Yishunxing Huaxing-A1 Antenna Test Report

RF: Hong

Yuankai Date:

2025-5-21 Contact: 15119409299
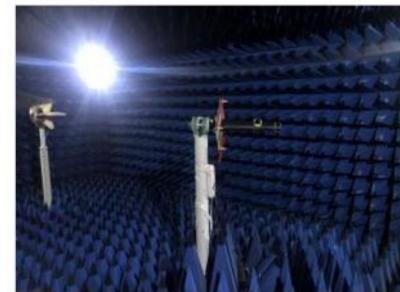
Project Debugging Introduction

model				
Plate type	Motherboard			
Frequency band and antenna material	Main Antenna	2G	GSM850/900/1800/1900	FPC
		3G	WCDMA B1/2/4/5/8	
		4G	LTE B1/2/3/5/7/8/12/13/17/20/25/26/28AB/34/ 38/39/40/41/66/71	
	Other Antennas	GWB	1575.42MHz/2.45GHz/5.8GHz	FPC
		DRX	have	FPC
Performance requirements	Execute according to customer requirements			

Note on header row for Frequency band and antenna material section: Frequency band / Material

Report Version Outline

Report Version	Reporting time	Problems solved by this antenna development
V0.1	20250313	Switch Logic Report
V0.2	20250318	Active test report
V0.3	20250321	Sample test report
V0.4	20250510	Machine test report (switch matching has been changed)
V0.5	20250521	Machine test report (add standing wave diagram, gain, dimension diagram, etc.)

Main Antenna Switch Logic

RF1 (C123: 0ÿ)	EGSM900,DCS1800,PCS1900, WCDMA B1/2/4/8, LTE-B1/2/3/4/7/8/25/34/38/39/40/41/66
RF2 (C121: 8.2nH)	GSM850, WCDMA B5, LTE-B5/20/26
RF3 (C131: 33nH)	LTE-B12/13/17/28AB
RF4 (C122: 68nH)	LTE-B71

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Main antenna active parameters

频段	CH	TRP（db）	TIS（dbm）	频段	CH	TRP（db）	TIS（dbm）
GSM850	CH(Low)	27.02		WCDMA B1	CH(Low)	19.04	
	CH(Chinese)	27.27			CH(Chinese)	19.13	
	CH(High)	27.05	-96.02		CH(High)	19.18	-103.57
EGSM900	CH(Low)	27.01		WCDMA B2	CH(Low)	19.05	
	CH(Chinese)	26.02			CH(Chinese)	19.01	
	CH(High)	25.10	-98.05		CH(High)	19.32	-103.65
DCS1800	CH(Low)	25.02		WCDMA B4	CH(Low)	18.03	
	CH(Chinese)	25.12			CH(Chinese)	18.12	
	CH(High)	25.07	-103.08		CH(High)	18.04	-103.14
PCS1900	CH(Low)	25.06		WCDMA B5	CH(Low)	17.03	
	CH(Chinese)	25.03			CH(Chinese)	17.54	
	CH(High)	25.19	-103.01		CH(High)	17.02	-97.13

Main antenna active parameters

频段	CH	TRP（db）	TIS（dbm）	频段	CH	TRP（db）	TIS（dbm）
WCDMA B8	CH(Low)	17.13		LTE B4	CH(Low)	19.05	
	CH(Chinese)	16.01			CH(Chinese)	19.16	
	CH(High)	15.02	-99.04		CH(High)	19.07	-92.03
LTE B1	CH(Low)	19.65		LTE B5	CH(Low)	17.59	
	CH(Chinese)	19.70			CH(Chinese)	18.05	
	CH(High)	19.70	-92.53		CH(High)	17.51	-85.03
LTE B2	CH(Low)	19.21		LTE B7	CH(Low)	20.53	
	CH(Chinese)	19.18			CH(Chinese)	21.08	
	CH(High)	19.68	-92.62		CH(High)	21.40	-92.62
LTE B3	CH(Low)	19.01		LTE B8	CH(Low)	17.72	
	CH(Chinese)	19.47			CH(Chinese)	16.11	
	CH(High)	19.41	-93.19		CH(High)	15.05	-87.08

Main antenna active parameters

频段	CH	TRP（db)	TIS（dbm)	频段	CH	TRP（db)	TIS（dbm)
LTE B12	CH(Low)	15.75		LTE B25	CH(Low)	19.05	
	CH(Chinese)	15.51			CH(Chinese)	19.32	
	CH(High)	16.02	-85.06		CH(High)	19.10	-92.56
LTE B13	CH(Low)			LTE B26	CH(Low)	17.54	
	CH(Chinese)	16.01	-85.11		CH(Chinese)	18.02	
	CH(High)				CH(High)	17.53	-85.19
LTE B17	CH(Low)	15.74		LTE B28A	CH(Low)	16.01	
	CH(Chinese)	16.03			CH(Chinese)	16.29	
	CH(High)	15.69	-85.13		CH(High)	16.13	-85.07
LTE B20	CH(Low)	17.65		LTE B28B	CH(Low)	16.20	
	CH(Chinese)	18.12			CH(Chinese)	16.02	
	CH(High)	17.61	-86.04		CH(High)	15.81	-84.12

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Main antenna active parameters

频段	CH	TRP（db)	TIS（dbm)	频段	CH	TRP（db)	TIS（dbm)
LTE B34	CH(Low)	19.53		LTE B41	CH(Low)		
	CH(Chinese)	19.60			CH(Chinese)	21.52	-92.52
	CH(High)	19.60	-92.25		CH(High)		
LTE B38	CH(Low)	21.45		LTE B66	CH(Low)	19.21	
	CH(Chinese)	21.38			CH(Chinese)	19.66	
	CH(High)	21.33	-92.51		CH(High)	18.79	-93.03
LTE B39	CH(Low)	19.12		LTE B71	CH(Low)	14.72	
	CH(Chinese)	19.07			CH(Chinese)	15.27	
	CH(High)	19.50	-92.63		CH(High)	15.61	-87.03
LTE B40	CH(Low)	20.66					
	CH(Chinese)	20.83					
	CH(High)	20.86	-91.27				

Four-in-one antenna active parameters

	802.11	信道号	TRP (db)	TIS (dbm)
WIFI	11B	CH1	11.02	
		CH7	11.55	
		CH13	11.28	-81.15
	11G	CH1	10.81	
		CH7	11.23	
		CH13	11.02	-68.10
	11N	CH1	10.03	
		CH7	10.35	
		CH13	10.12	-65.03
	11A	CH36	9.02	
		CH64	10.05	
		CH165	10.23	-69.07

Antenna gain

Band	Gain (MAX)
GSM850	0.65
EGSM900	0.61
DCS1800	1.07
PCS1900	1.11
WCDMA B1	1.15
WCDMA B2	1.11
WCDMA B5	0.65
WCDMA B8	0.61
Band1	1.15
Band2	1.11
Band3	1.07
Band4	1.02
Band5	0.65
Band7	1.21
Band8	0.61
Band12	0.52

Band	Gain (MAX)
Band17	0.53
Band20	0.65
Band28A	0.54
Band28B	0.54
Band34	1.11
Band38	1.21
Band39	1.11
Band40	1.18
Band41	1.21
GPS	1.01
2.4G WiFi	1.18
BT	1.18
5.8G WiFi	1.29

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Main antenna passive parameters	
Passive Test	
Freq	Effi
(MHz)	(%%)
600.0	20.1%
700.0	24.2%
800.0	28.7%
900.0	30.4%
960.0	22.1%
1700.0	45.7%
1800.0	50.2%
1900.0	52.1%
2000.0	54.3%
2100.0	55.1%
2200.0	53.2%
2300.0	54.5%
2400.0	54.1%
2500.0	55.3%
2600.0	55.9%
2700.0	55.7%

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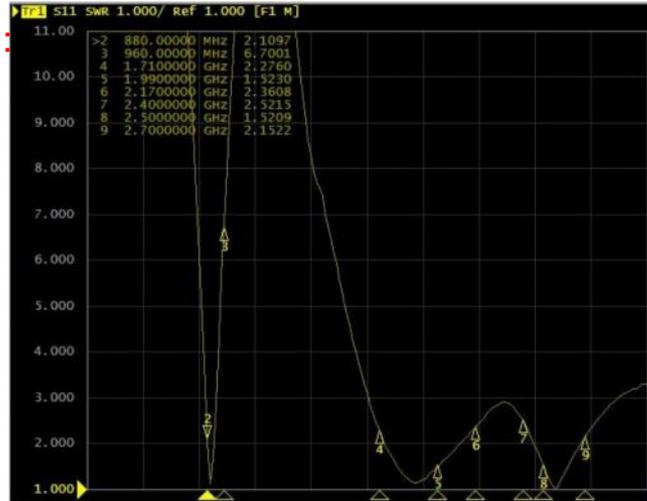
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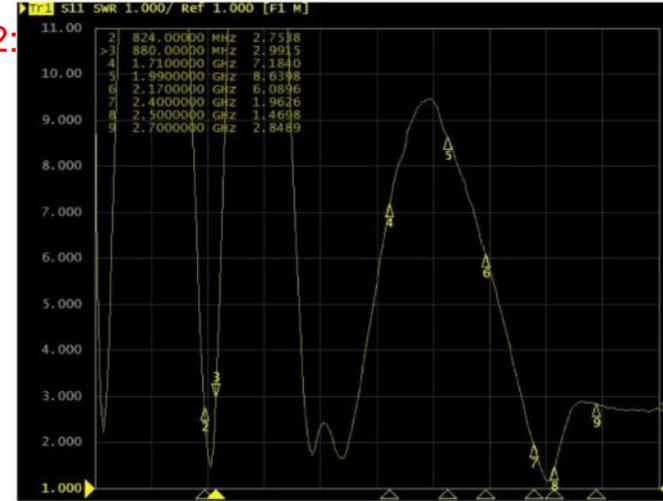
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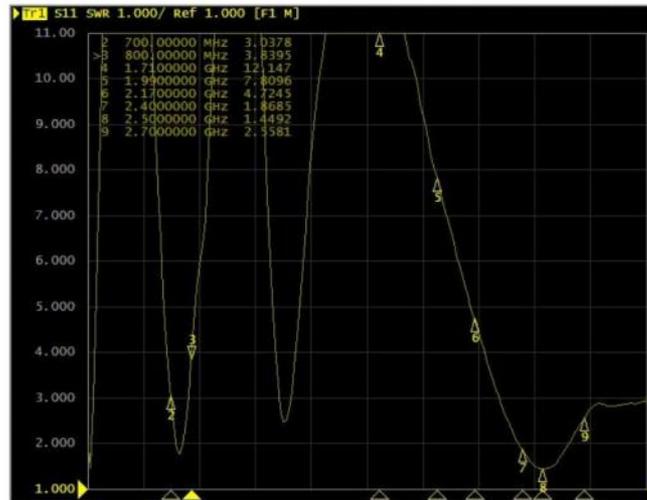
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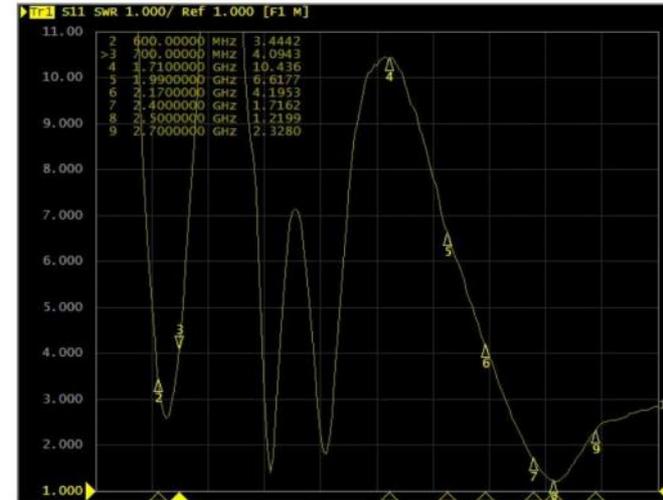
Four-in-one antenna passive parameters

Passive Test			
Freq	Effi	Freq	Effi
(MHz)	(%%)	(MHz)	(%%)
1550.0	26.2%	5100.0	31.5%
1560.0	27.5%	5160.0	31.9%
1570.0	28.9%	5220.0	32.2%
1575.0	30.1%	5280.0	32.7%
1580.0	28.5%	5340.0	32.6%
1590.0	27.3%	5400.0	33.6%
		5460.0	33.7%
2400.0	27.3%	5520.0	34.1%
2420.0	28.8%	5580.0	33.0%
2440.0	29.4%	5640.0	32.8%
2460.0	30.5%	5700.0	31.6%
2480.0	29.3%	5760.0	31.1%
2500.0	28.2%		

Tr1 S11 SWR 1.000/ Ref 1.000 [F1 M]

1	1.5754200	GHz	1.6498
2	2.4000000	GHz	1.6953
3	2.5000000	GHz	1.8183
4	5.1000000	GHz	1.6093
>5	5.8000000	GHz	1.4498

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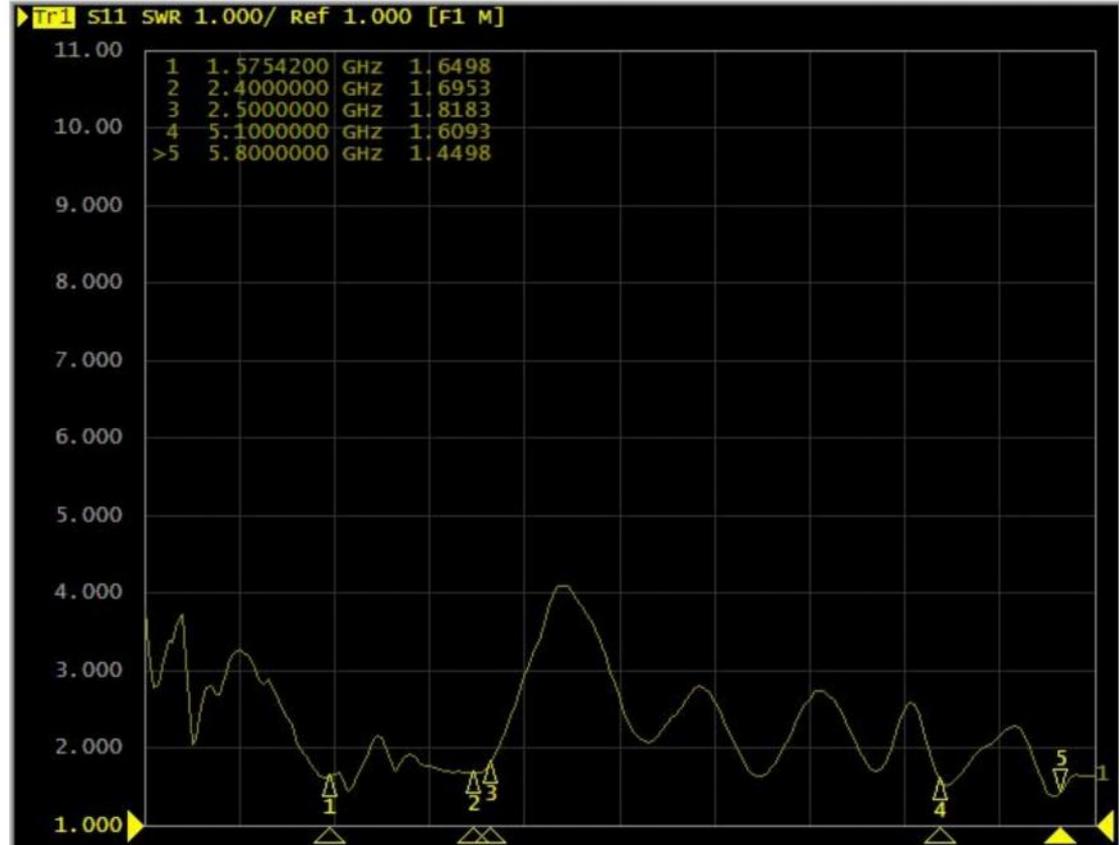
Diversity antenna passive parameters

Passive Test	
Freq	Effi
(MHz)	(%%)
600.0	18.5%
700.0	21.1%
800.0	23.6%
900.0	25.2%
960.0	20.5%
1700.0	25.3%
1800.0	27.1%
1900.0	30.3%
2000.0	28.4%
2100.0	27.0%
2200.0	25.5%
2300.0	26.2%
2400.0	28.1%
2500.0	29.5%
2600.0	30.9%
2700.0	30.2%

Tr1 S11 SWR 1.000/ Ref 1.000 [F1 M]

1	700.00000	MHz	2.4898
>2	824.00000	MHz	3.1035
3	960.00000	MHz	3.8913
4	1.7100000	GHz	4.2460
5	1.9900000	GHz	4.2559
6	2.1700000	GHz	5.7282
7	2.4000000	GHz	3.0482
8	2.5000000	GHz	1.9647
9	2.7000000	GHz	2.4367
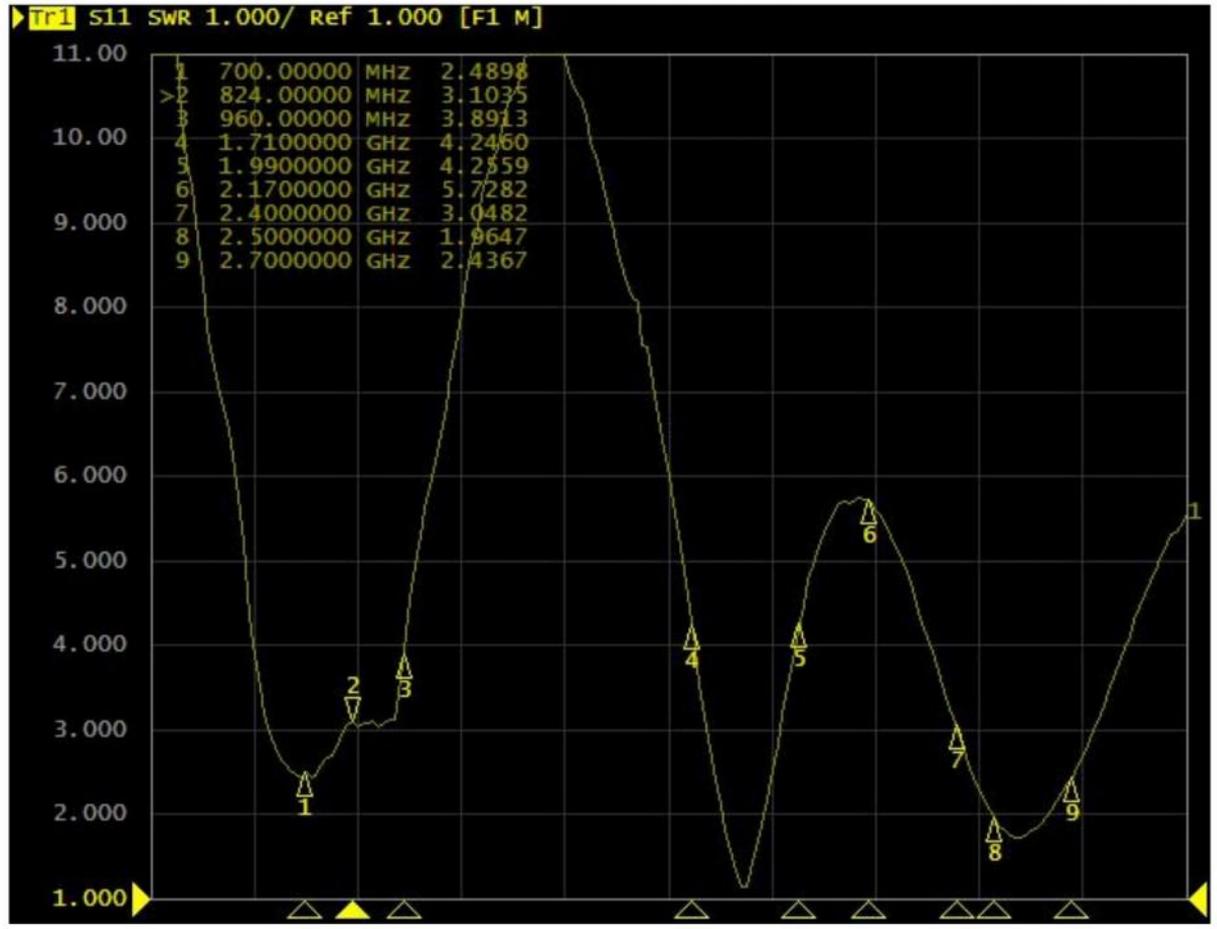
Passive parameters-Apple diagram-600MHz-824MHz
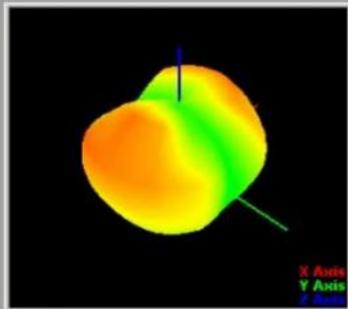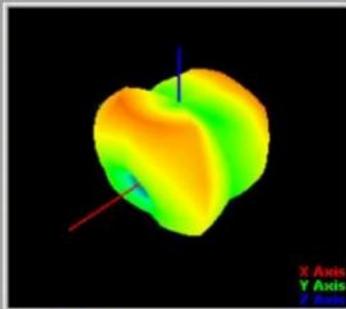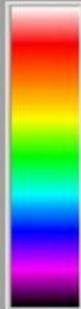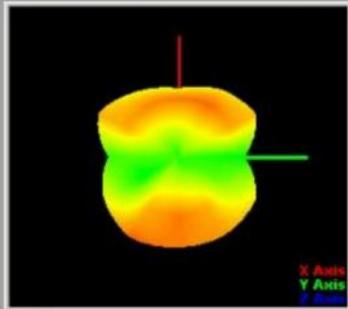
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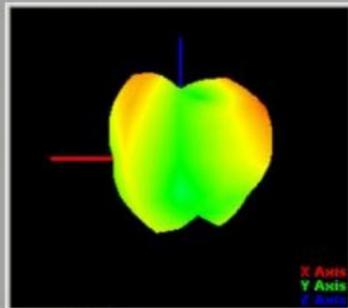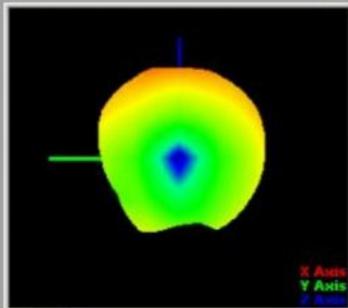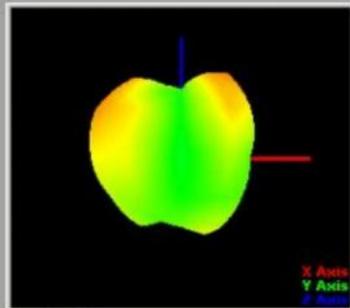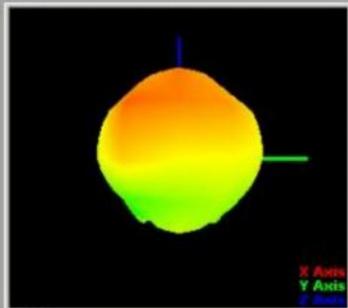
Coordination System Description:
Line Colr XYZ   Theta-Phi
Red L.   Axis X   Theta90-Phi0
Green L.   Axis Y   Theta90-Phi90
Blue L.   Axis Z   Theta0
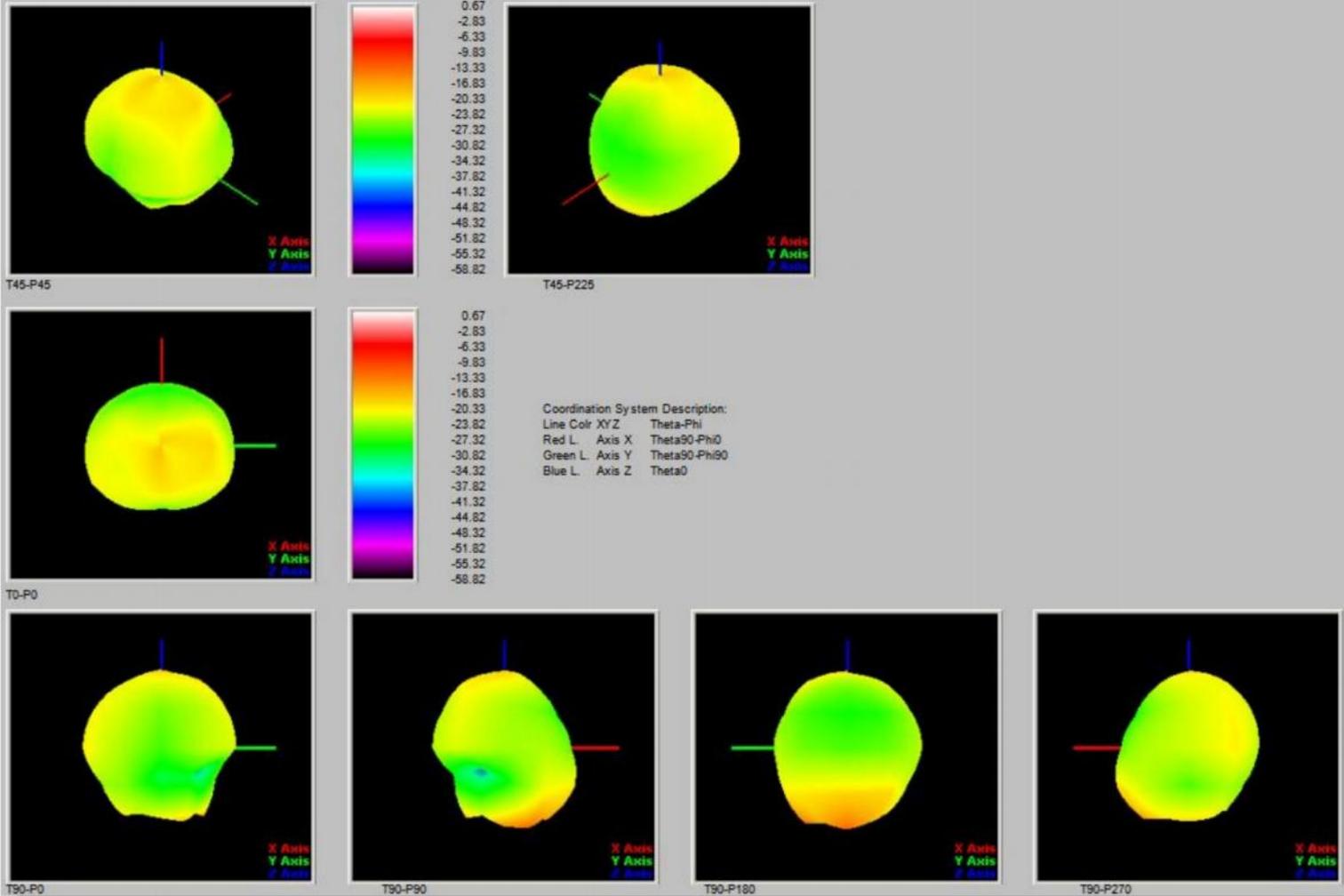
Passive parameters-Apple diagram-880MHz-960MHz
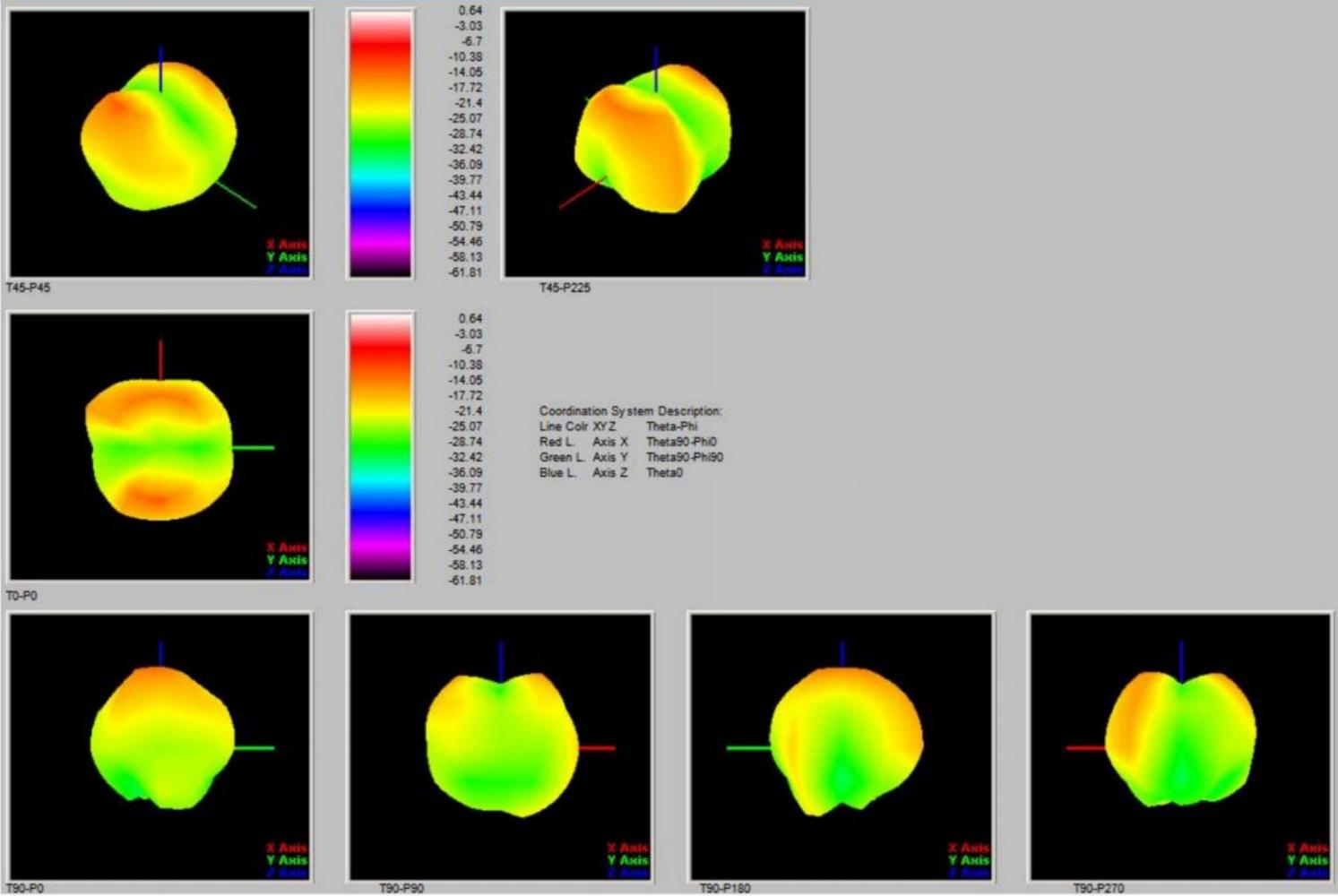
Passive parameters-Apple diagram-1710MHz-1880MHz
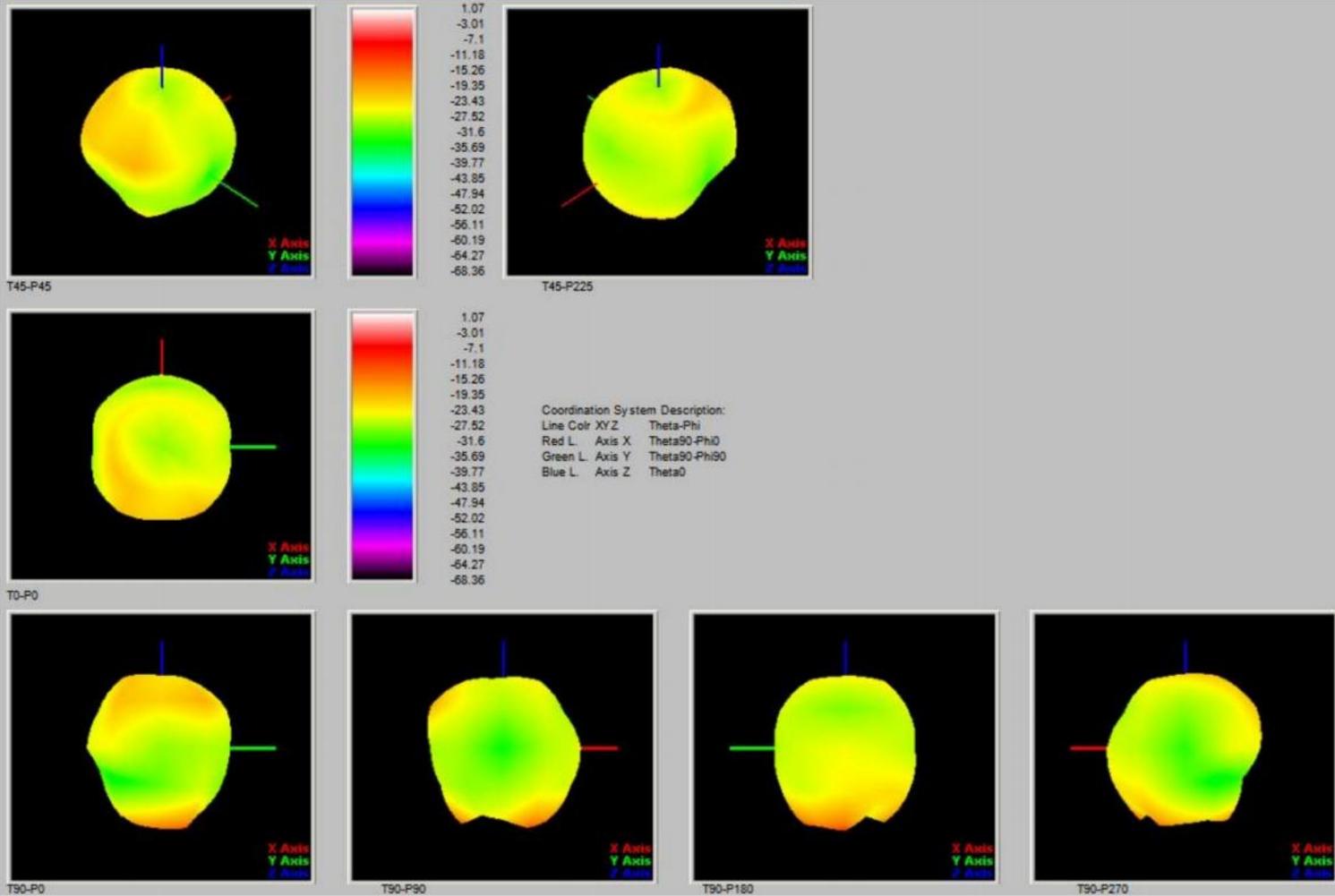
Passive parameters-Apple diagram-1880MHz-1990MHz
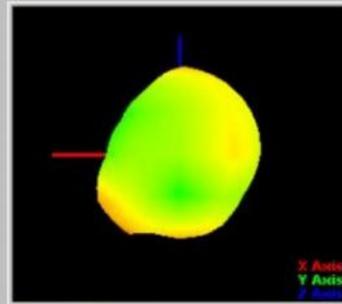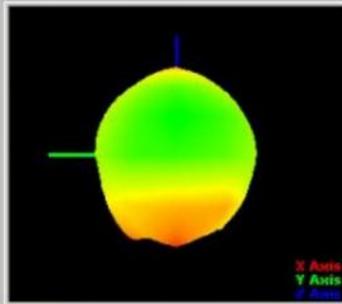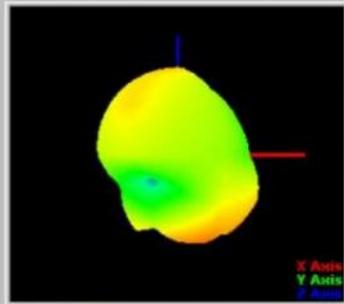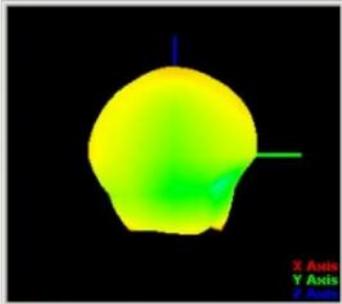
Passive parameters-Apple diagram-1990MHz-2170MHz
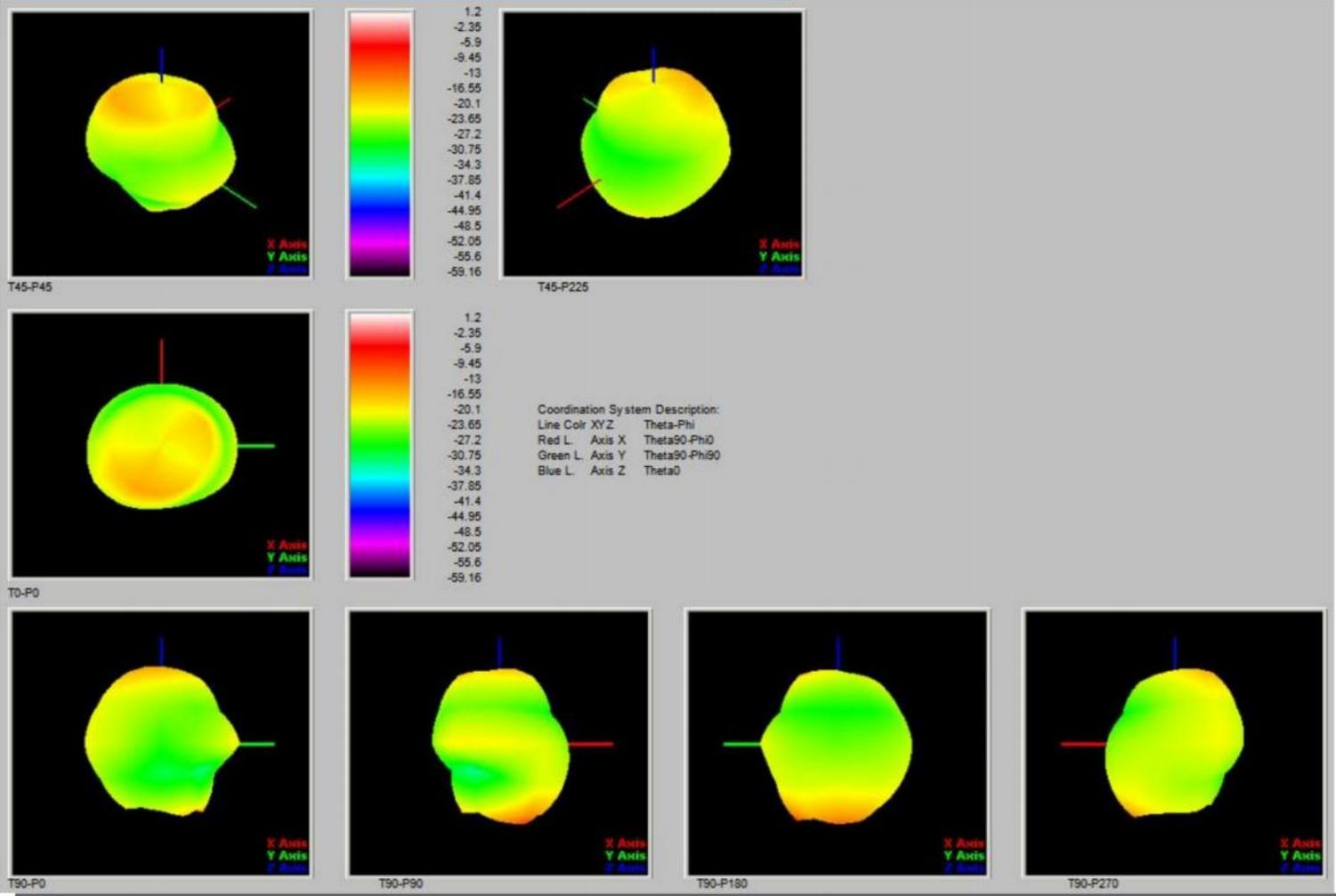
Passive parameters-Apple diagram-2300MHz-2400MHz
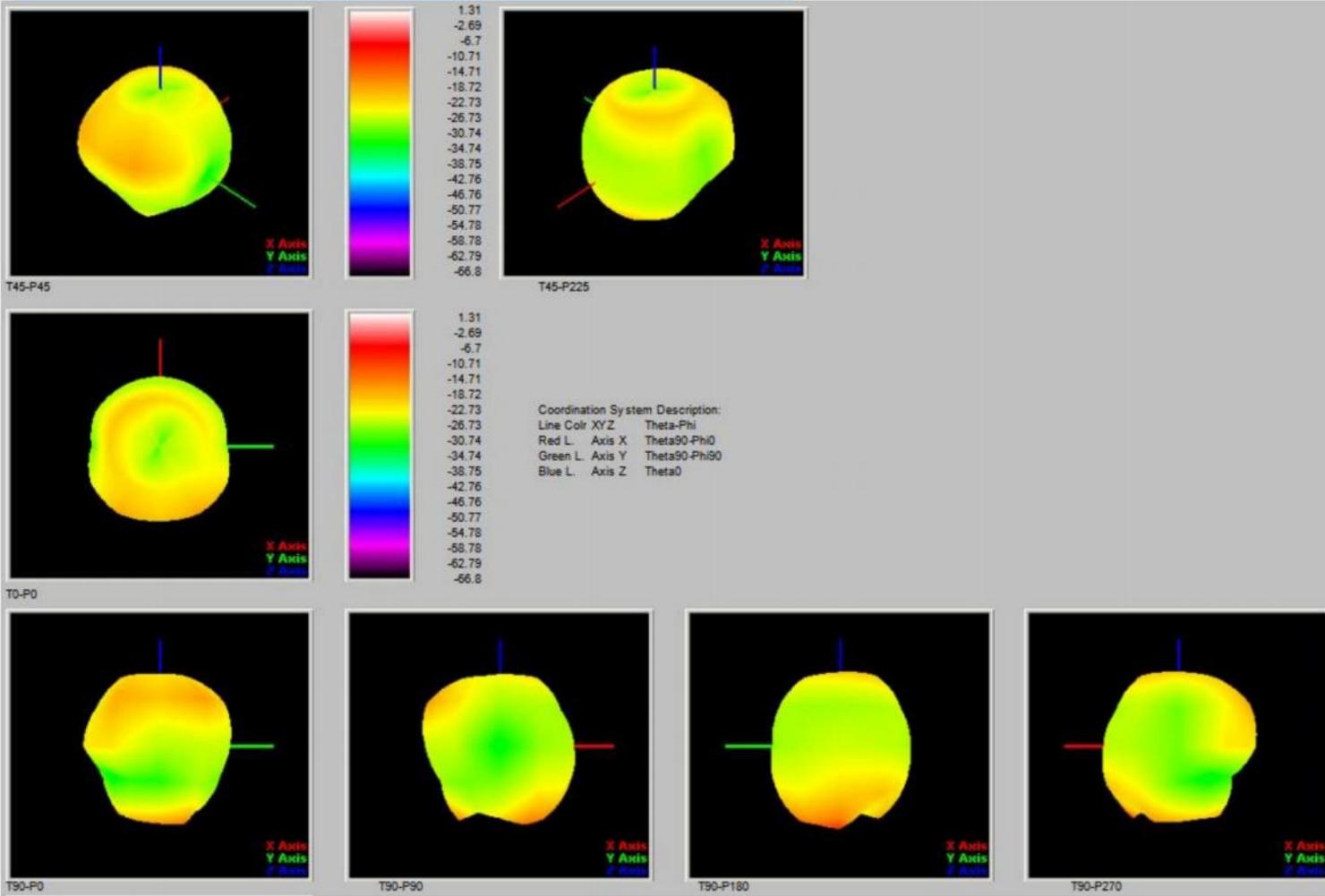
Passive parameters-Apple diagram-2400MHz-2500MHz
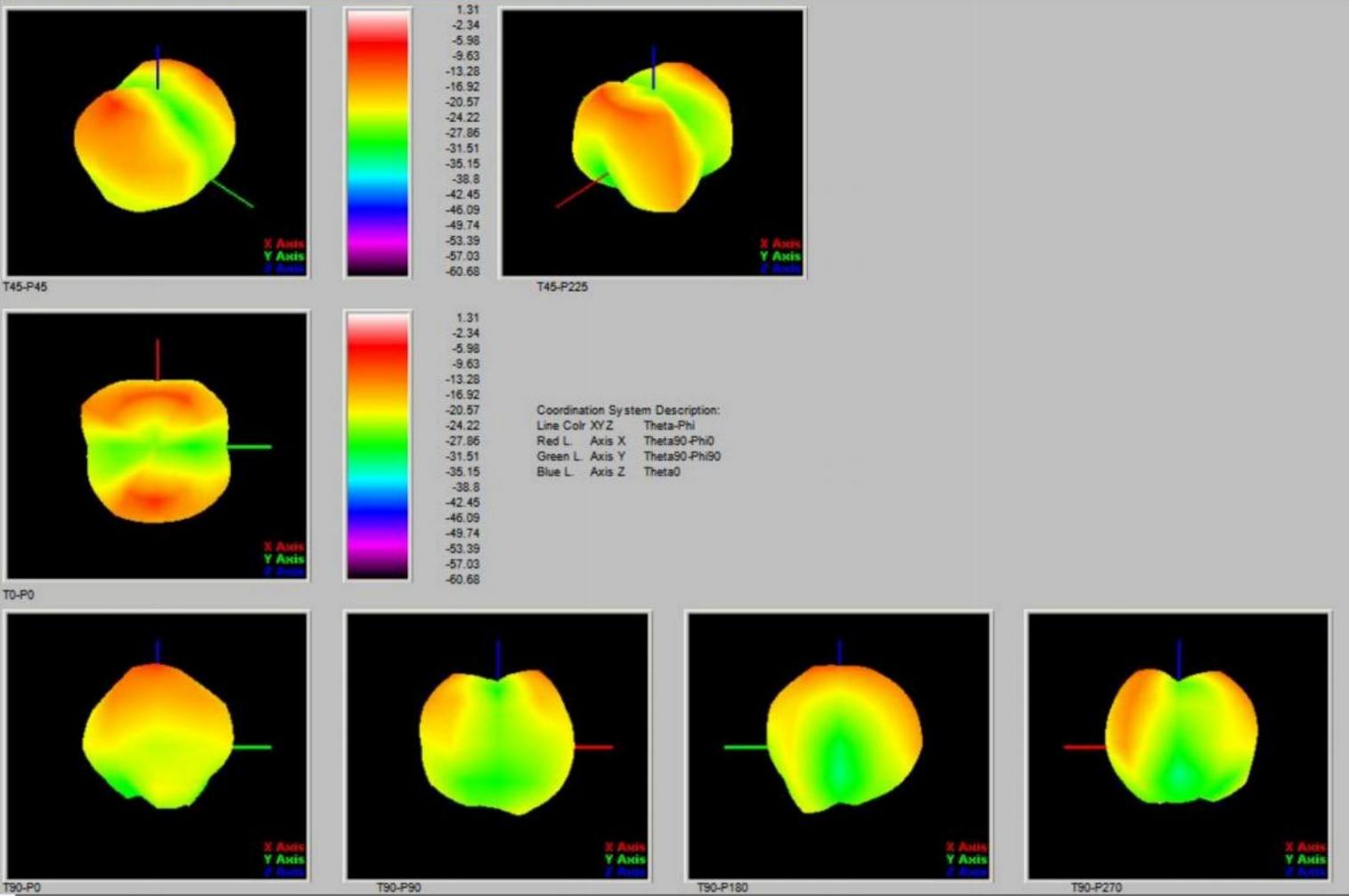
Passive parameters-Apple diagram-2500MHz-2700MHz

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

THOT

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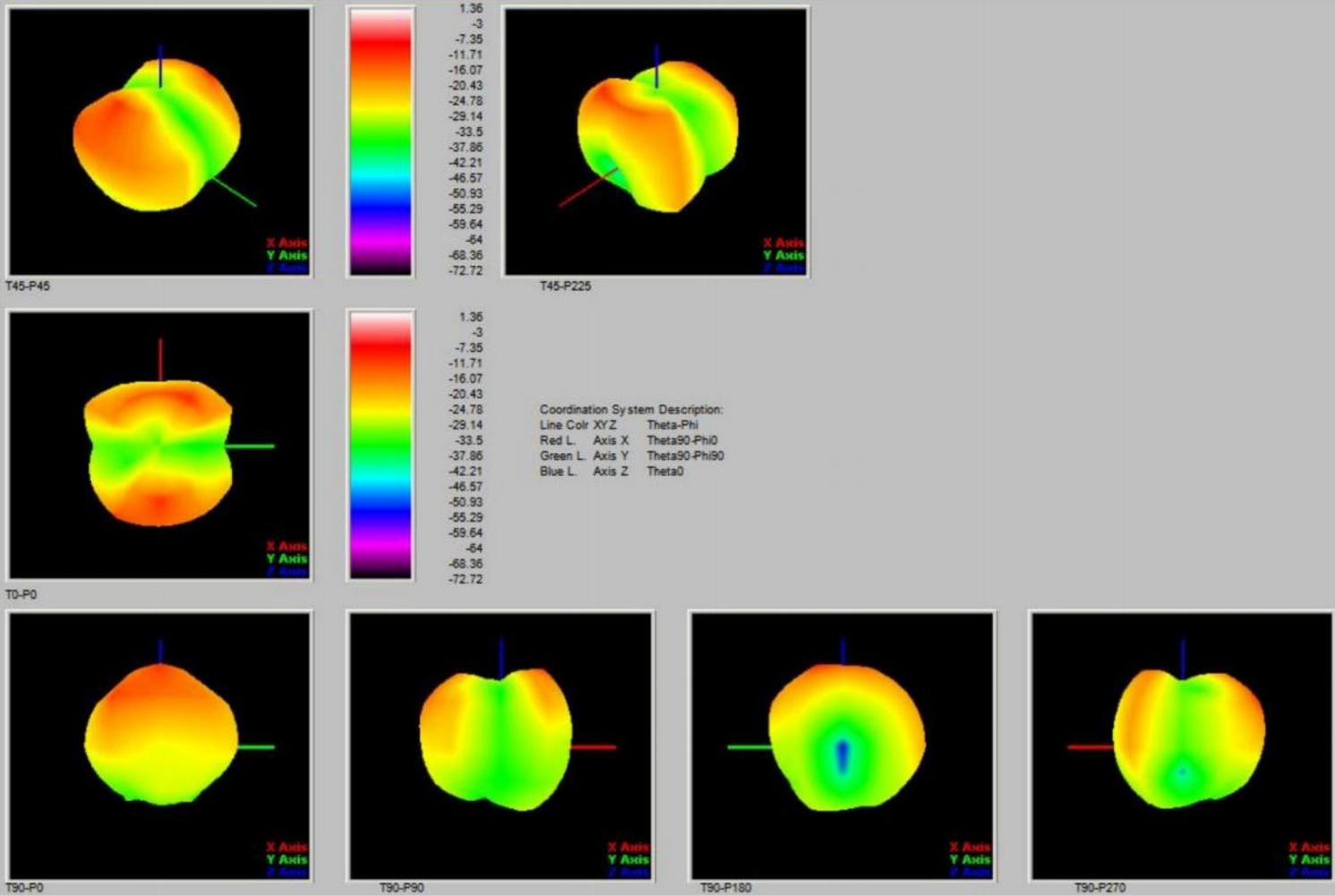
Passive parameters-Floor plan-600MHz-824MHz

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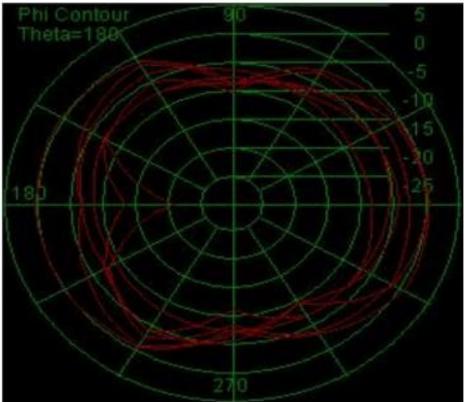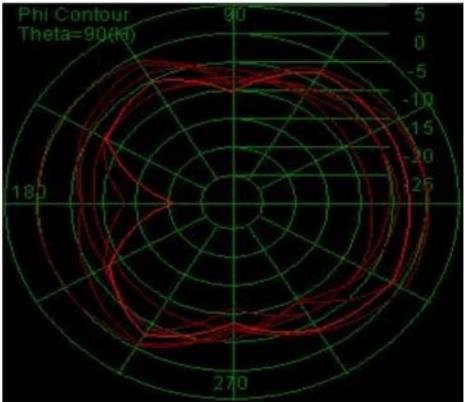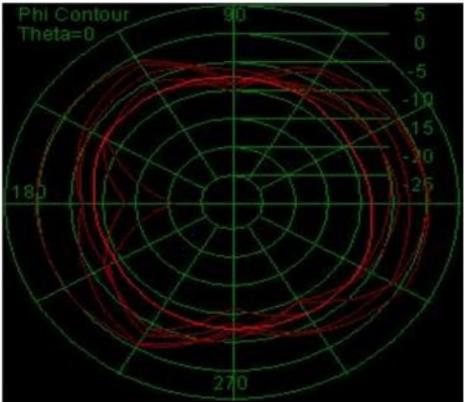
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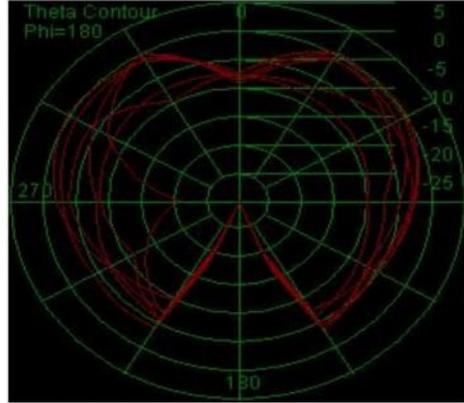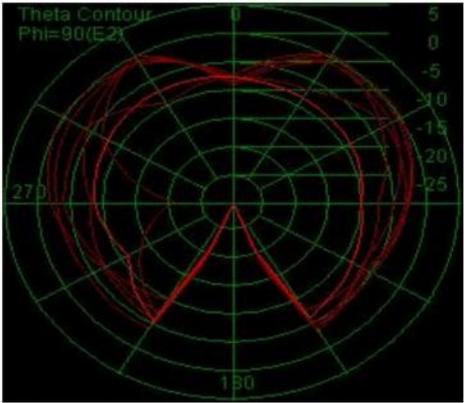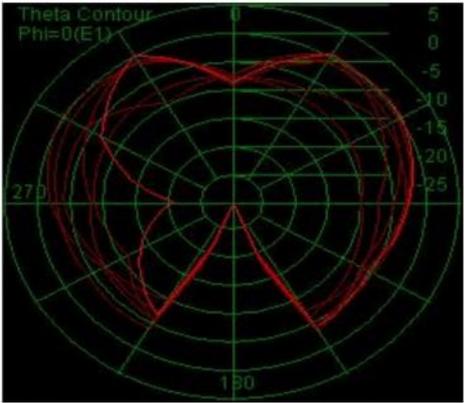
Passive parameters-Plan view-824MHz-880MHz

Horizontal:
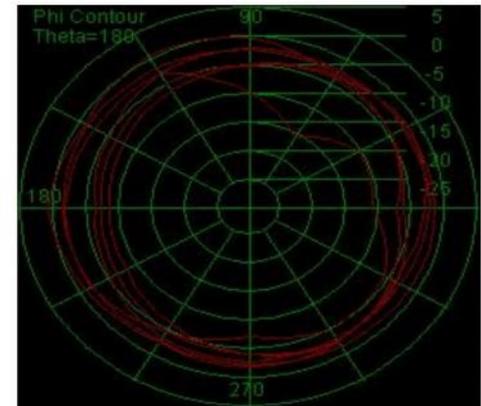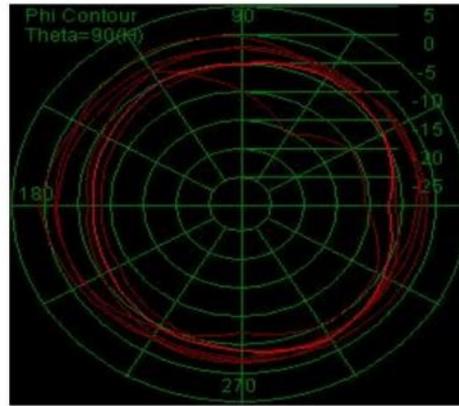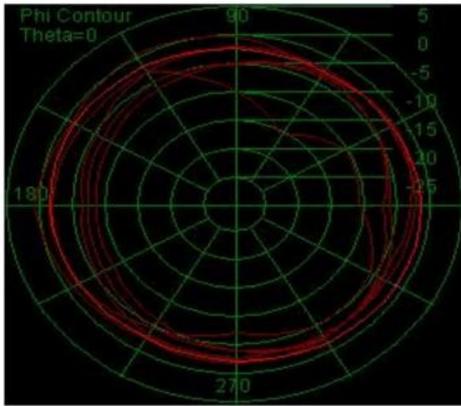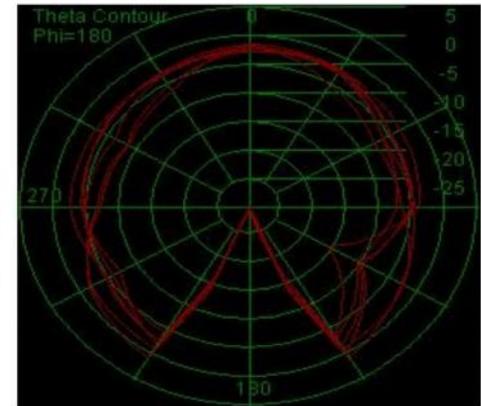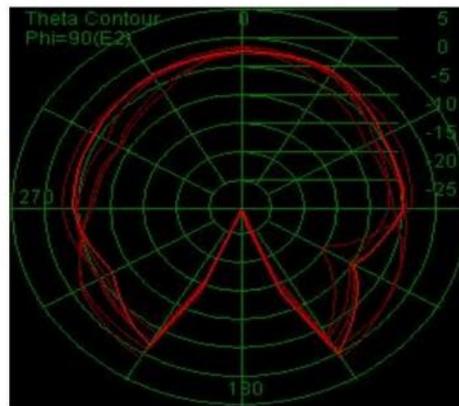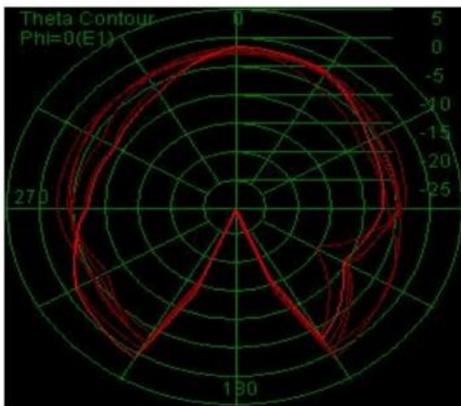
Vertical:

Passive parameters-Plan view-880MHz-960MHz

Horizontal:
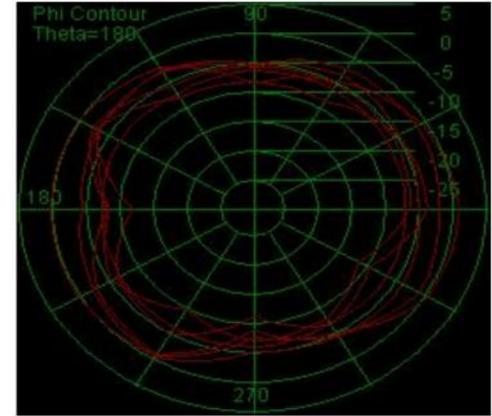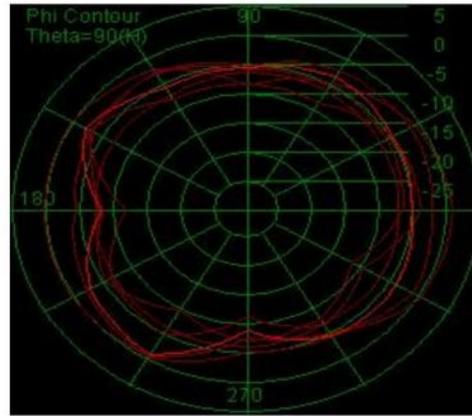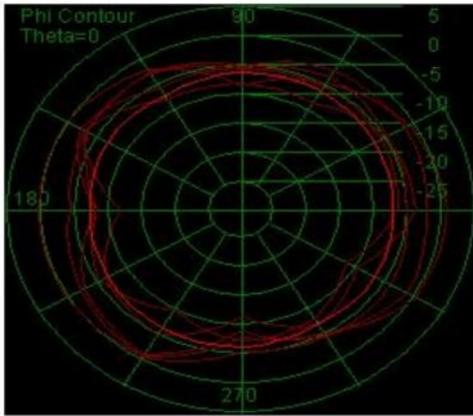
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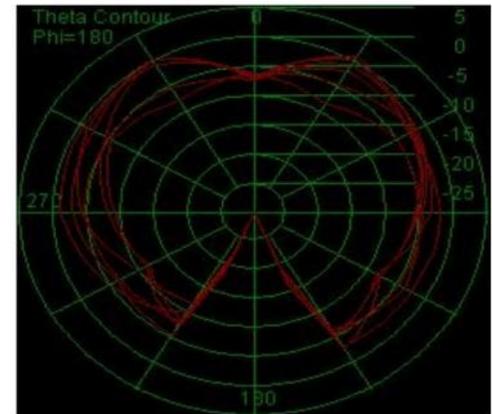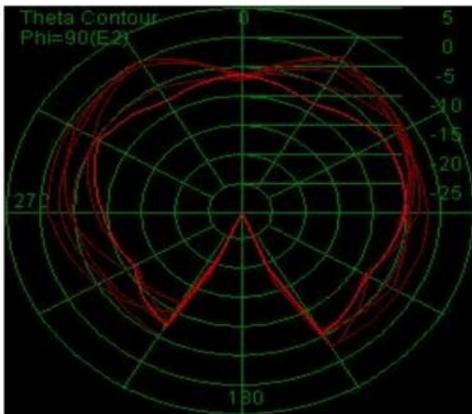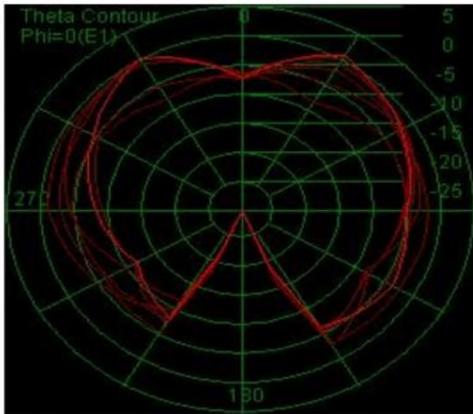
Passive parameters-Plan view-1710MHz-1880MHz

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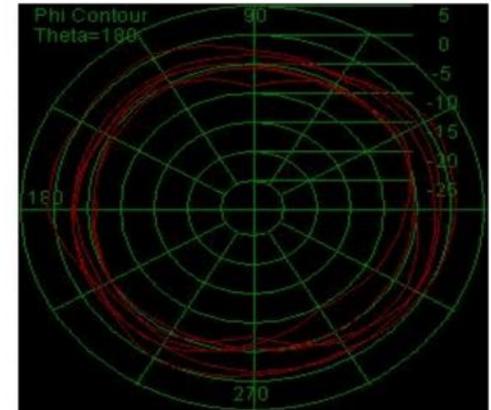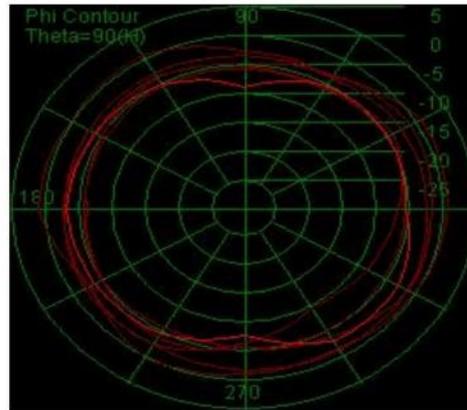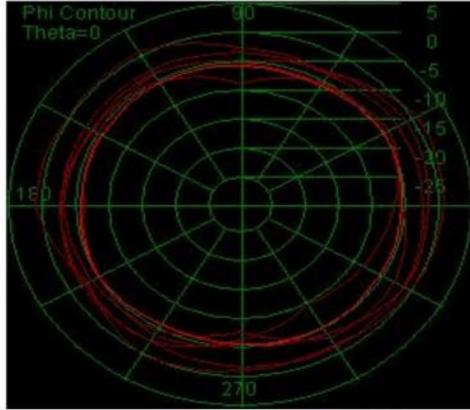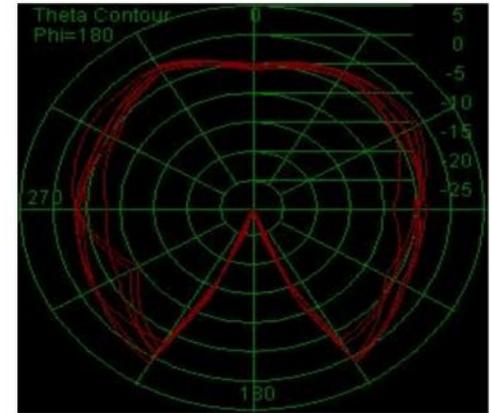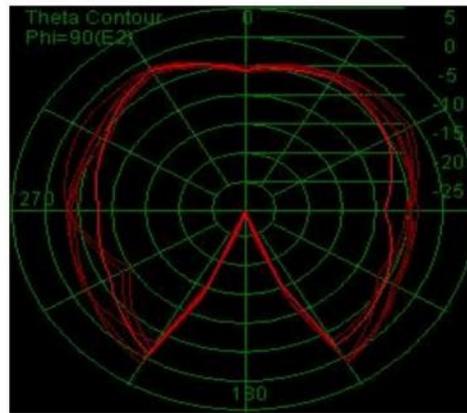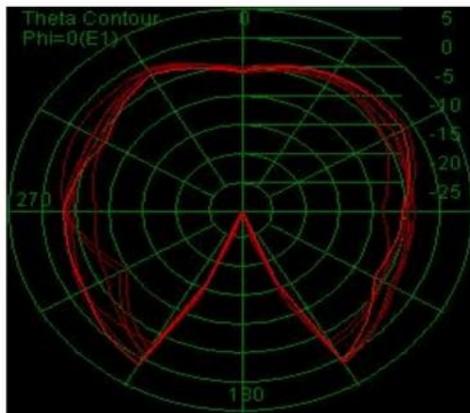
Vertical:

Passive parameters-Plan view-1880MHz-1990MHz

Horizontal:
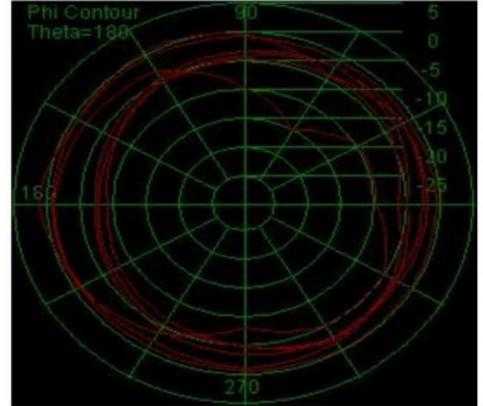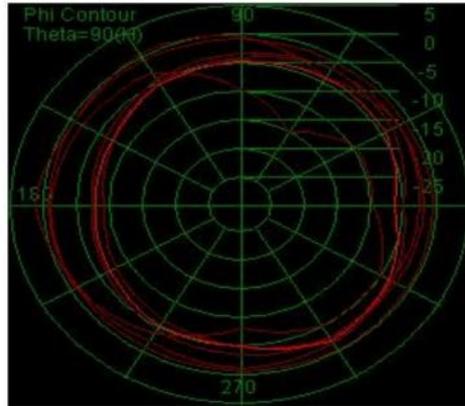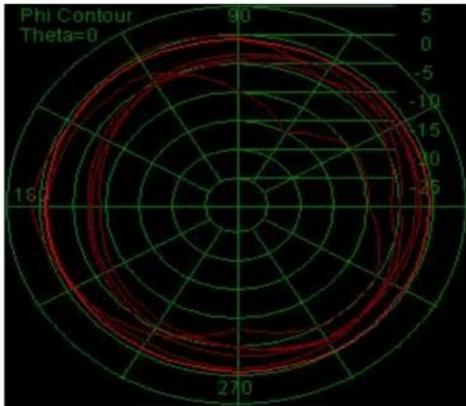
Vertical:
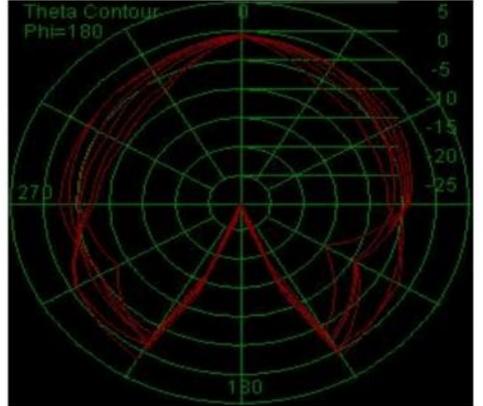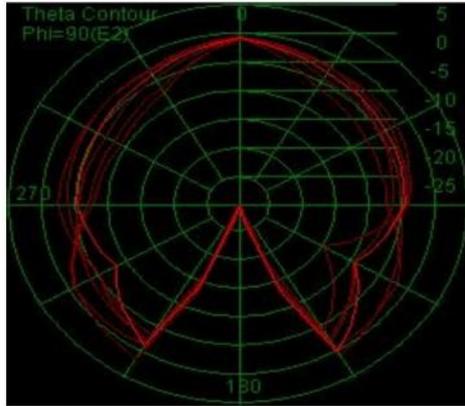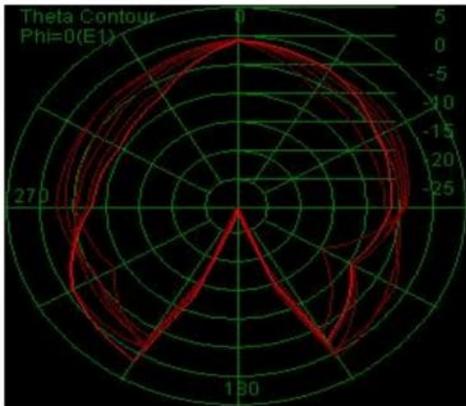
Passive parameters-Plan view-1990MHz-2170MHz

Horizontal:
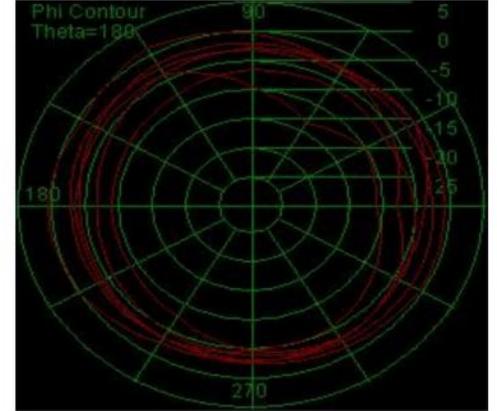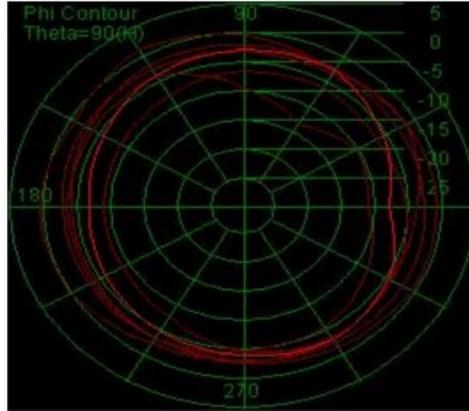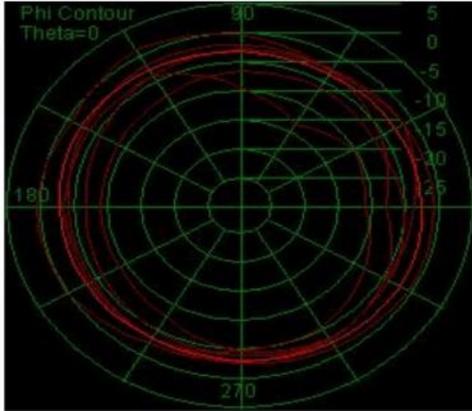
Vertical:
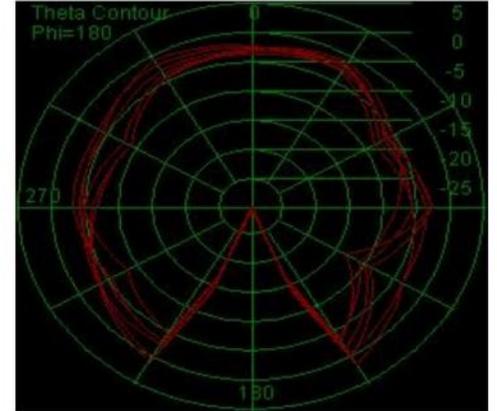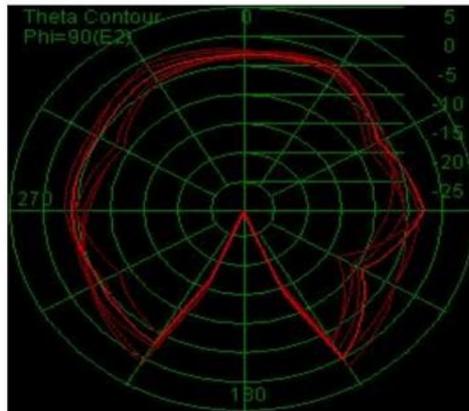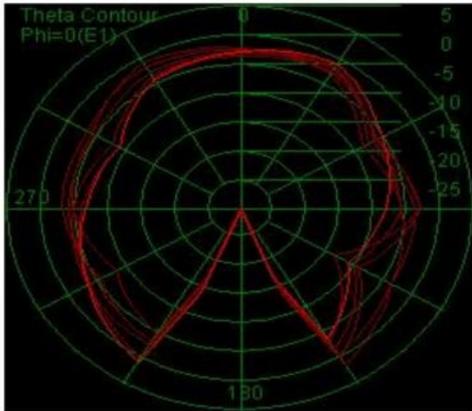
Passive parameters-Floor plan-2300MHz-2400MHz

Horizontal:
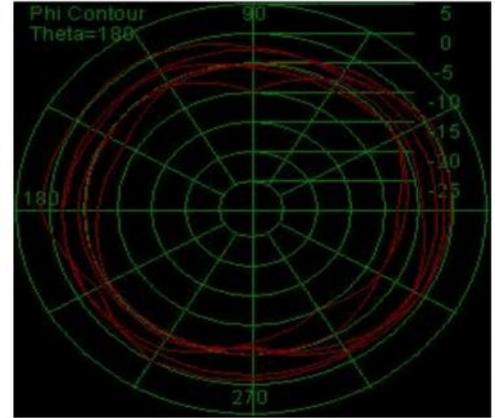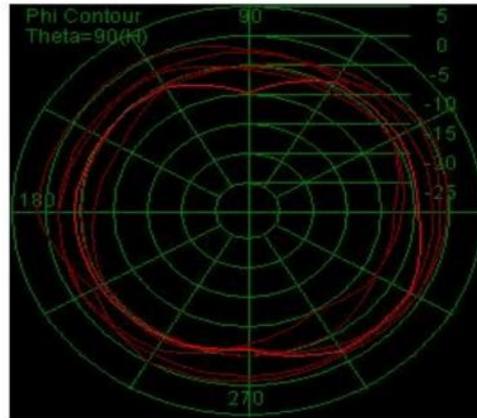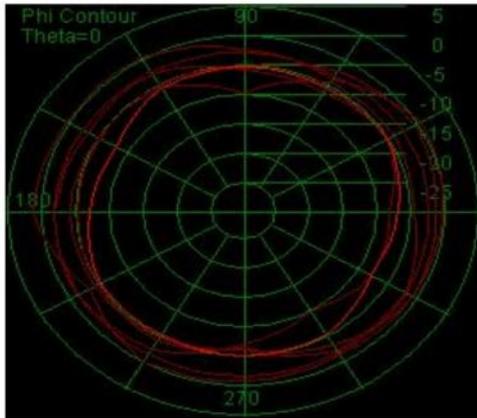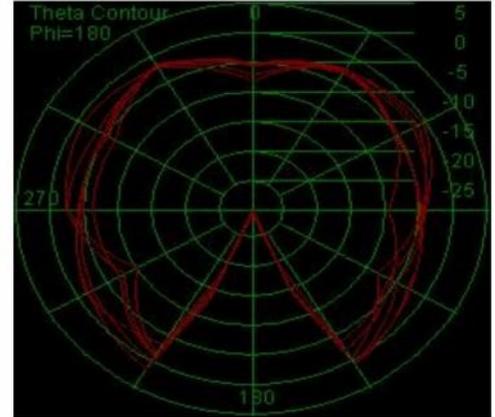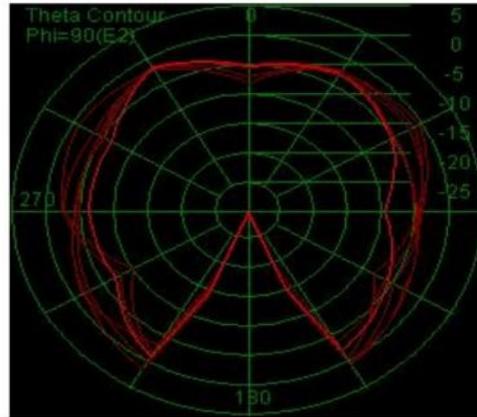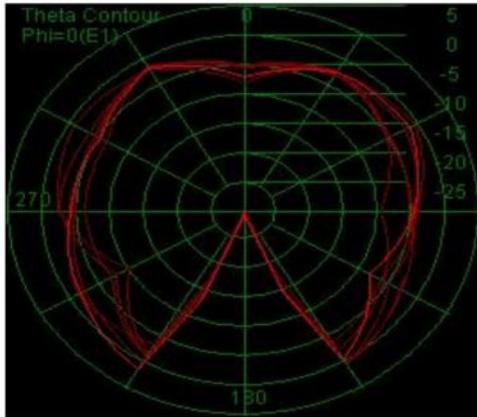
Vertical:

**Passive parameters-Floor plan-2400MHz-2500MHz**

Horizontal:
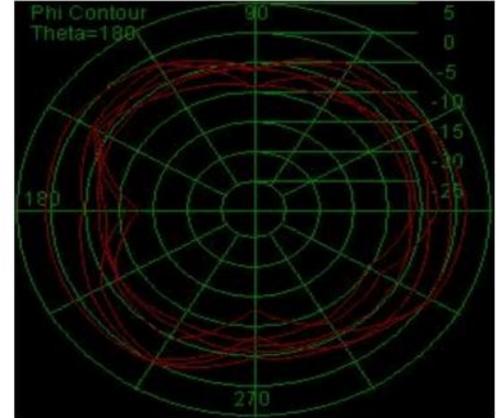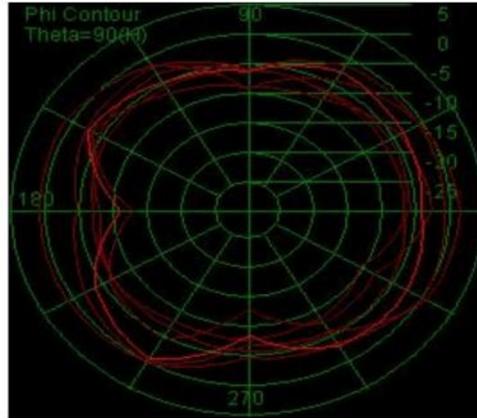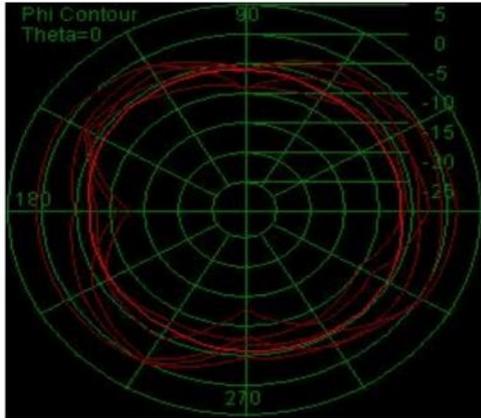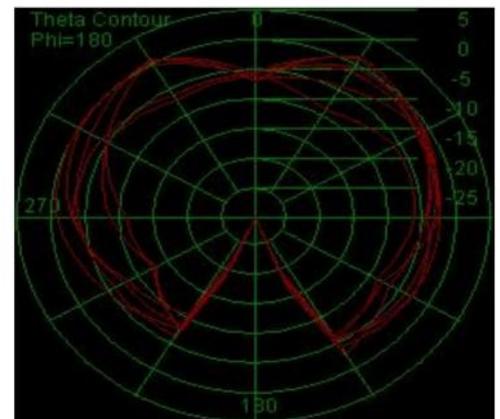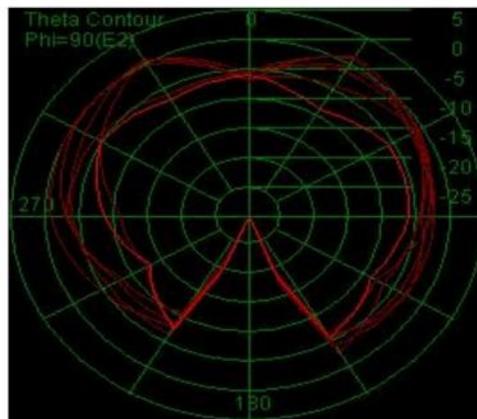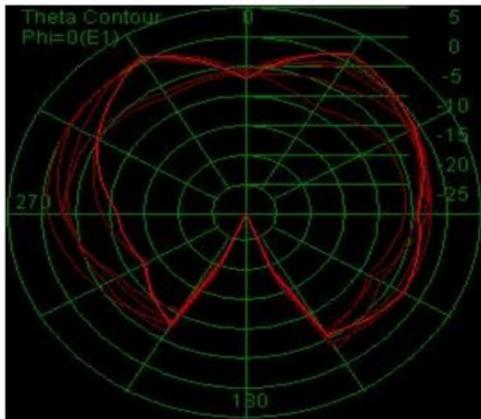
Vertical:

Passive parameters-Floor plan-2500MHz-2700MHz

Horizontal:
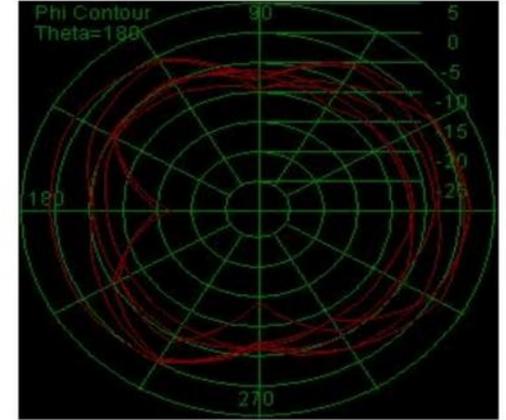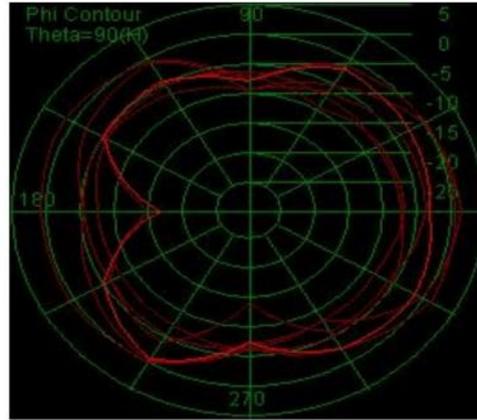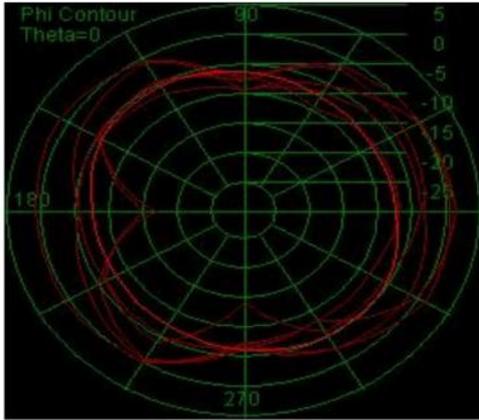
Vertical:
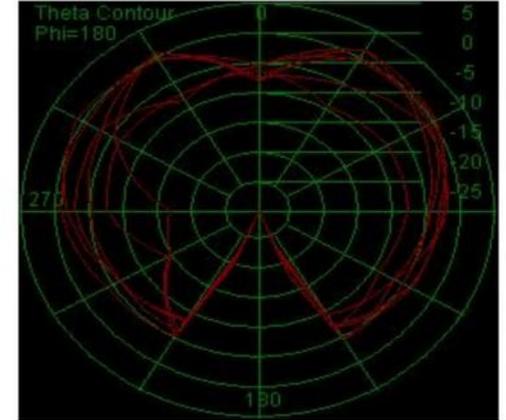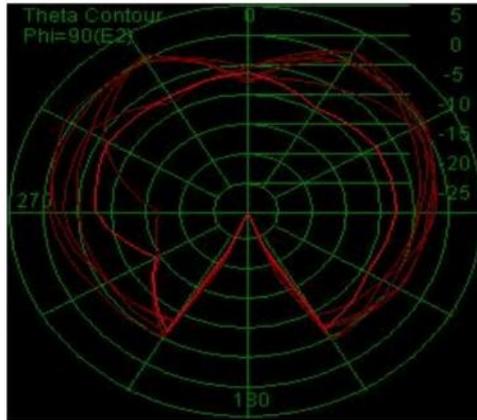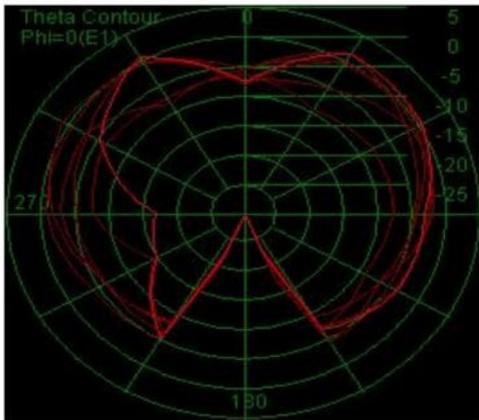
Main antenna dimensions
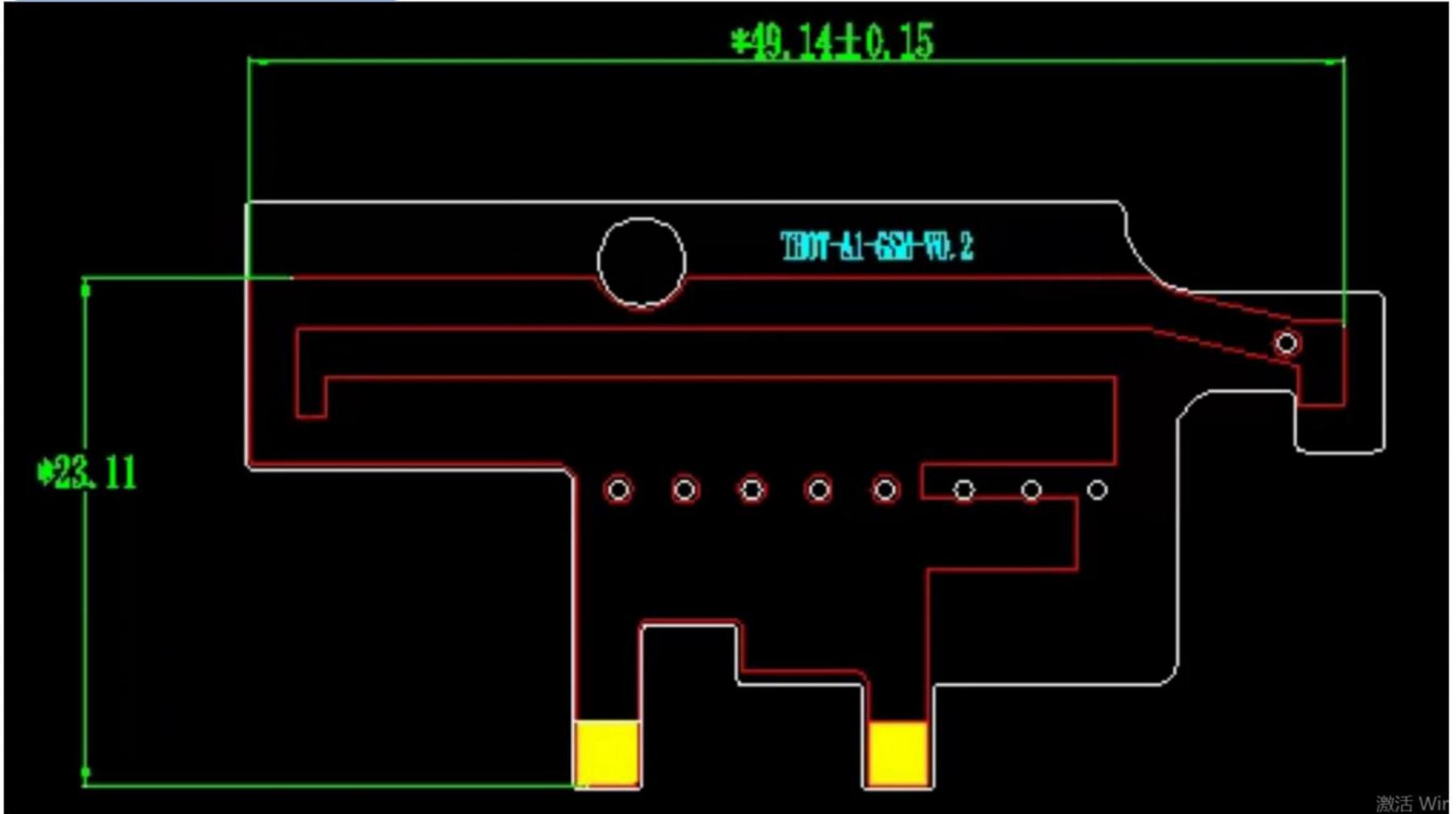
Dimensions of 4-in-1 antenna
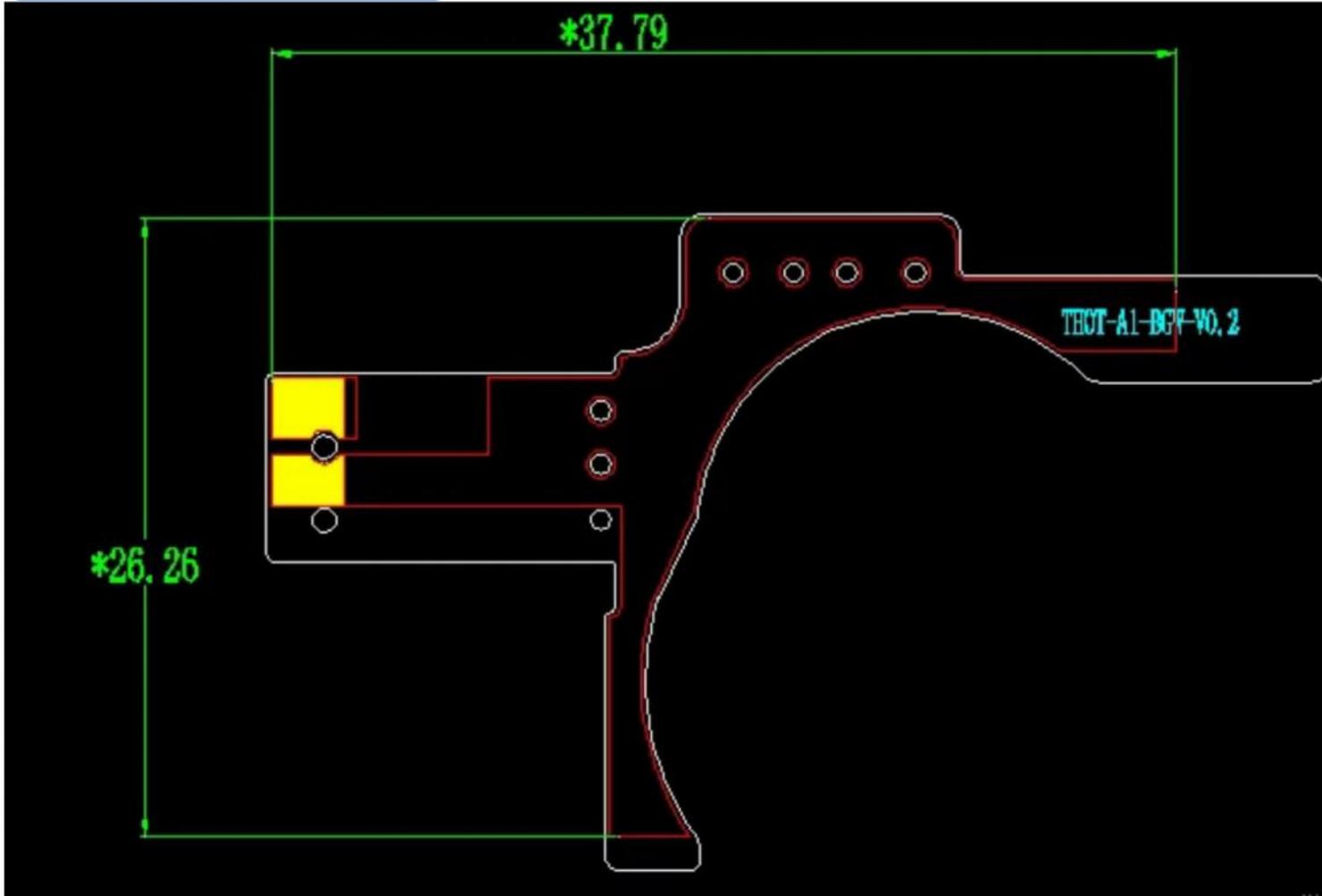
Diversity Antenna Dimensions

*49.66±0.15

*11.61

THOT-A1-DIV-V0.2

Antenna location

Four-in-one antenna

Main Antenna

Diversity Antenna

Main Antenna Matching

C122:68nH

C121:8.2nH

C131:33nH

C123:0ÿ

0ÿ

NC

and 9.1nH

GSM

GND

THOT
深圳市昱晟通讯设备有限公司
Yusheng Communications-equipment Co.,LTD

GPS Test Star Chart

![THOT logo]

深圳市昱晟通讯设备有限公司
Yusheng Communications-equipment Co.,LTD

Environmental treatment

Speaker grounding

Middle frame and small board grounding

Screen and motherboard grounding

Middle frame and mainboard grounding

Committed to providing customers with professional-grade antenna solutions

Environmental treatment

Pay attention to the height of the conductive

foam on both sides to avoid unstable

grounding

Screen and middle

frame grounding

The screen cable is shielded

with conductive cloth
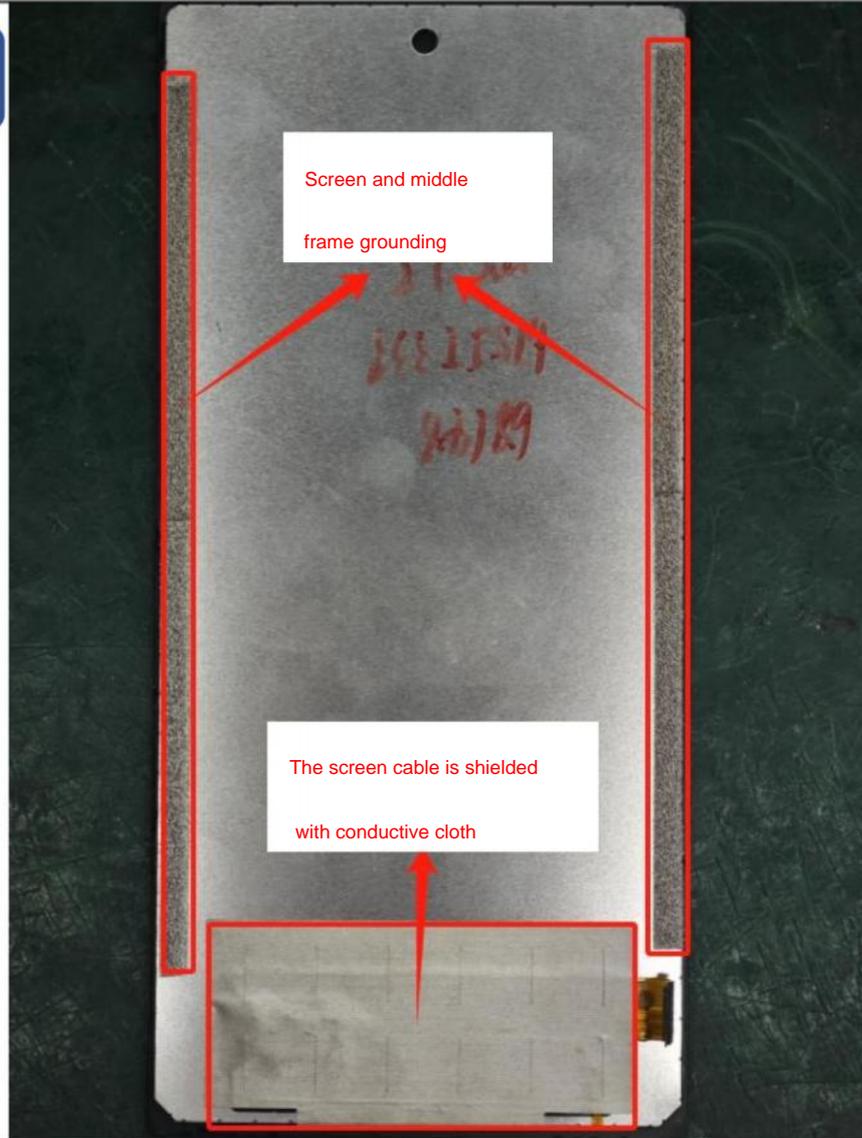
Summarize

1. Please pay attention to the environment in the report to ensure the consistency of the whole machine

2. The low frequency sensitivity is currently low, please be aware

Thank you!

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