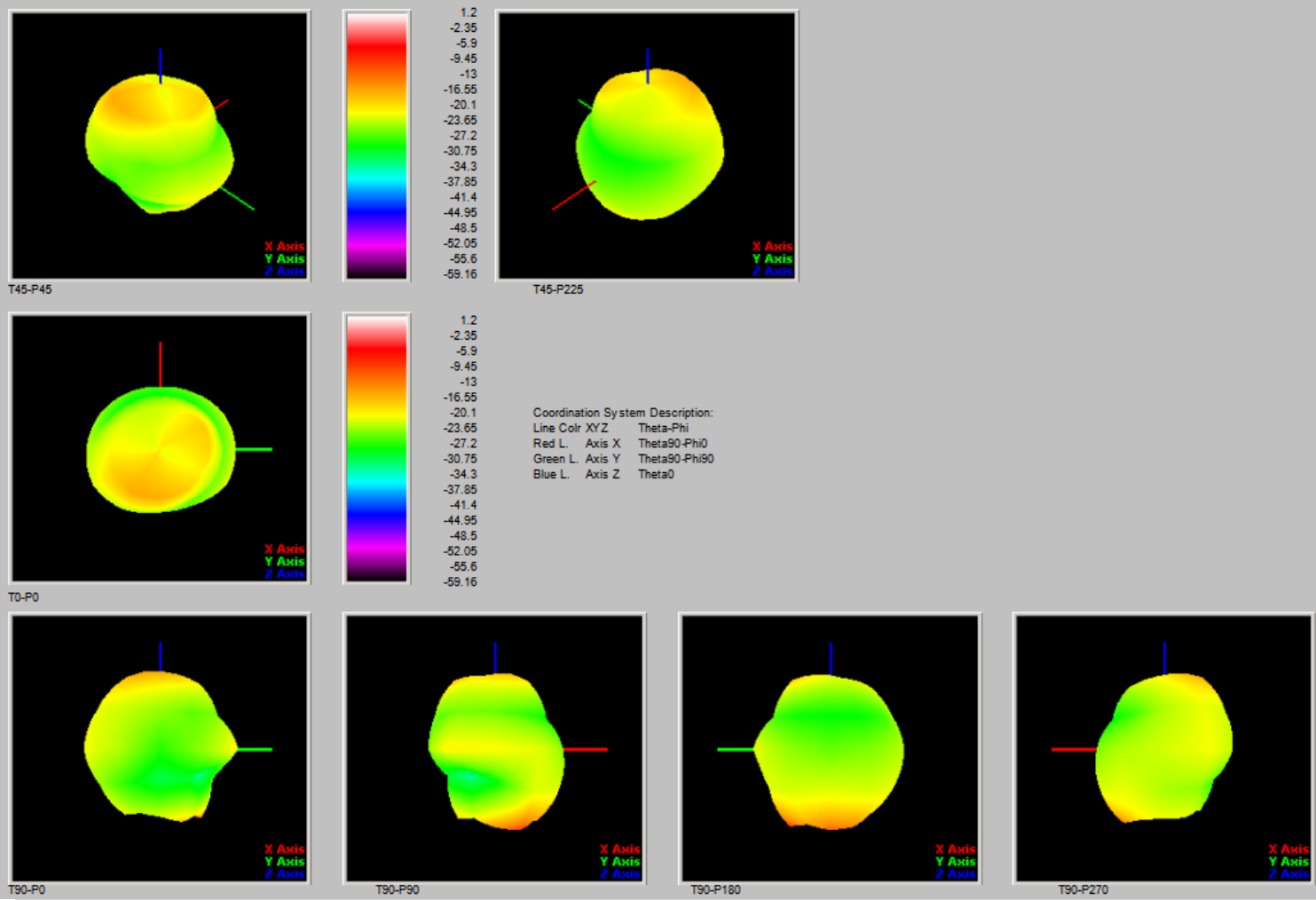
1.17
-2.55
-6.27
-9.99
-13.72
-17.44
-21.16
-24.88
-28.6
-32.32
-36.04
-39.77
-43.49
-47.21
-50.93
-54.65
-58.37
-62.09

Coordination System Description:
Line Color XYZ Theta-Phi
Red L. Axis X Theta90-Phi0
Green L. Axis Y Theta90-Phi90
Blue L. Axis Z Theta0



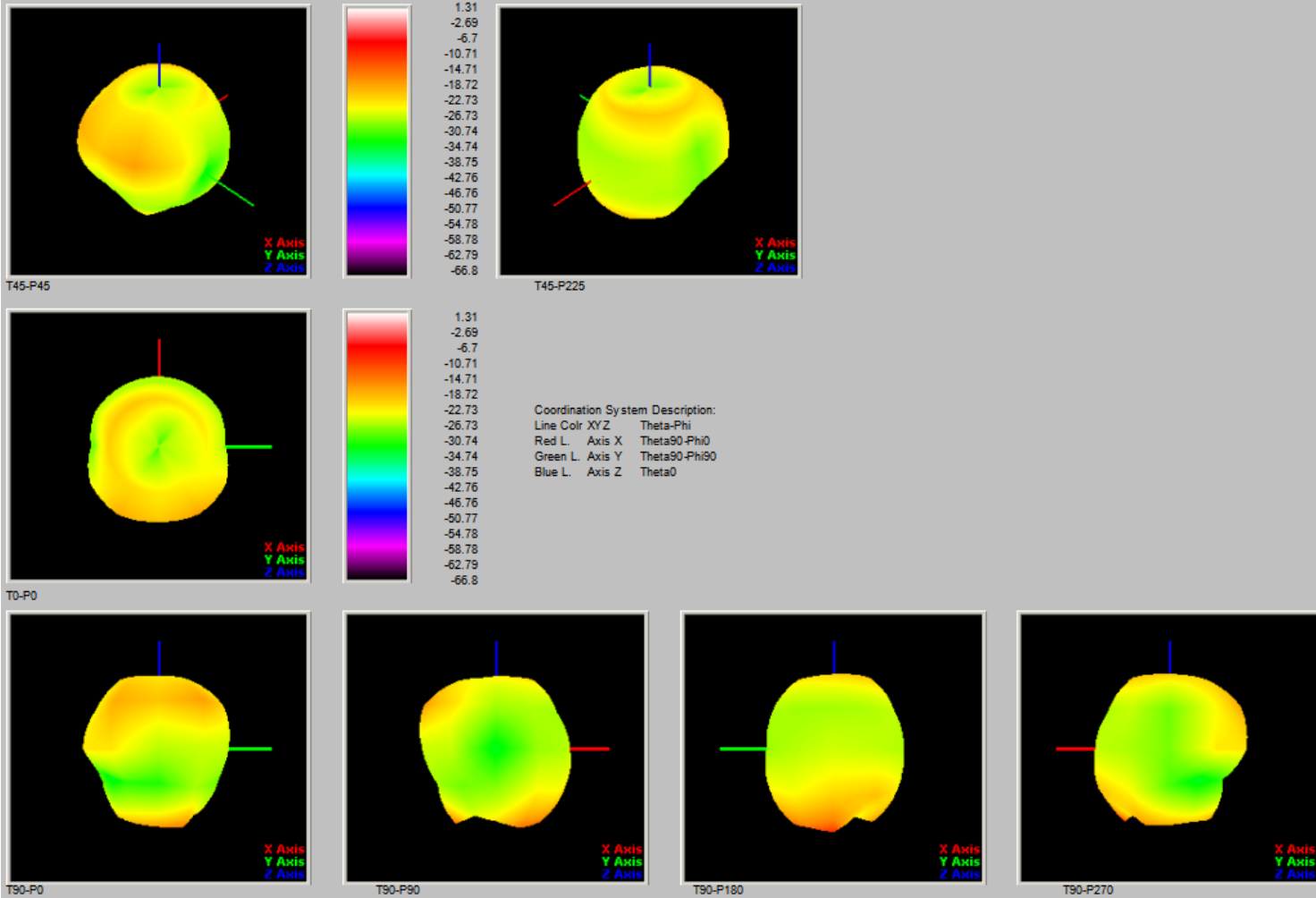
无源参数-苹果图-1990MHz-2170MHz

Passive Parameter - Apple Map -1990MHz-2170MHz



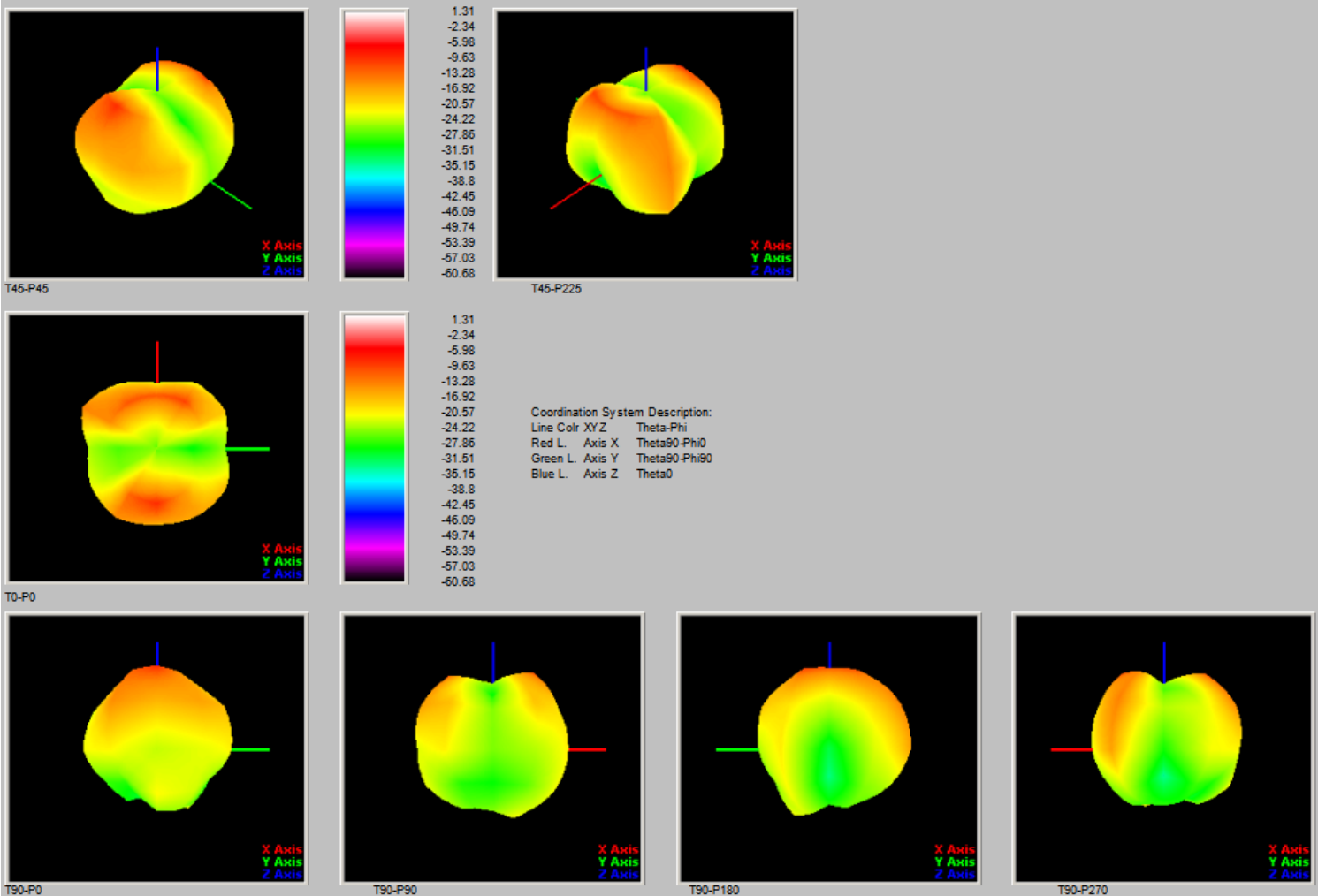
无源参数-苹果图-2300MHz-2400MHz

Passive Parameter - Apple Map -2300MHz-2400MHz

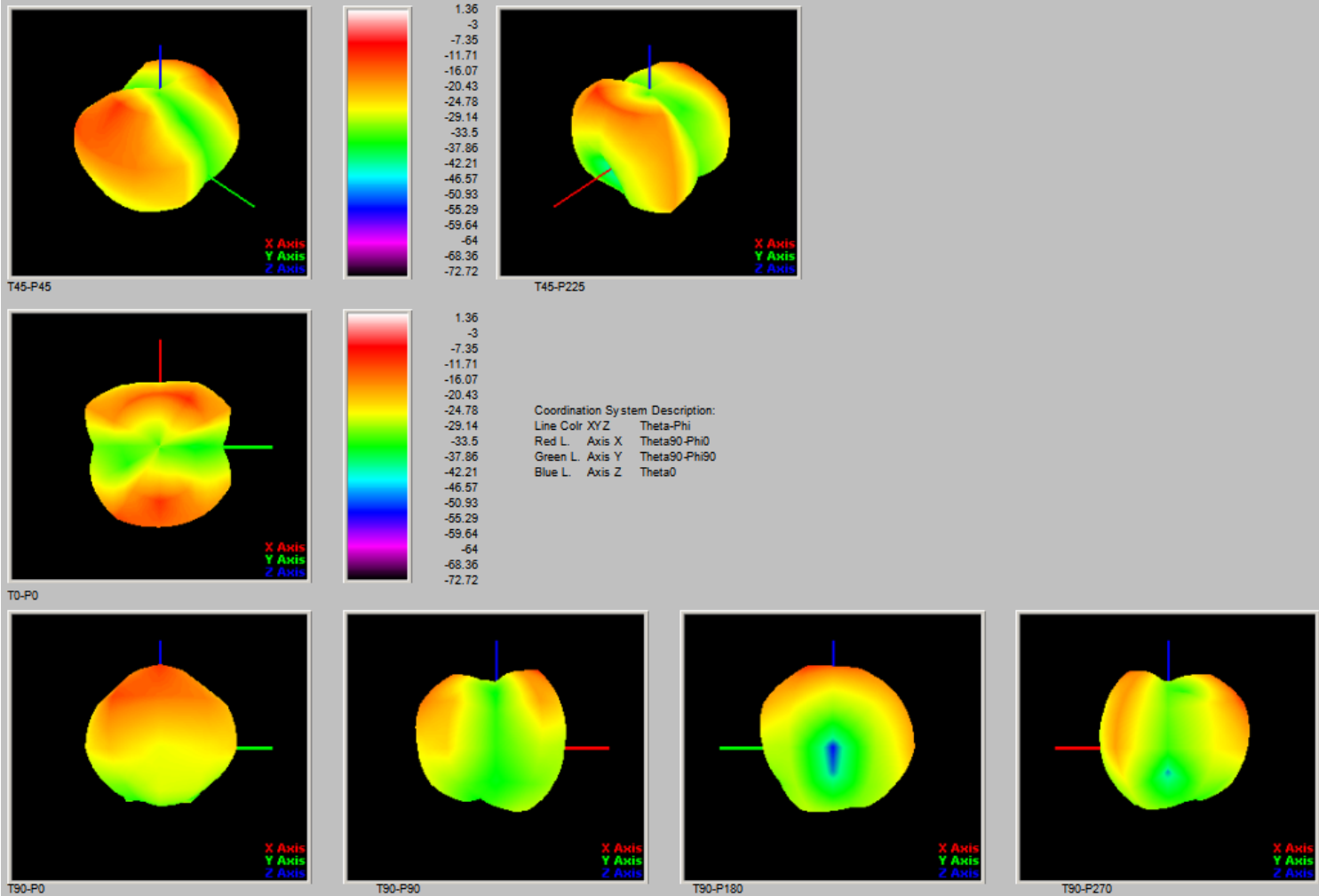


无源参数-苹果图-2400MHz-2500MHz

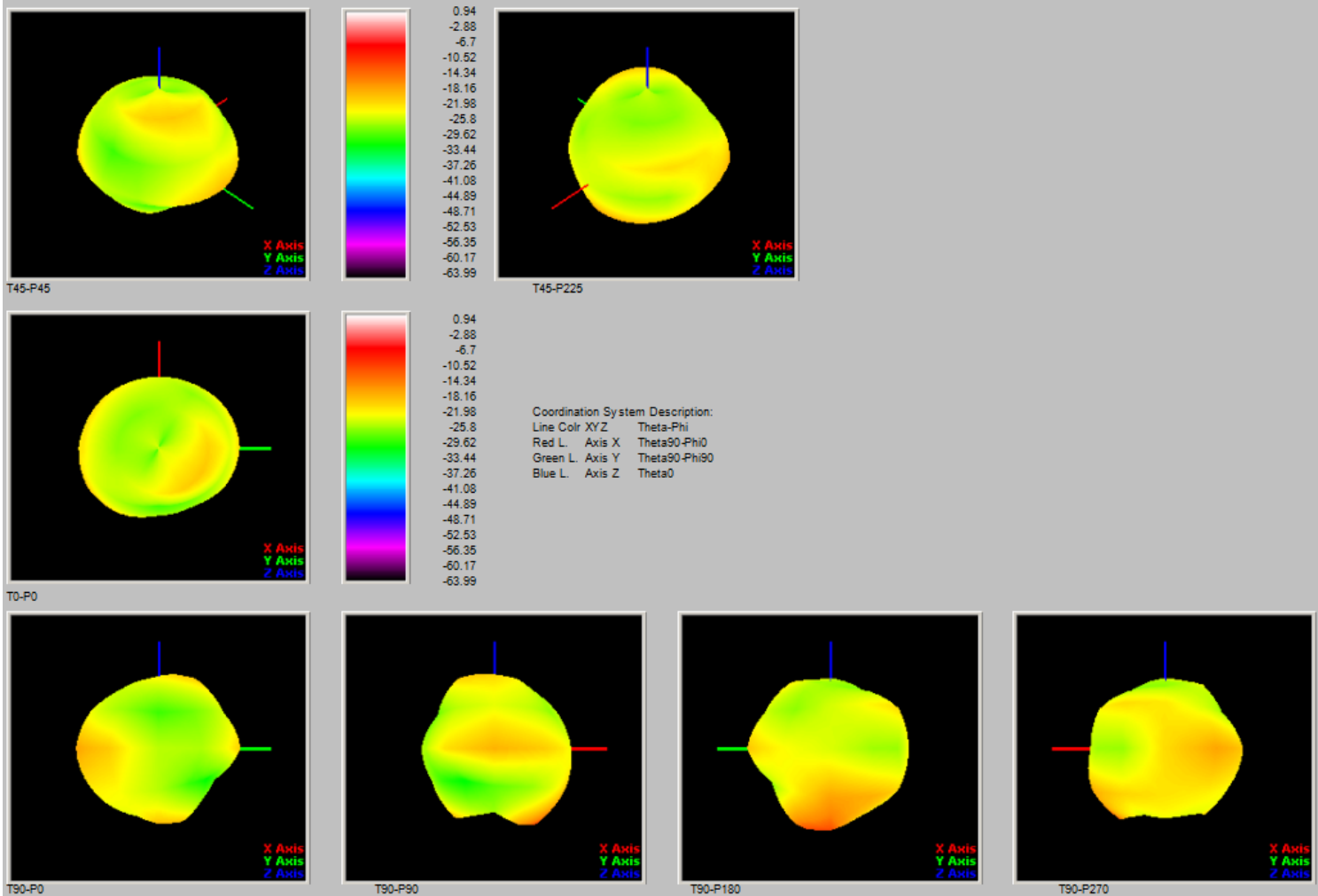
Passive Parameter - Apple Map -2400MHz-2500MHz



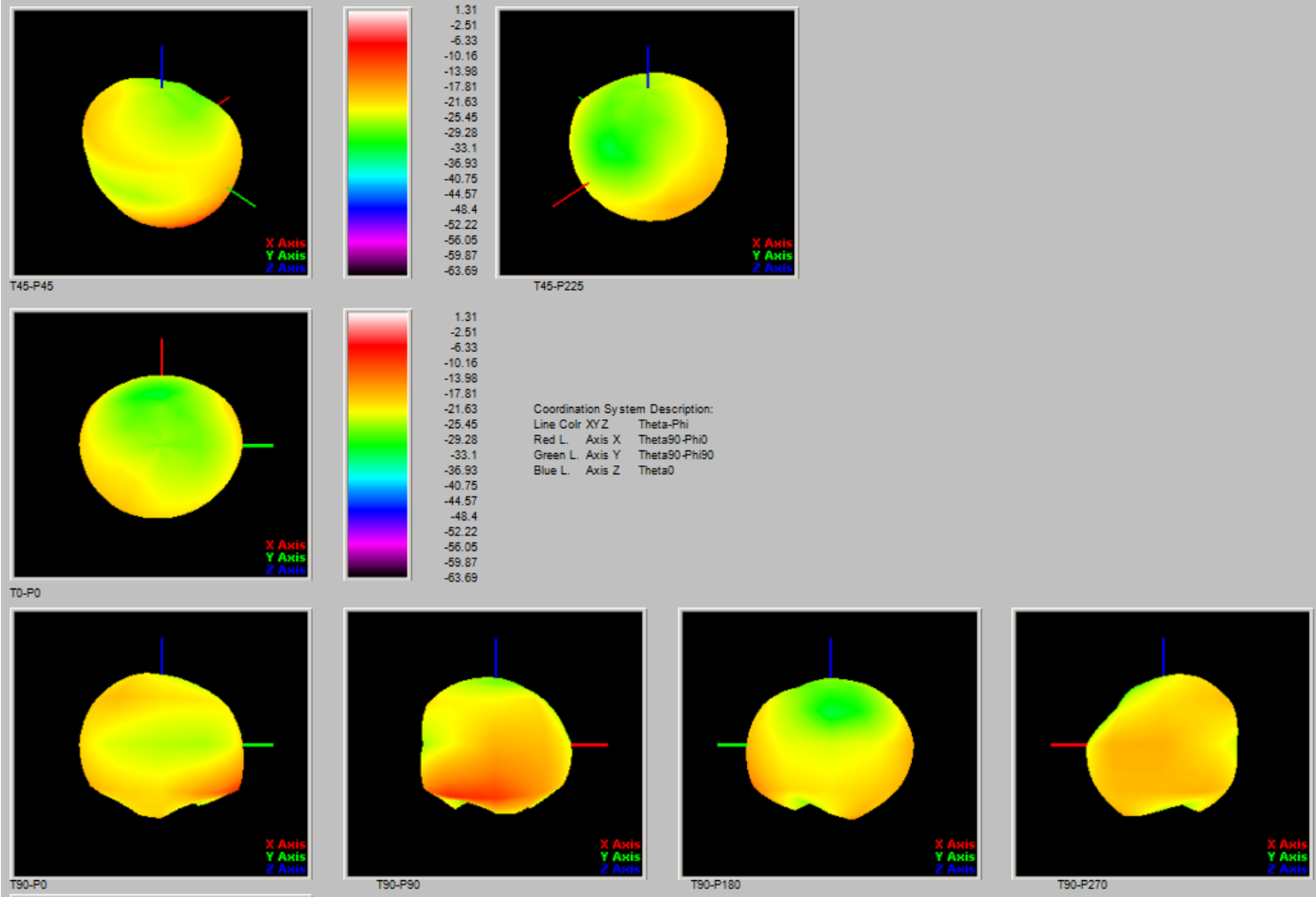
无源参数-苹果图-2500MHz-2700MHz



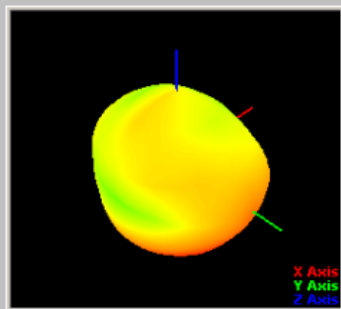
GPS-无源参数-苹果图-1560MHz-1580MHz



2. 4GWIFI&BT-无源参数-苹果图-2400MHz-2500MHz



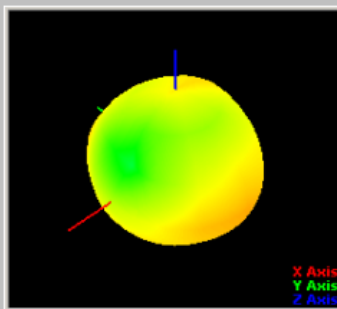
5GWIFI-无源参数-苹果图-5100MHz-5800MHz



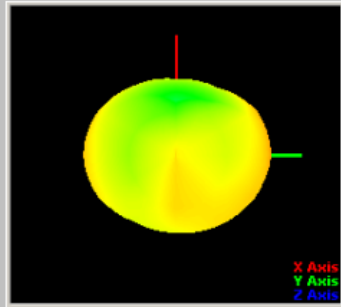
T45-P45



1.41
-2.4
-6.21
-10.02
-13.83
-17.64
-21.44
-25.25
-29.06
-32.87
-36.68
-40.49
-44.29
-48.1
-51.91
-55.72
-59.53
-63.34



T45-P225

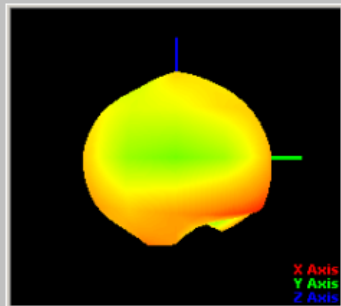


T0-P0

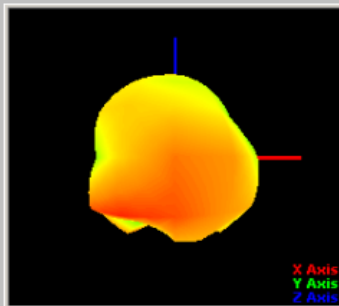


1.41
-2.4
-6.21
-10.02
-13.83
-17.64
-21.44
-25.25
-29.06
-32.87
-36.68
-40.49
-44.29
-48.1
-51.91
-55.72
-59.53
-63.34

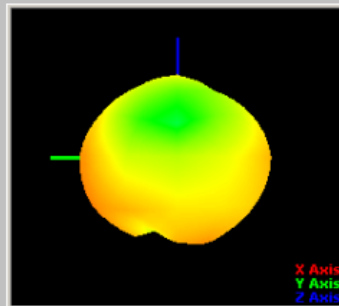
Coordination System Description:
Line Color XYZ Theta-Phi
Red L. Axis X Theta90-Phi0
Green L. Axis Y Theta90-Phi90
Blue L. Axis Z Theta0



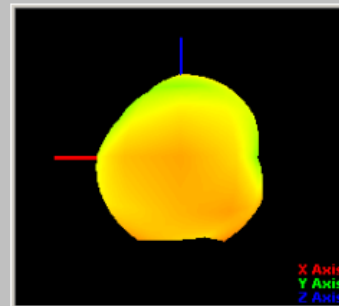
T90-P0



T90-P90



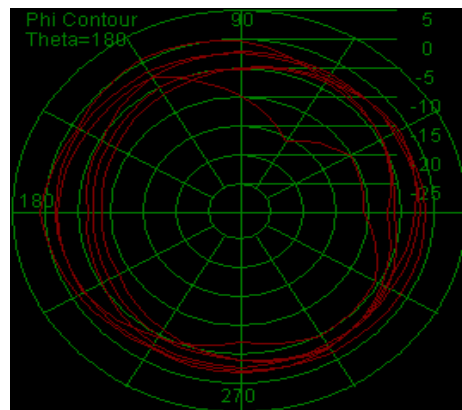
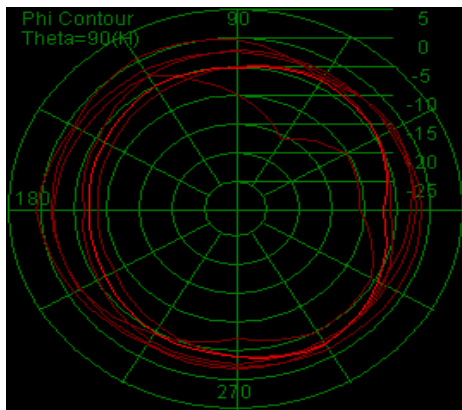
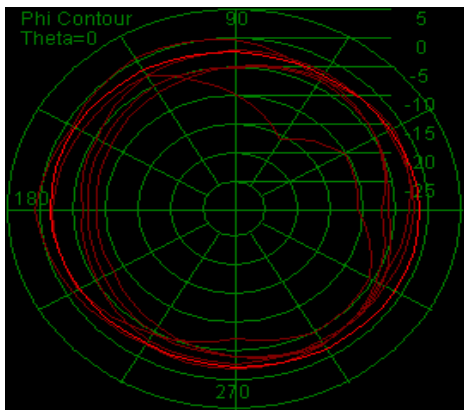
T90-P180



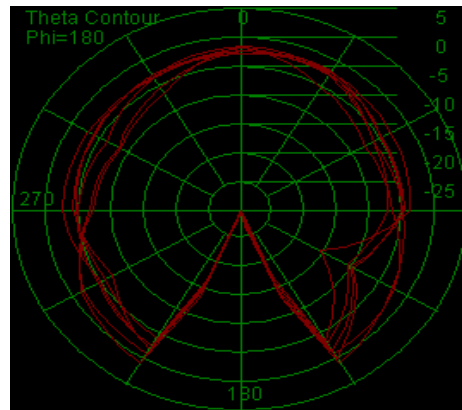
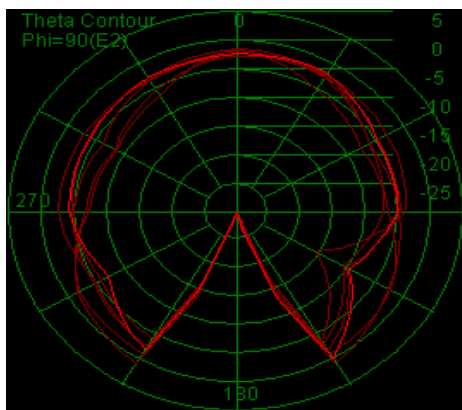
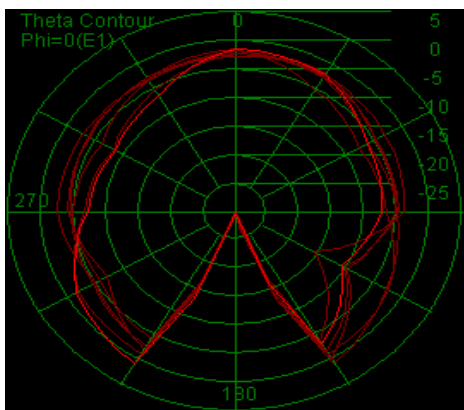
T90-P270

无源参数-平面图-824MHz-880MHz

Horizontal:

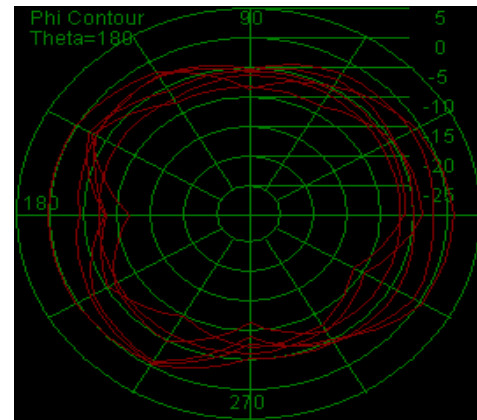
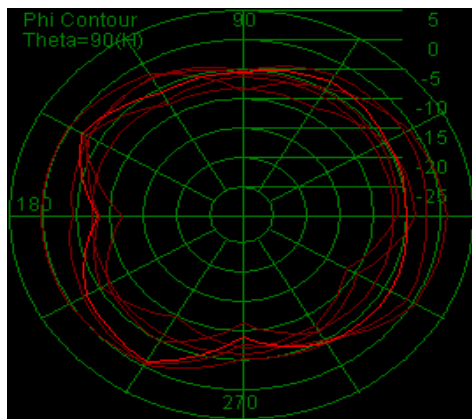
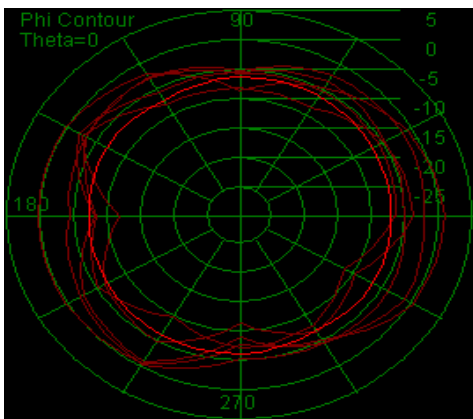


Vertical:

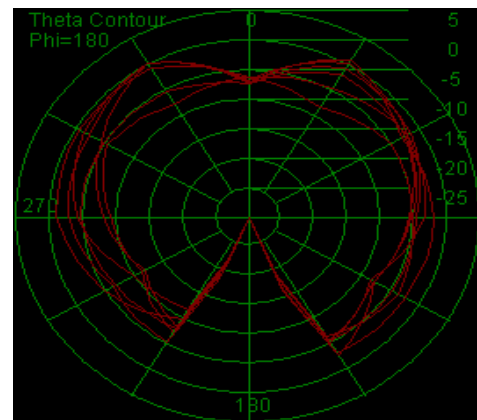
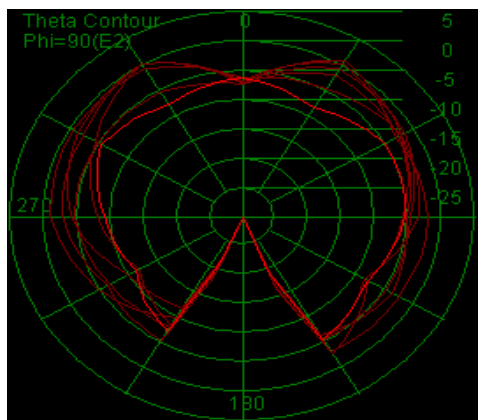
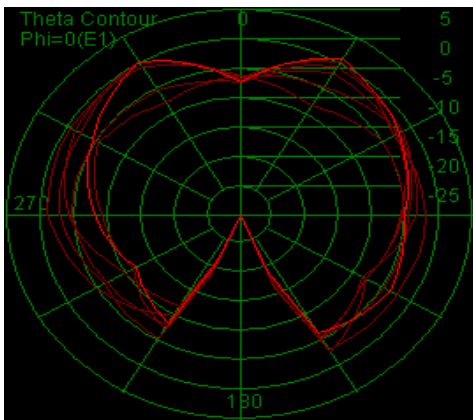


无源参数-平面图-880MHz-960MHz

Horizontal:

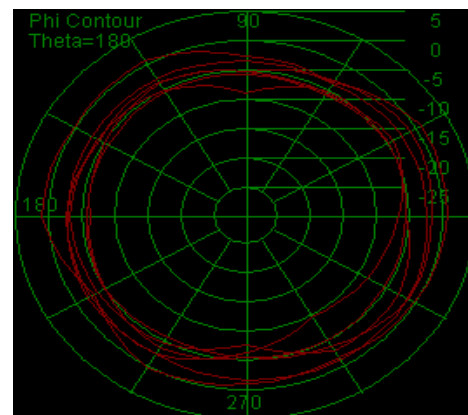
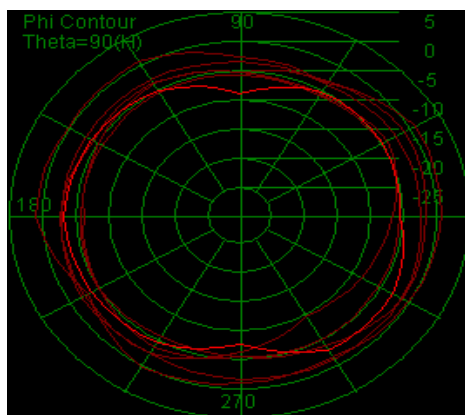
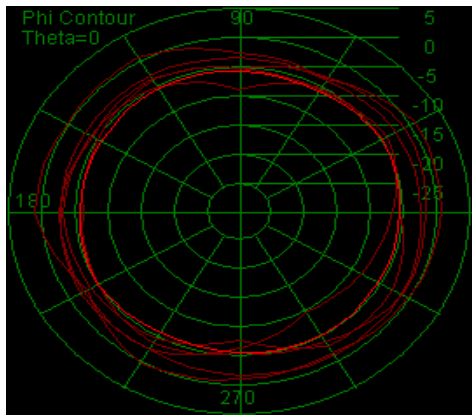


Vertical:

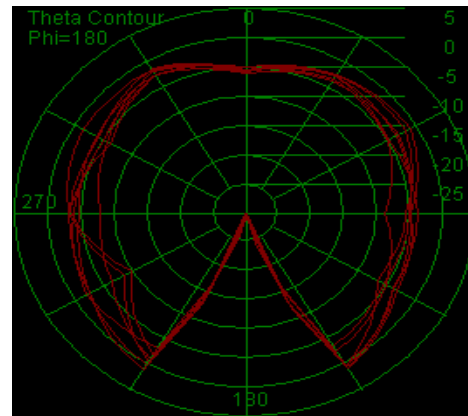
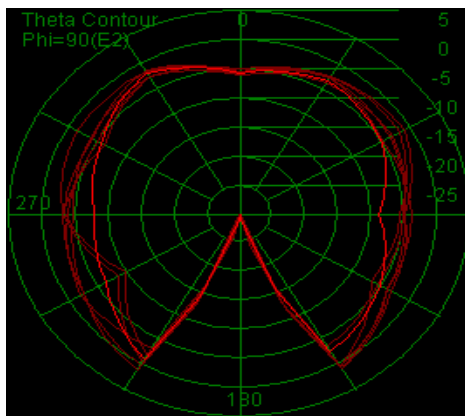
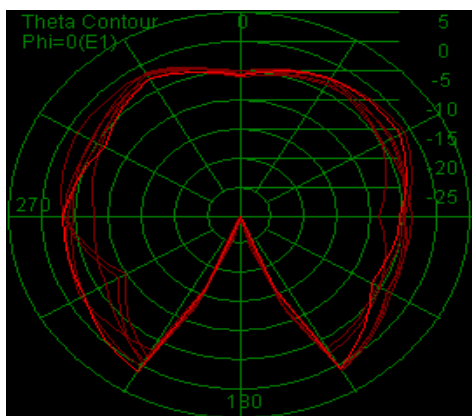


无源参数-平面图-1710MHz-1880MHz

Horizontal:

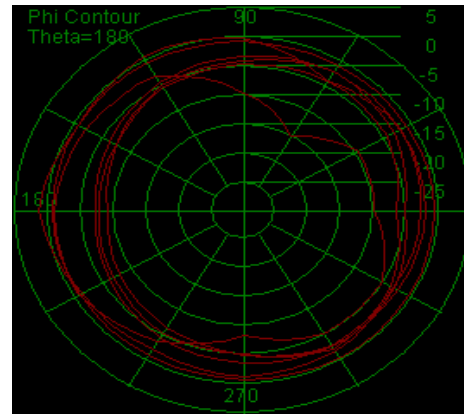
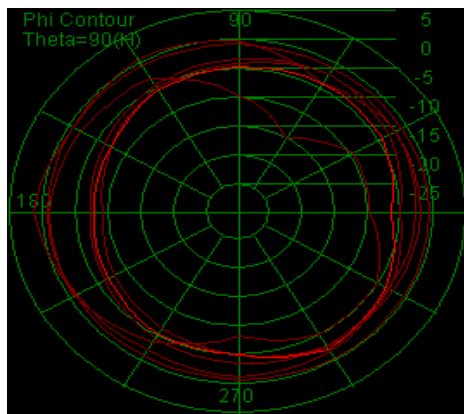
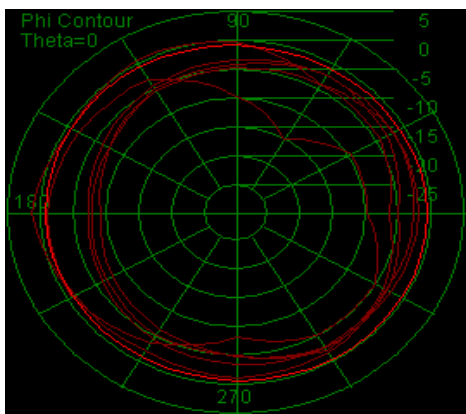


Vertical:

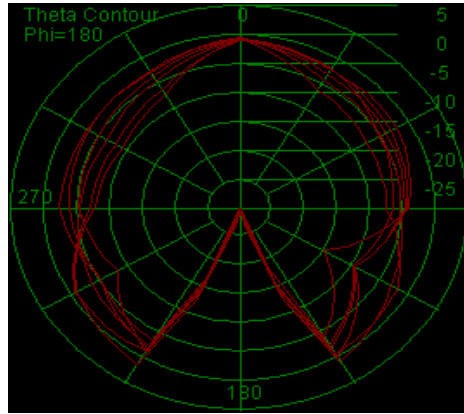
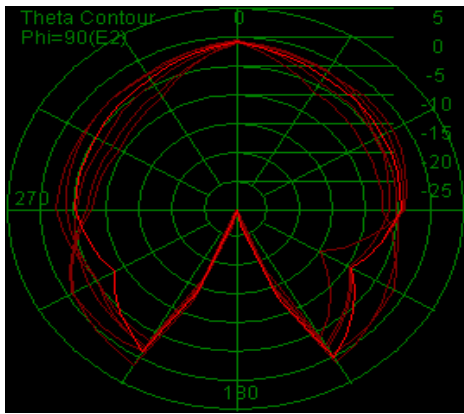
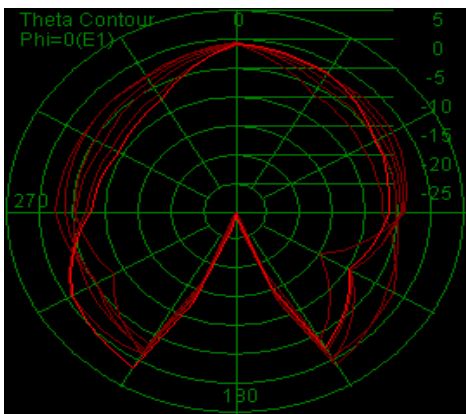


无源参数-平面图-1880MHz-1990MHz

Horizontal:

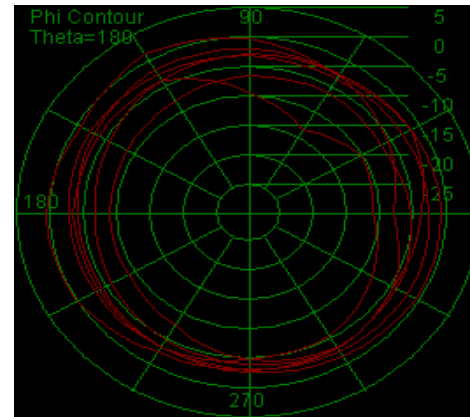
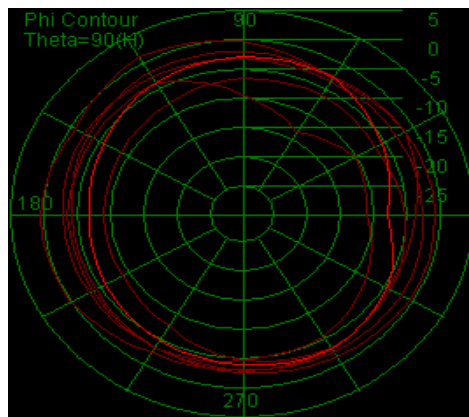
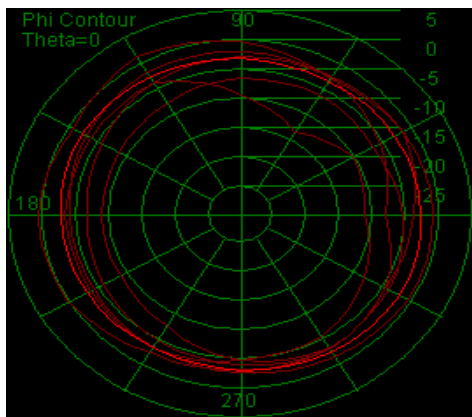


Vertical:

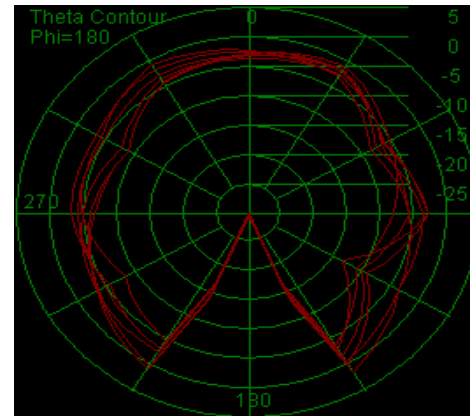
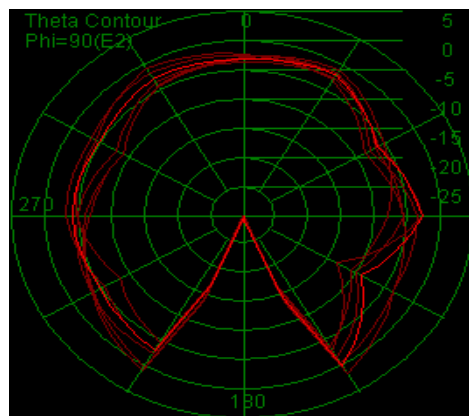
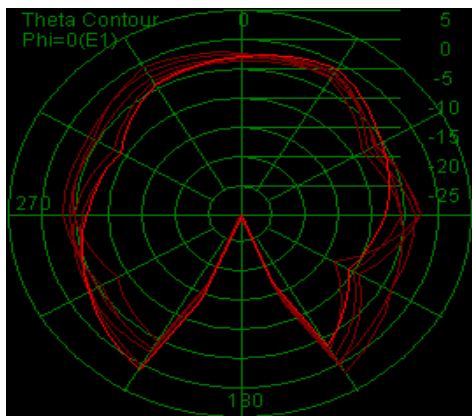


无源参数-平面图-1990MHz-2170MHz

Horizontal:

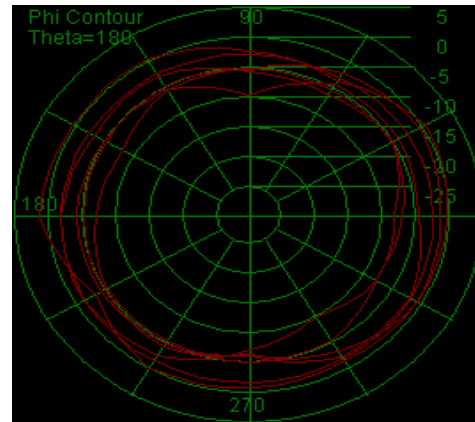
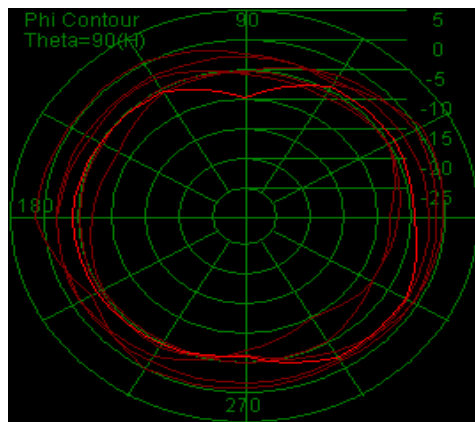
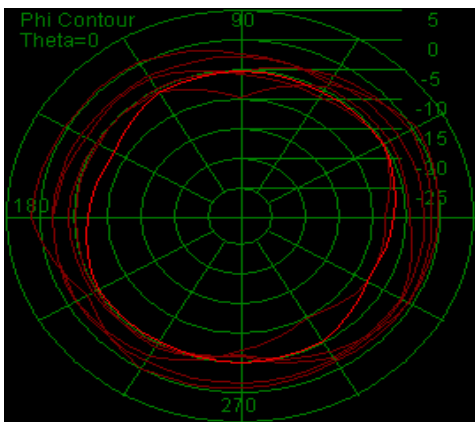


Vertical:

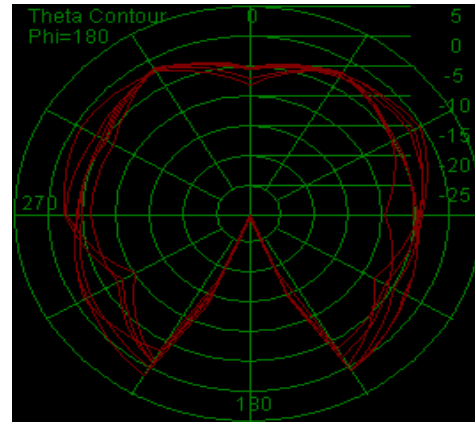
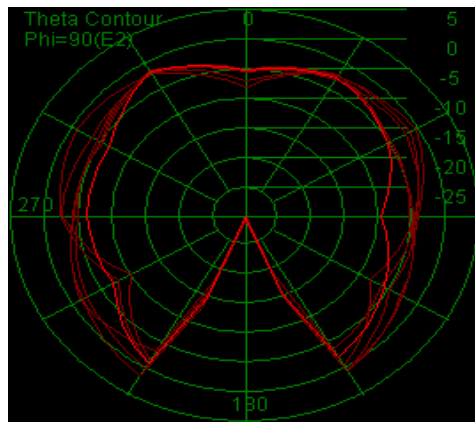
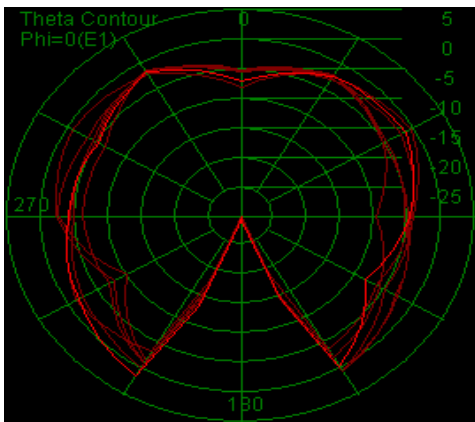


无源参数-平面图-2300MHz-2400MHz

Horizontal:

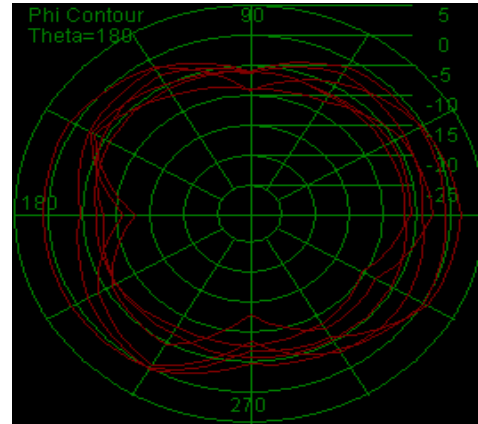
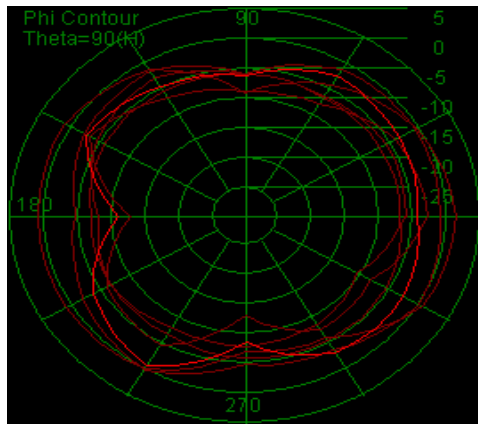
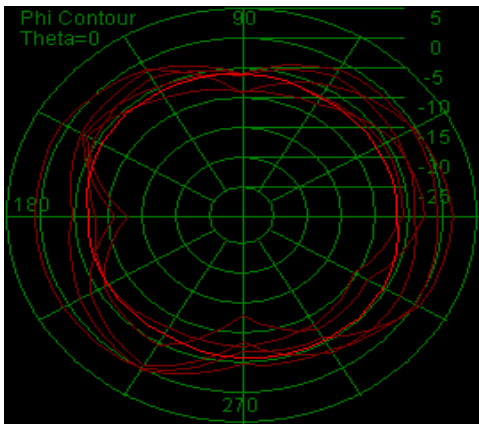


Vertical:

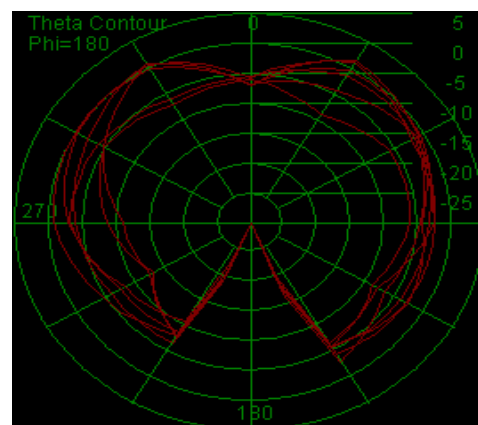
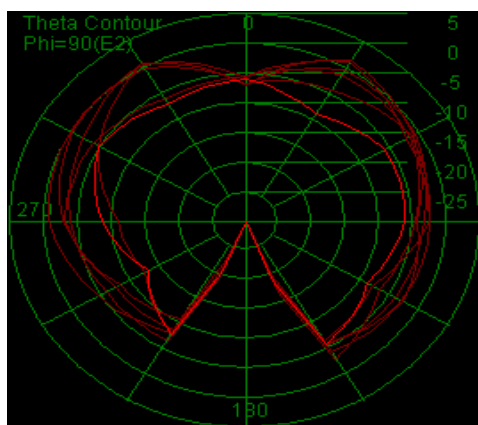
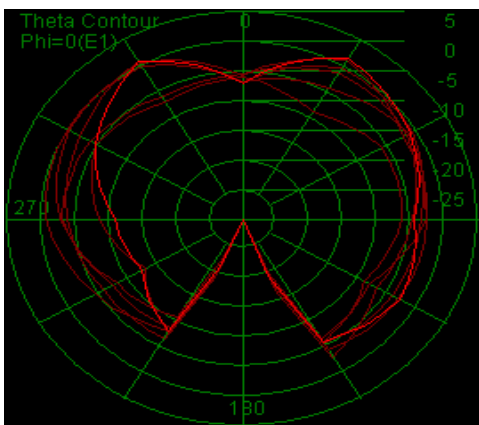


无源参数-平面图-2400MHz-2500MHz

Horizontal:

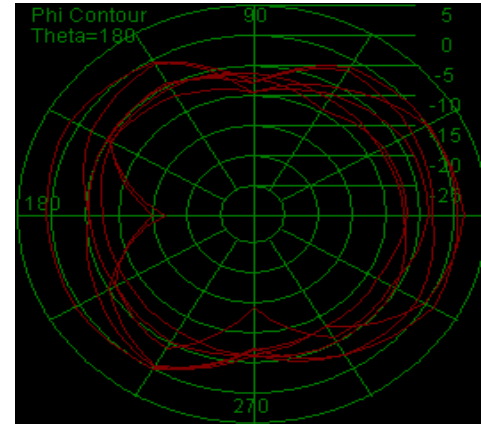
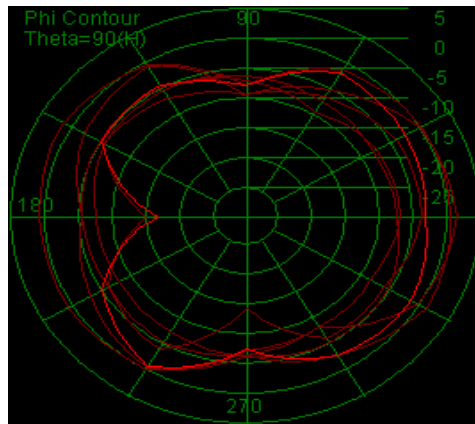
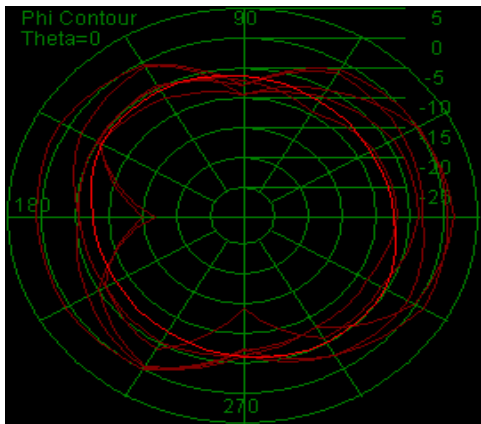


Vertical:

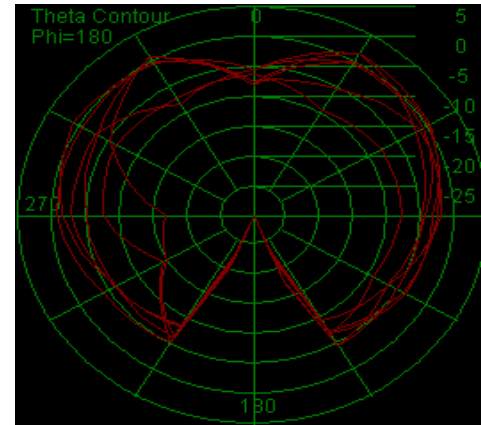
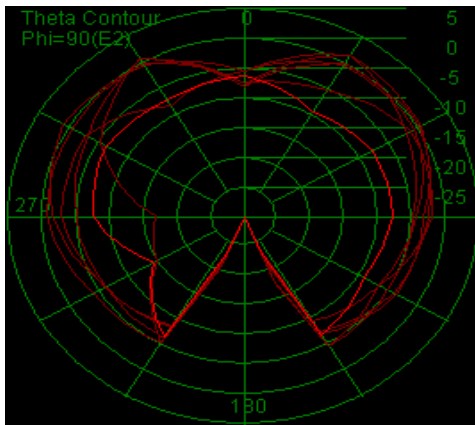
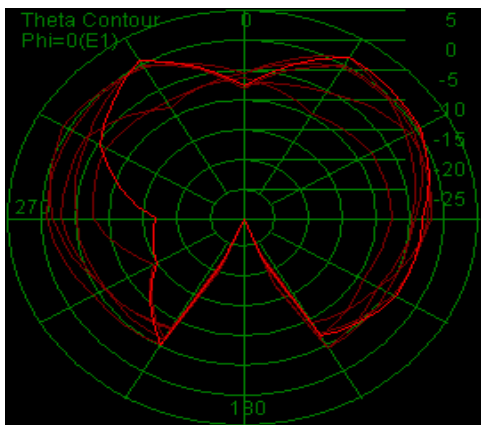


无源参数-平面图-2500MHz-2700MHz

Horizontal:

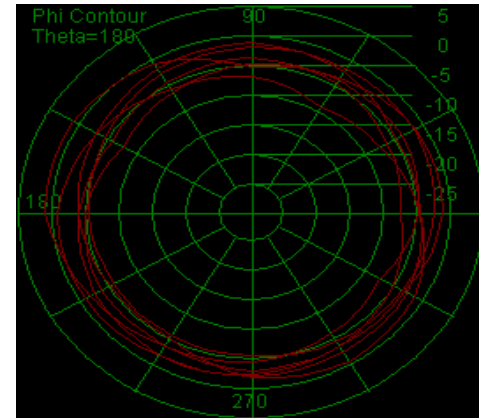
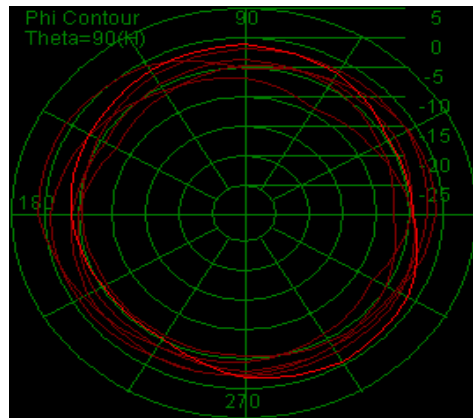
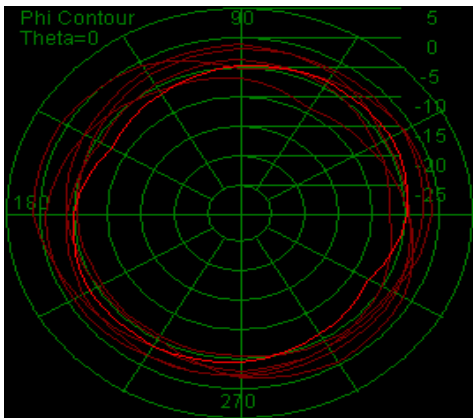


Vertical:

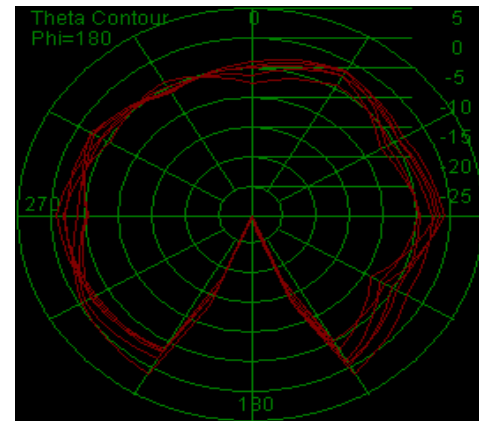
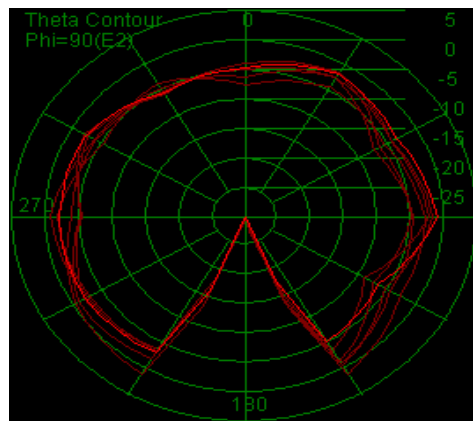
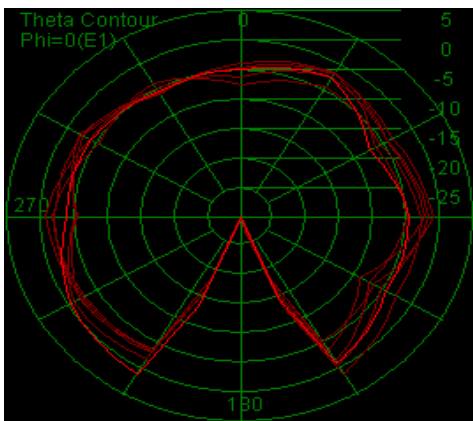


GPS-无源参数-平面图-1560MHz-1580MHz

Horizontal:

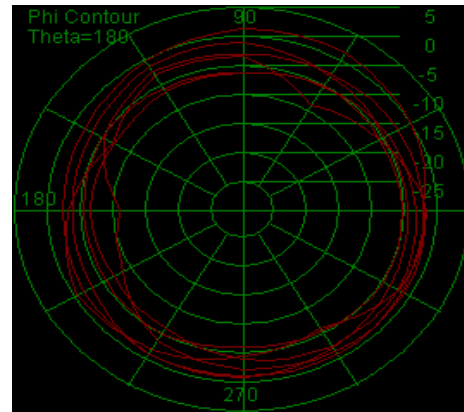
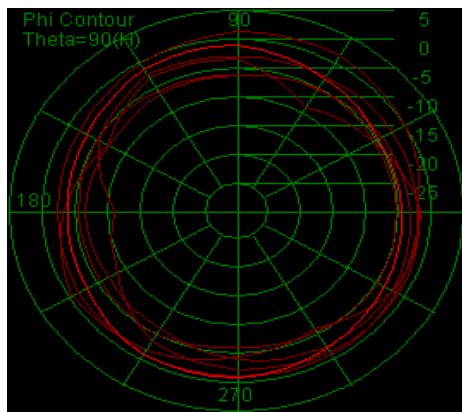
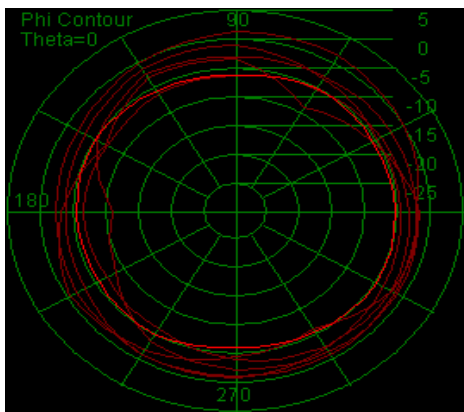


Vertical:

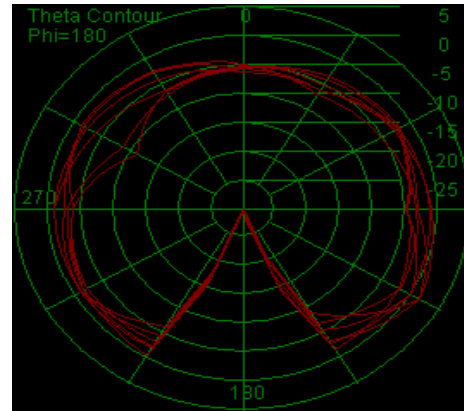
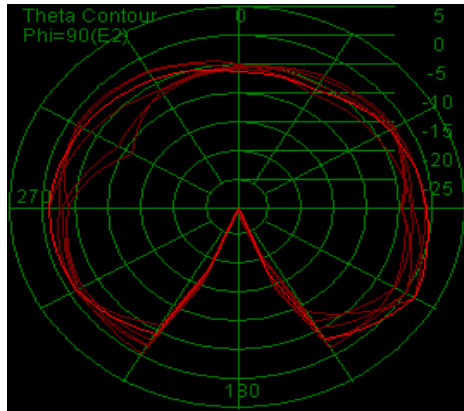
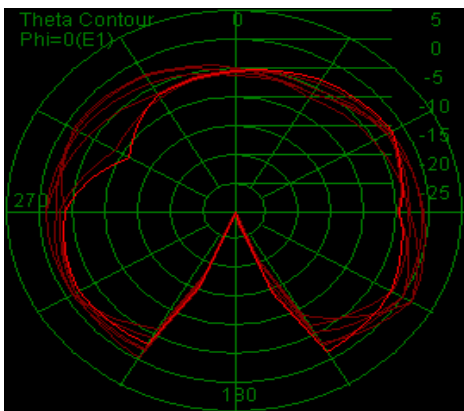


2. 4GWIFI&BT-无源参数-平面图-2400MHz-2500MHz

Horizontal:

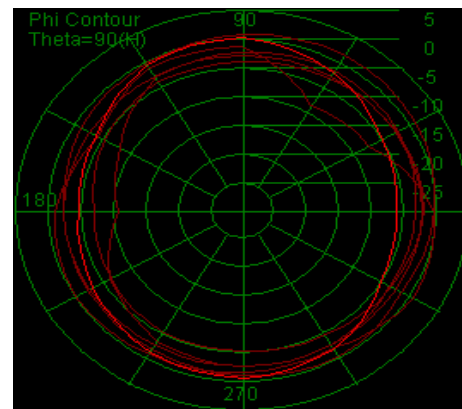
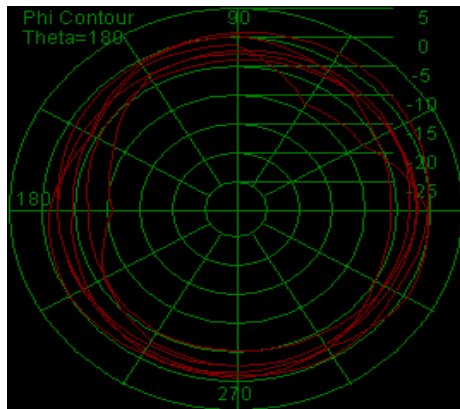
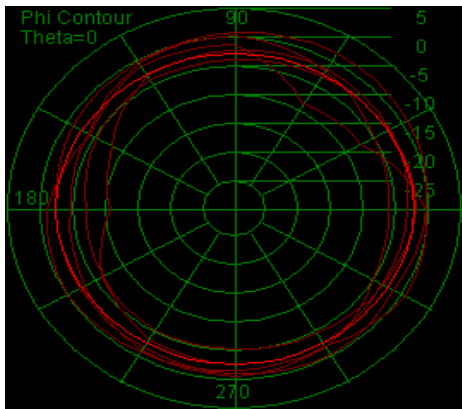


Vertical:

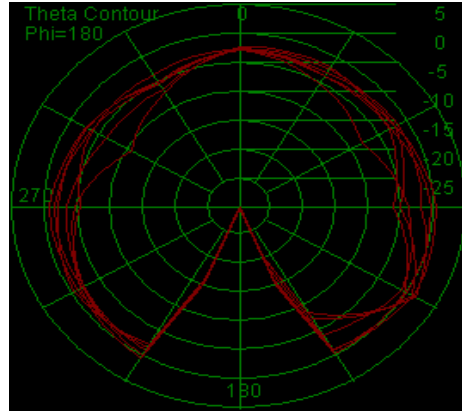
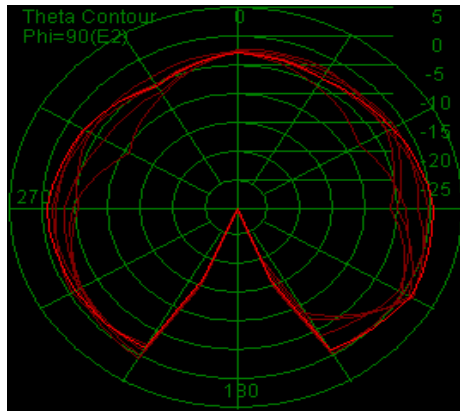
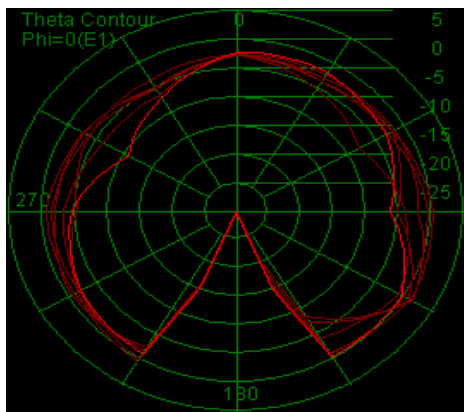


5GWIFI-无源参数-平面图-5100MHz-5800MHz
5GWIFI- Passive Parameter - Planar Graph -5100MHz-5800MHz

Horizontal:

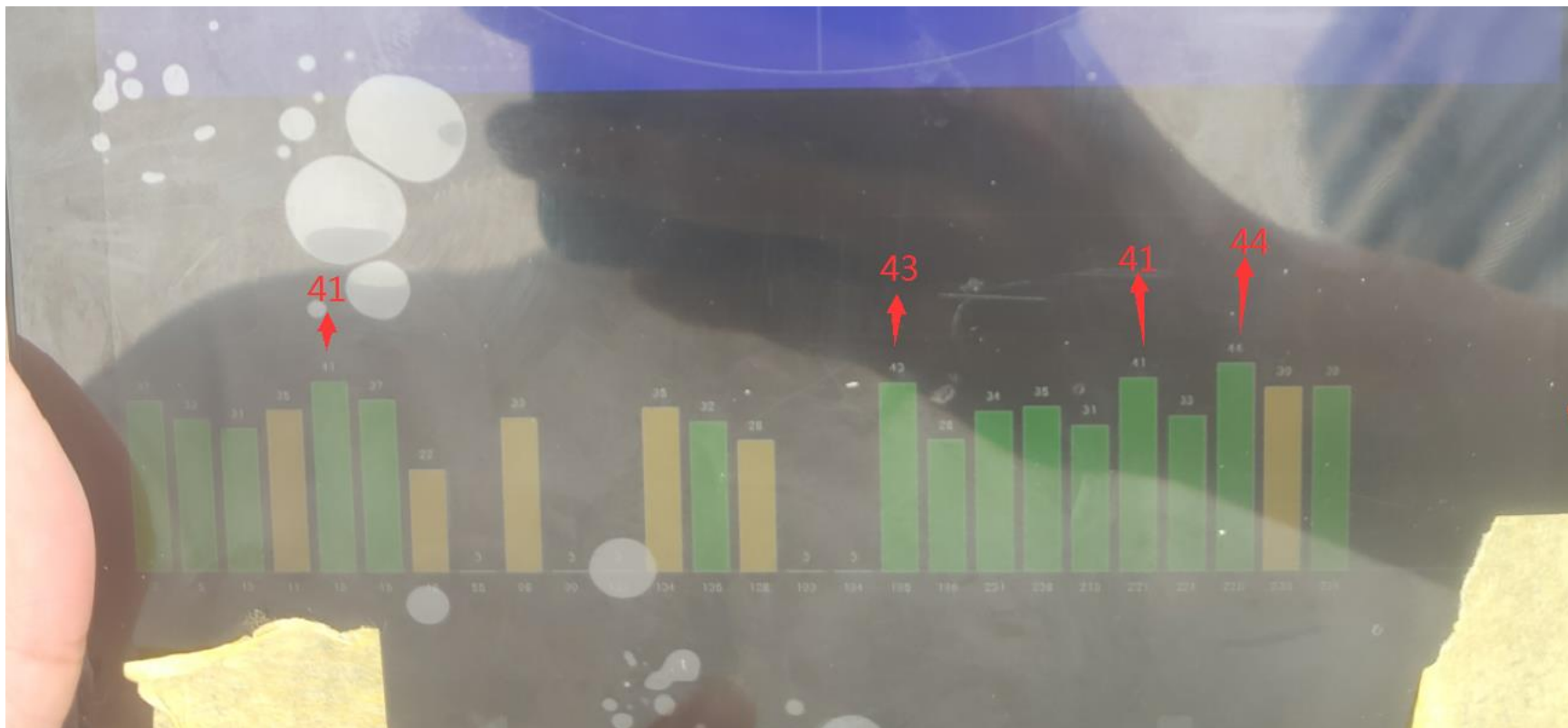


Vertical:



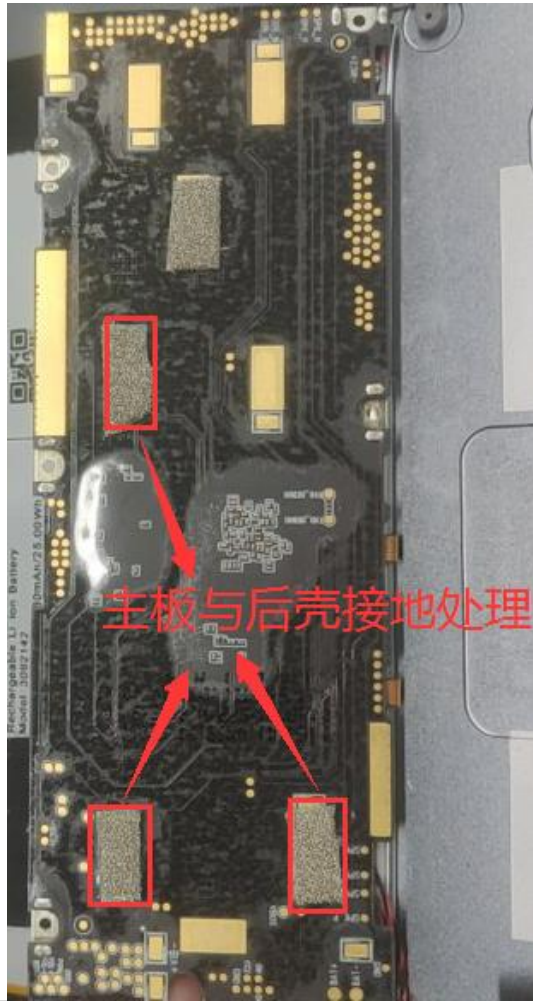
GPS测试星号图 GPS test star map

1. 在我司楼下开阔地带，草坪上测试



天线环境处理及改善

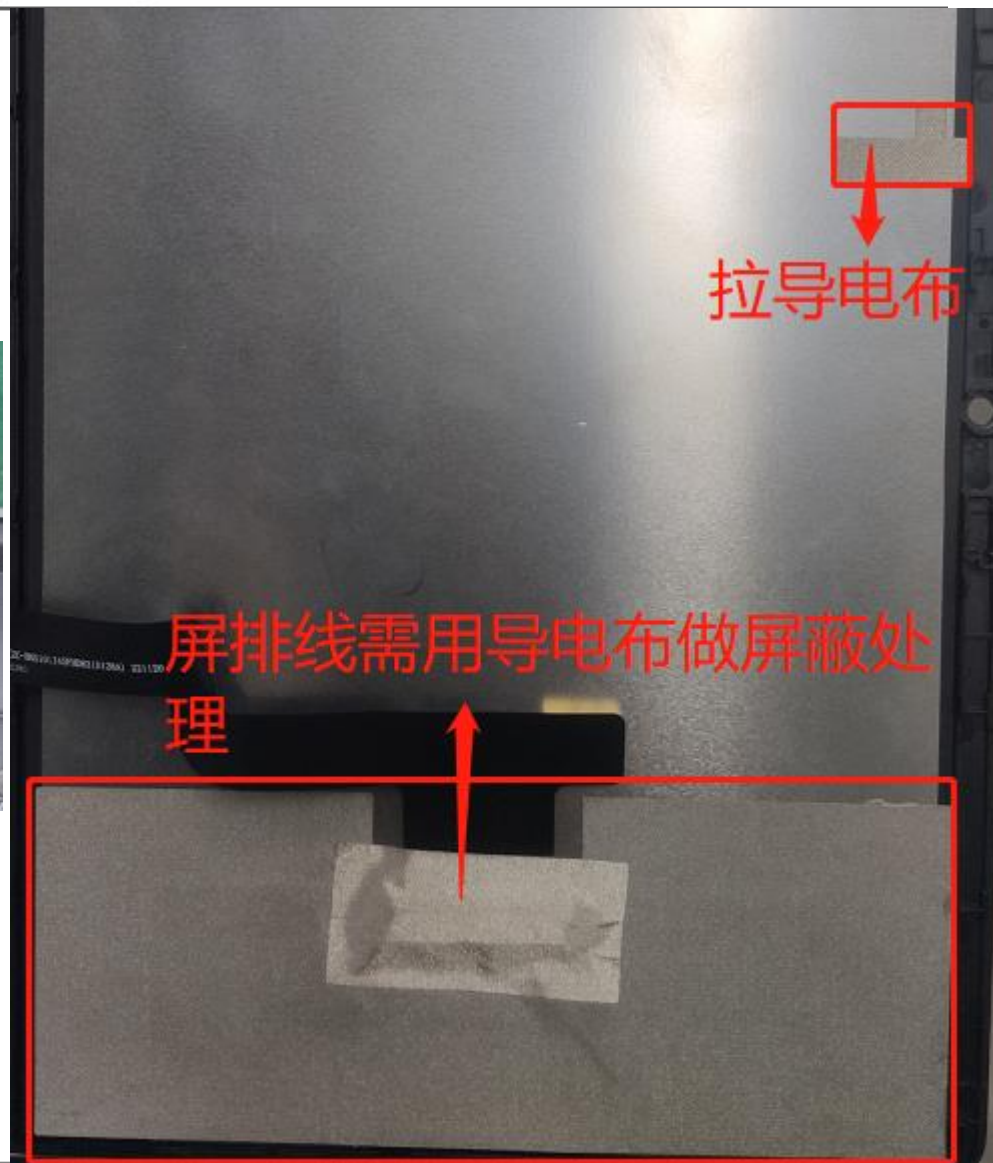
Antenna environment treatment and improvement



天线环境处理及改善
Antenna environment
treatment and improvement



需注意导通性良好



试产机注意事项

Points to note for trial production machine



总结

1. 需注意按报告中的环境处理装机，确保整机一致性
2. 此报告为FCC认证报告

1. Pay attention to handling the installed machine according to the environment in the report to ensure the consistency of the whole machine.
2. This report is the FCC certification report.

Thank you!



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