

Shenzhen Joyar Technology (Group) Co. LTD

Sample acceptance

Version number: V1.1

supplier: Etheta Communication Technology (ShenZhen) Co. Ltd

item: Frevr10.1

Material name: Frevr 4G 3IN1

Material specification: Joyar, 3IN1 FPC, wifi antennal

Material color: black

Material code: 134102005097

attached report: ☒Standard 2D drawings ☐FAI (CPK) ☐Environmental statement ☐Environmental report
☒Sample test report ☐Packing instructions ☐Oproduct SPEC ☐Product key components list
☐Quality control plan ☐Product anatomy ☐Typesetting technology

Sample date: 2023-06-29

Sample quantity: The sample acknowledgement is in five copies. 10-15 samples are required

Sample type: approval sample

Sample type: ☒New mould ☐New supplier ☐Mold modification ☐Engineering change ☐Other:

performance test: ☒Passed ☐Failed ☐Other:

Reliability test: ☒Passed ☐Failed ☐Other:

Small batch verication: ☒Passed ☐Failed ☐Other:

Evaluate the results: ☒Limited quantity: ☐Fully approved ☐Other:

Reserve note:

Supplier sample production confirmation:

formulate	examine	agree	Quality	business
邓平	刘飞明	马超	苏亚东	莫洁文

Joyar Examine and approve:

Hardware validation	Structure validation	Quality confirmation	Project confirmation	Confirmation date

antenna – acknowledgement Check List

1. The manufacturer should fill in the basic data:

Part number :	RD022307NB87-4	edition:	V1.0
Project name:	Freyr10.1	producer:	<u>Etheta</u>
Part name:	Freyr_4G_3IN1 antenna		

2. Product data:

1. Antenna type:

☐ a.extraposition

Material type and specification_____

☐ b.Metal stamping

Material type and specification_____; Shrapnel gold thickness: _____; Salt spray time: _____。

☒ c.FPC

Material type and specification Printing ink+ Cu+3m Adhesive; Gold finger gold thickness: $\geq$ 0.03um FPC, Adhesive type: 3M467 Adhesive supplier: 3M

☐ d.LDS

material: _____, supplier: _____; Gold thickness: _____; Salt spray time: _____。

3. The manufacturer shall attach the following relevant documents to the acknowledgement; Email the electronic file (pdf) to Jiangyuan Group:

☒ 1. Standard 2D drawings

☐ 2. Material certificate

☐ 3. Packing method

☐ 4. BOM

☒ 5. Antenna performance test report (TRP, TIS, SAR,)

☐ 6. Reliability test report

☐ 7. ROHS

四. Confirmation field

Supplier signed and signed company seal		Sign and stamp controlled	
Business affairs	莫洁文	MD	邓平
		Hardware test	陈杨广
Research and development	季港	SQE	王宏涛
		PM	莫洁文
quality	苏亚东		

5. Change record field

Compile/change date	Reason for change	Change content	edition

深圳市睿德通讯科技有限公司承认书

Note: The sample acknowledgement letter is in 5 copies, a total of 10-15 samples need to be provided, suppliers need to deliver according to the admitted samples, FPC adds high temperature and high humidity test, BOM indicates 3M adhesive model.



ShenZhen Etheta Communication Technology Co., LTD.

Supplier name: ShenZhen Etheta Communication Technology Co., LTD
Specificationfor Approval

Client Name: Shenzhen Joyar Technology (Group) Co. LTD

Brand Name: Etheta

Part No: RD022307NB87-4

Part Description: Freyr 4G 3IN1天线

Manufacturer: ShenZhen Etheta Communication Technology Co., LTD

Part Name: FPC antenna

Materiel No.: 134102005097

Supplier signed and signed company seal		date	Customer signature
MD	邓平	2023/06/29	acknowledge: confirm:
RF	季港	2023/06/29	
confirm	马超	2023/06/29	

Catalogue

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1. Project picture

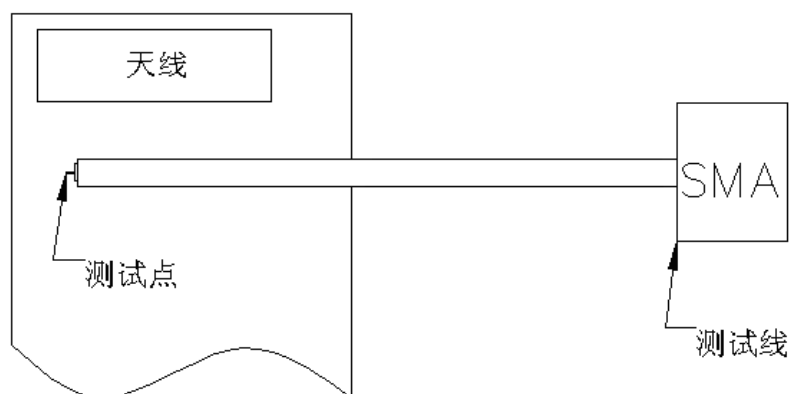


2. Test fixture

Objective: To test the passive parameters of antenna as accurately as possible.

Production method: The mobile phone fixture is a 50 ohm coaxial cable, one end is connected to the back end of the matching circuit of the mobile phone motherboard

The other end of the test point (front end of the RF test hole) is connected to the SMA connector. The diagram is as follows :



3. Matching circuit

Antenna matching keeps the pilot production machine unchanged

4. Performance test

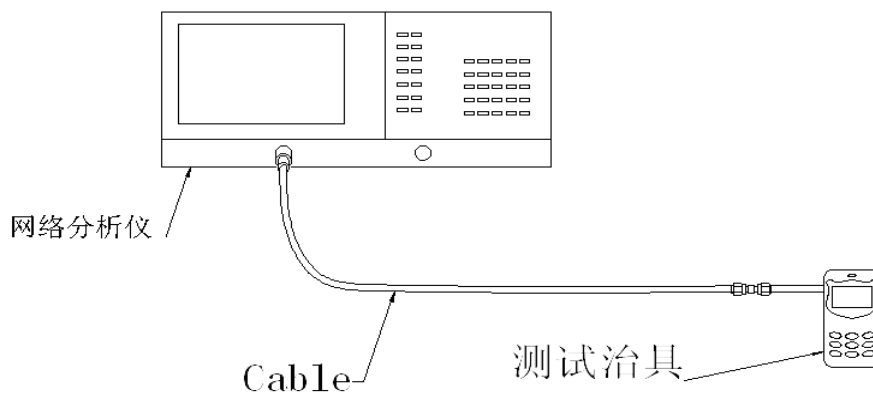
4.0 S11Test method description

Test Equipment: Network Analyzer (HP 8753E)

Test method: A 50 ohm Cable is exported from the test port of the instrument and connected after calibration with a calibration piece

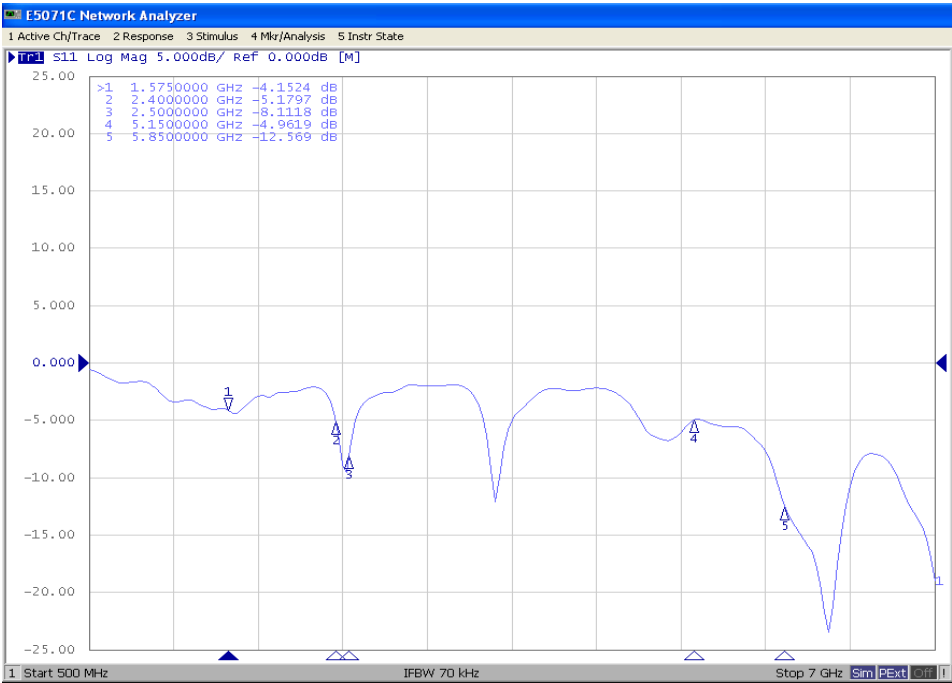
The SMA connector of the RF fixture records the return loss and standing wave ratio corresponding to the relevant frequency points.

The test diagram is as follows:



测试示意图

4.1、S11:



4.2、Passive test data:

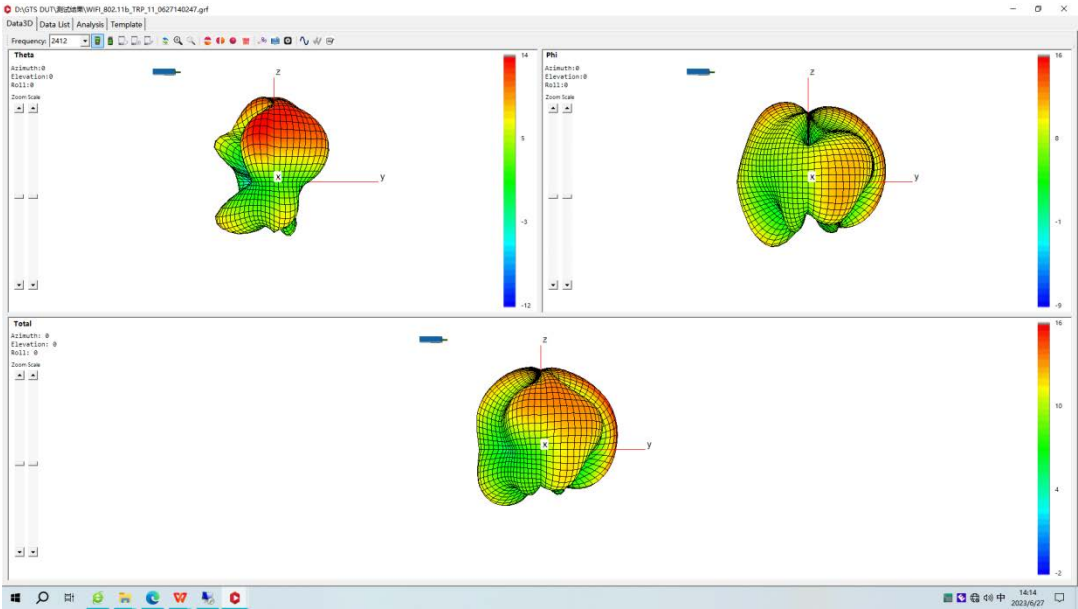
f(MHz)	E (%)	E (dB)	G (dBi)	f(MHz)	E (%)	E (dB)	G (dBi)
1550	13%	-8.96	-6.09	5150	19%	-7.15	-3.80
1560	13%	-8.80	-5.88	5200	20%	-6.97	-3.47
1570	13%	-8.71	-5.69	5250	20%	-7.03	-3.06
1575	14%	-8.62	-5.50	5300	20%	-6.91	-2.62
1580	14%	-8.63	-5.46	5350	19%	-7.11	-3.07
1590	14%	-8.58	-5.20	5400	18%	-7.34	-3.42
1600	14%	-8.54	-5.02	5450	18%	-7.47	-3.85
1610	14%	-8.57	-4.88	5500	16%	-8.01	-4.15
1620	14%	-8.61	-4.87	5550	15%	-8.24	-4.34
1630	14%	-8.56	-4.86	5600	14%	-8.44	-4.36
1640	14%	-8.62	-4.86	5650	16%	-7.99	-4.21
1650	14%	-8.66	-5.01	5700	18%	-7.50	-4.13
1660	14%	-8.66	-5.21	5750	20%	-7.01	-4.14
2400	10%	-10.00	-5.04	5800	20%	-7.04	-3.99
2410	11%	-9.54	-4.81	5850	18%	-7.47	-4.00
2420	12%	-9.24	-4.70				
2430	13%	-8.77	-4.65				
2440	14%	-8.40	-4.43				
2450	15%	-8.19	-4.00				
2460	16%	-7.98	-3.83				
2470	16%	-7.99	-4.13				
2480	15%	-8.28	-4.32				
2490	13%	-8.84	-4.71				
2500	11%	-9.57	-5.03				

4.3、Active test data:

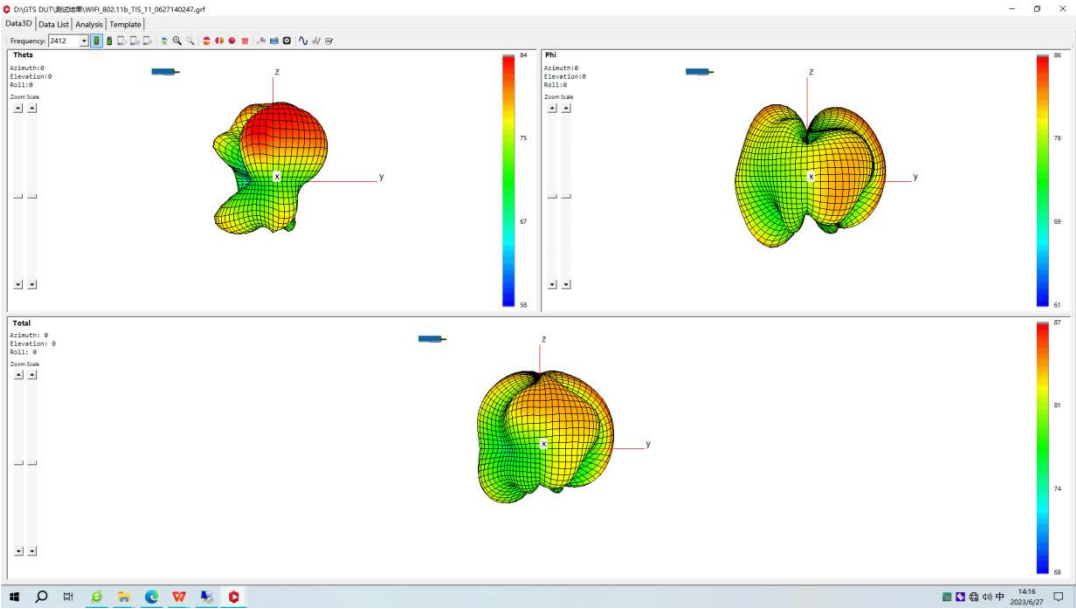
2.4G B模11M	1	6	11	5.8G A模6M	36	64	157
TRP (dBm)	11.75	12.87	12.43	TRP (dBm)	12.55	12.22	11.54
TIS	-81.51	-82.81	-82.37	TIS	-89.34	-88.71	-86.12
GPS	-138.76						

4.4、Apple chart:
苹果图

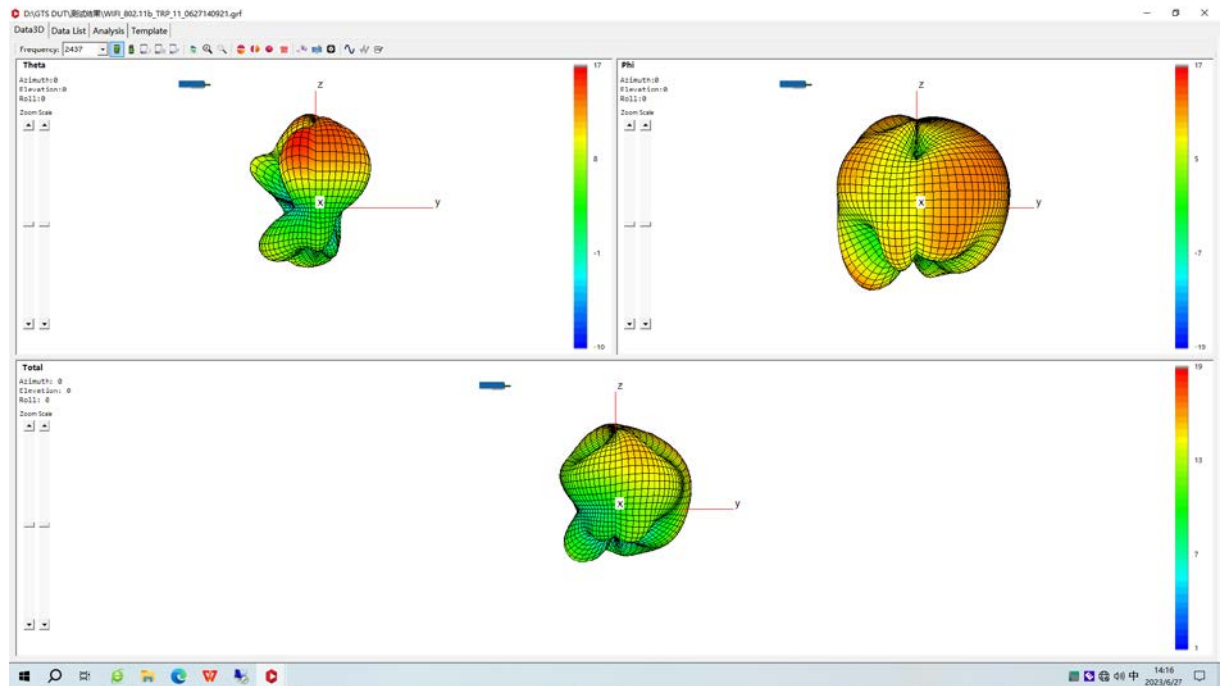
1 TRP



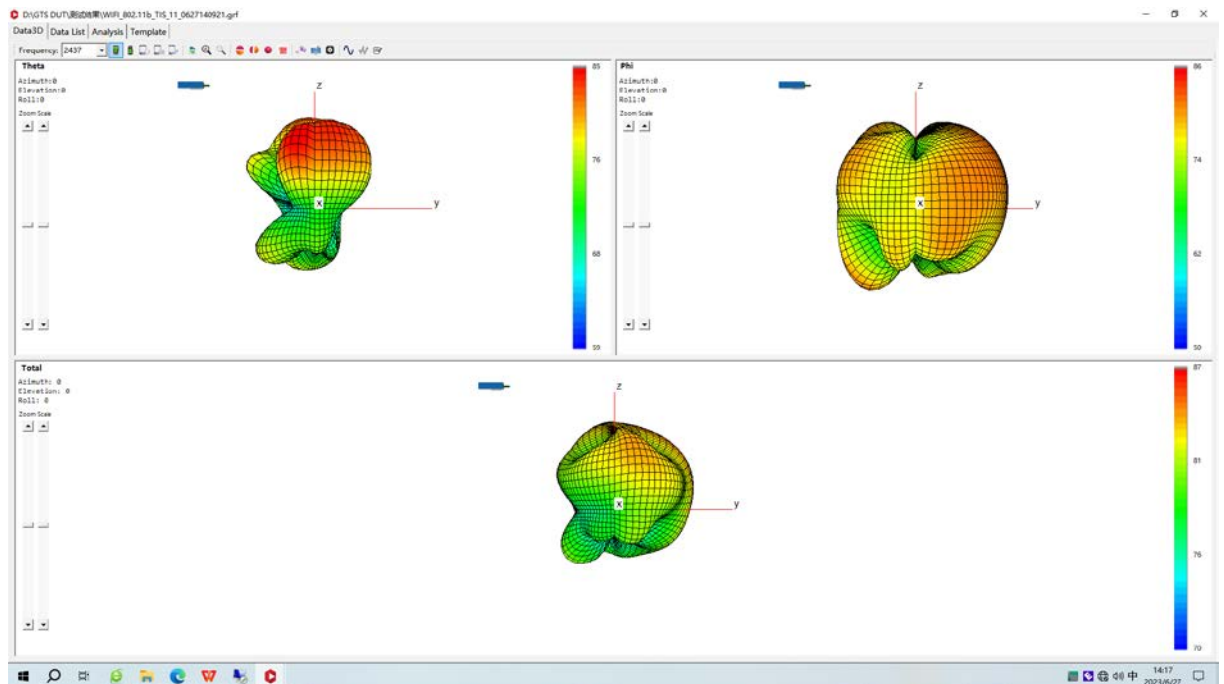
1 TIS



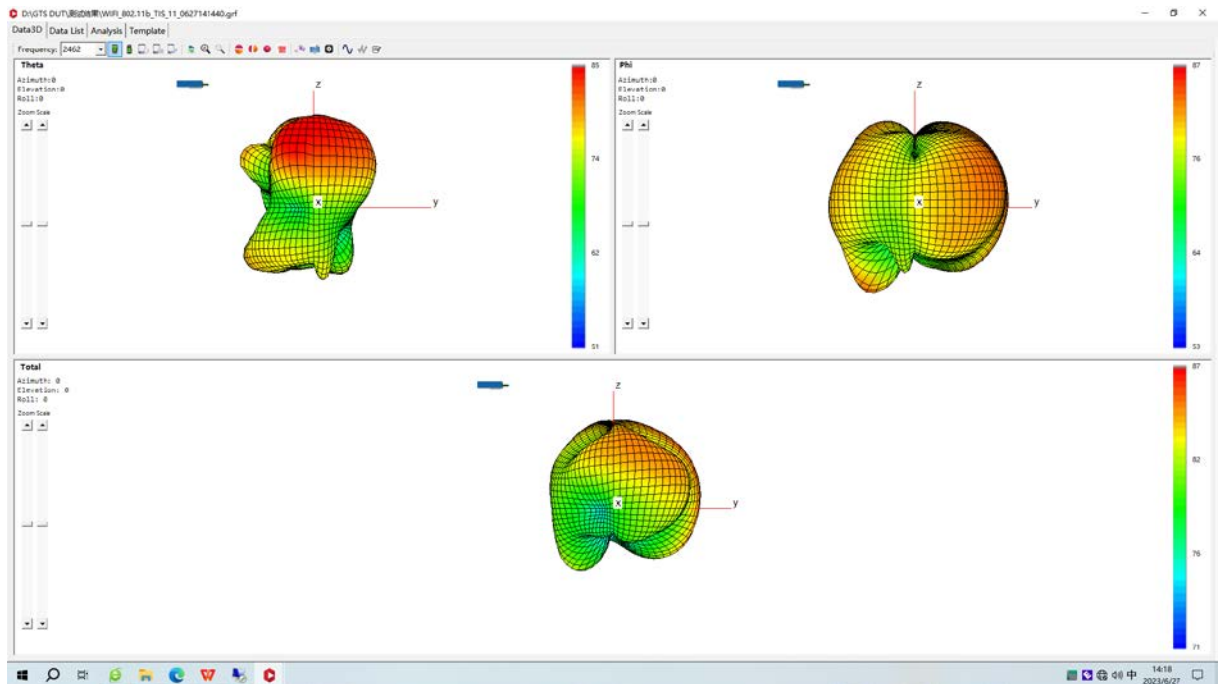
6 TRP



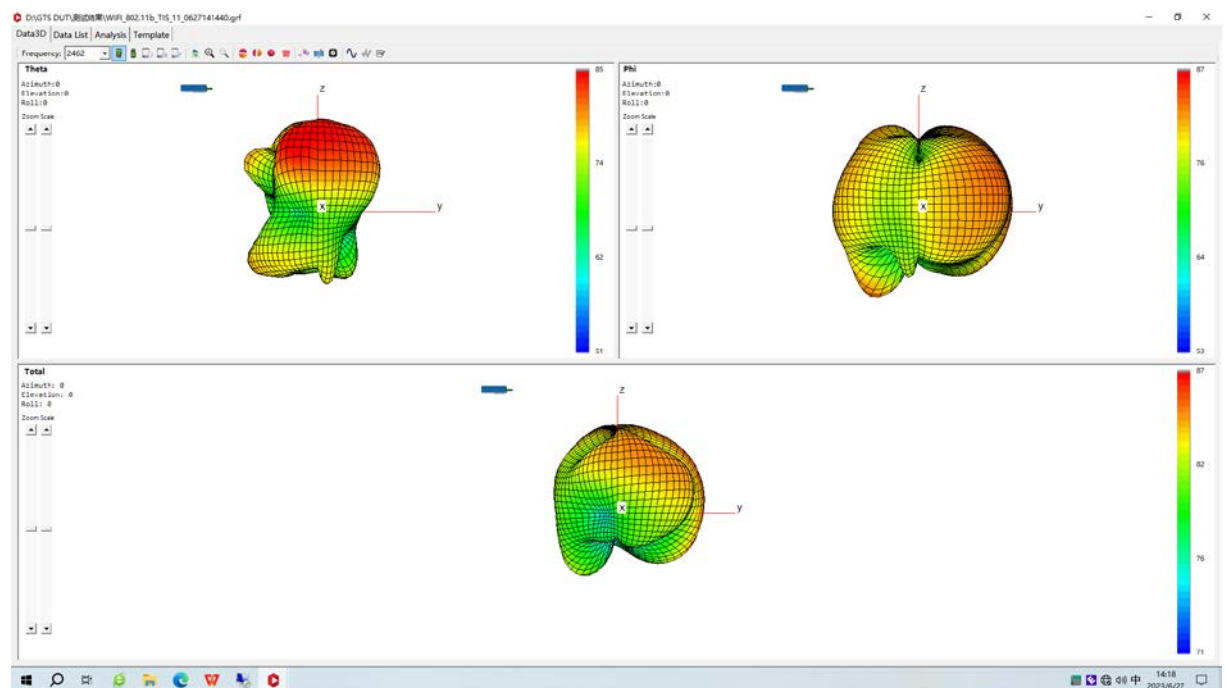
6 TIS



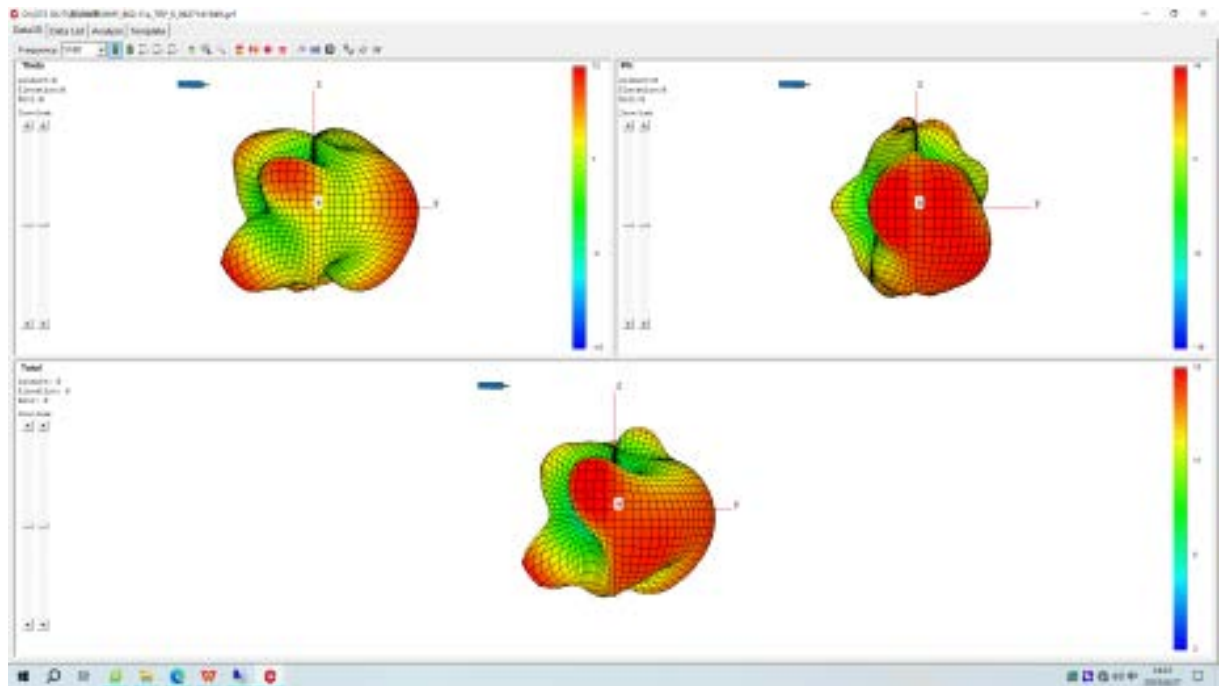
11 TRP



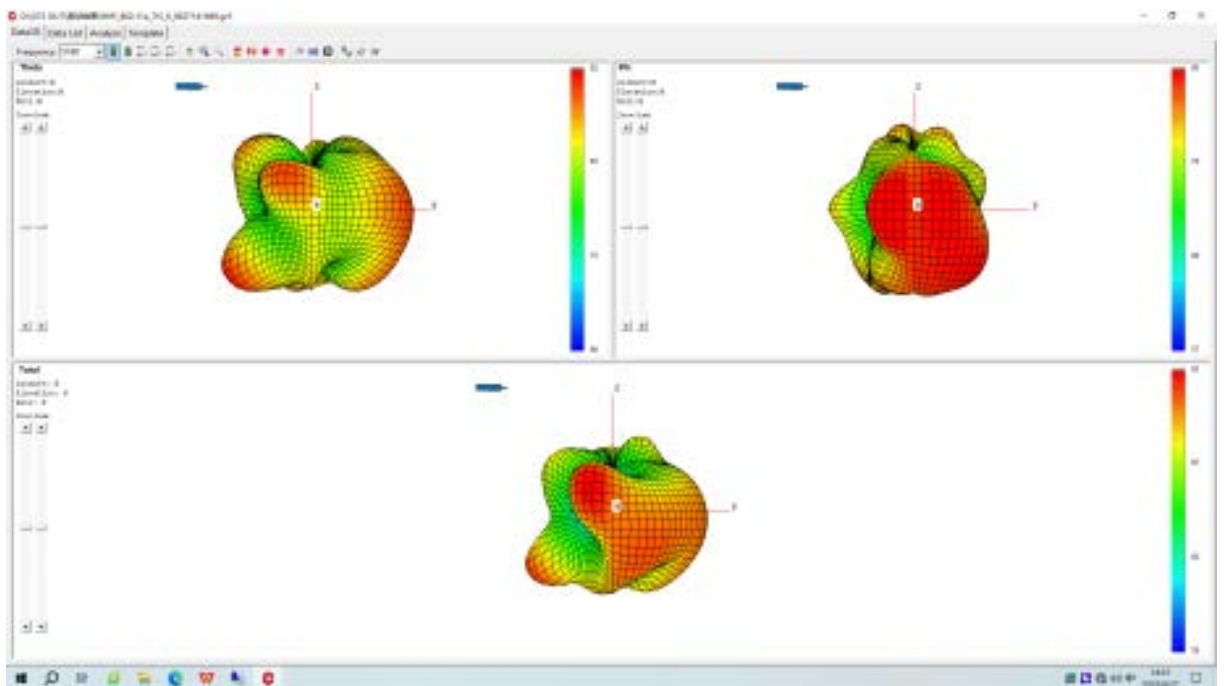
11 TIS



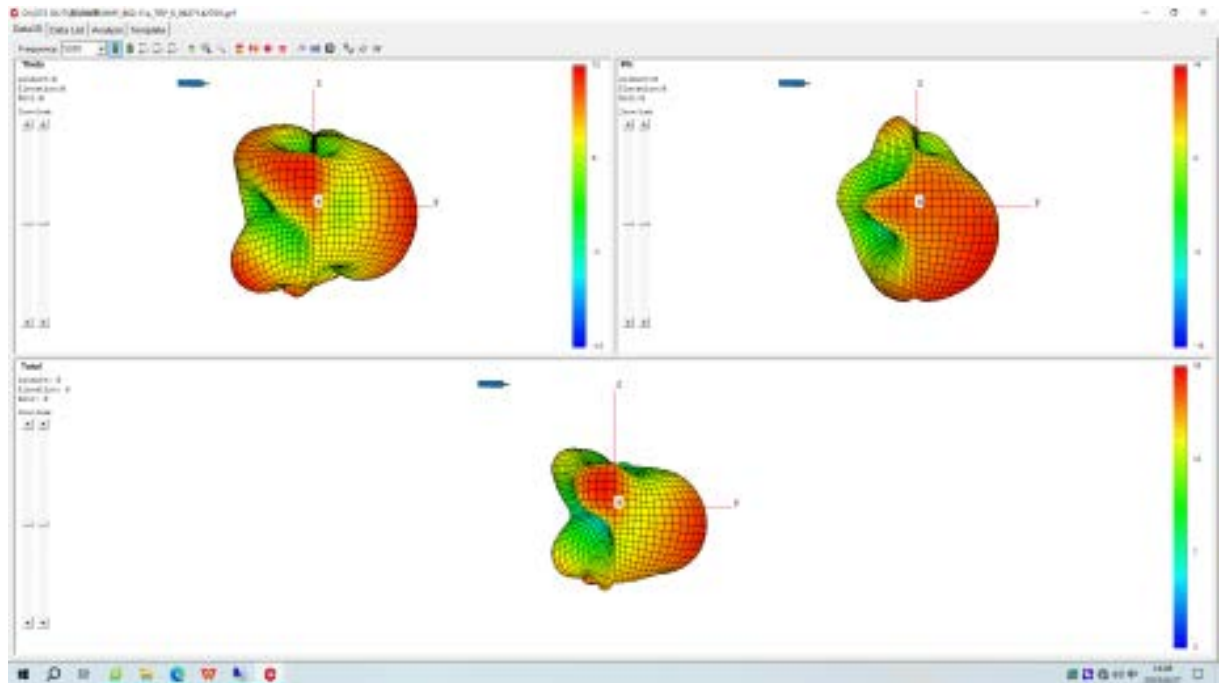
36 TRP



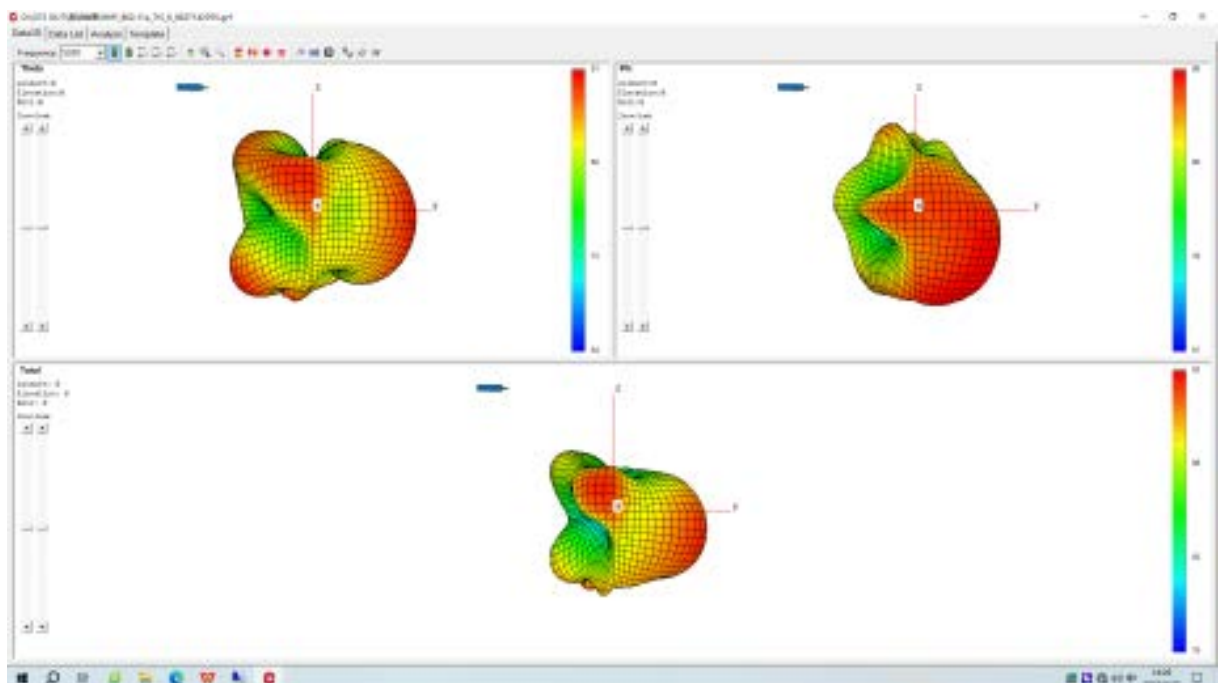
36 TIS



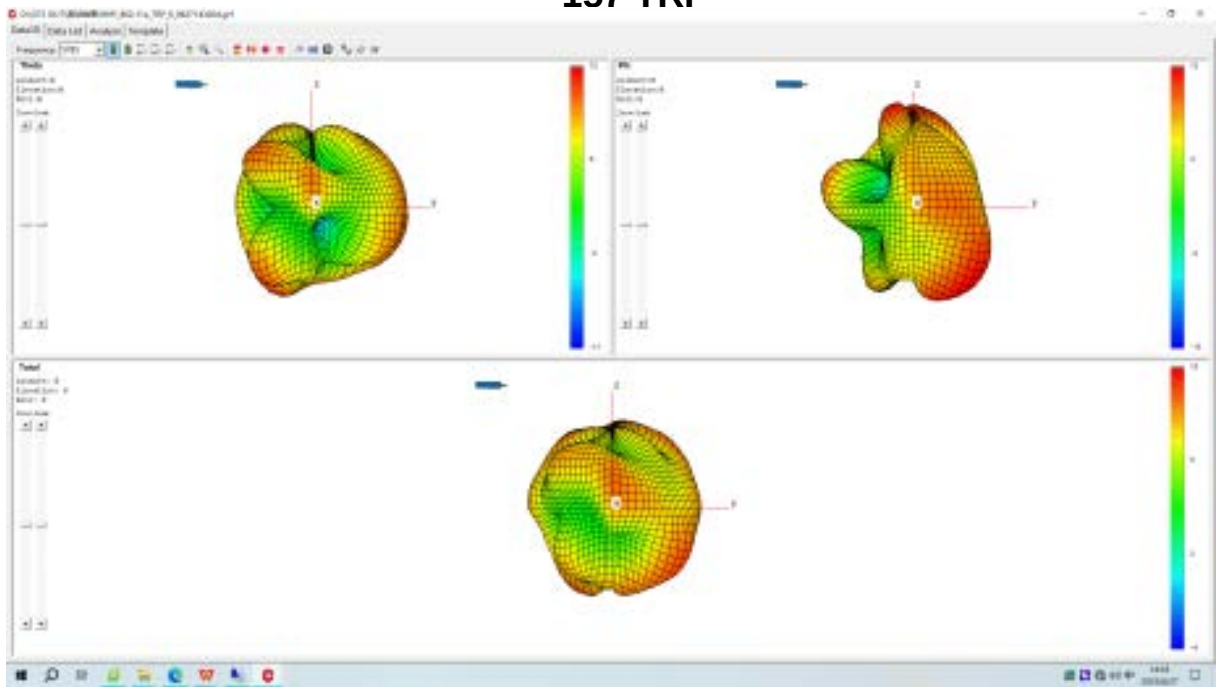
64 TRP



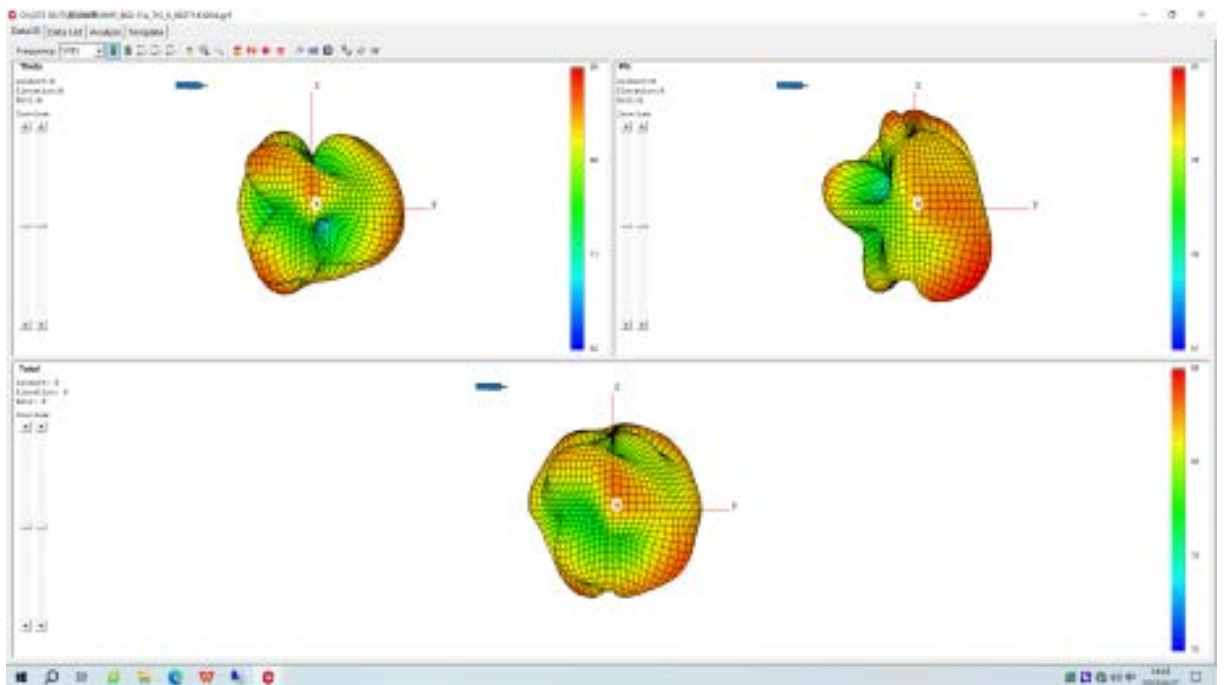
64 TIS

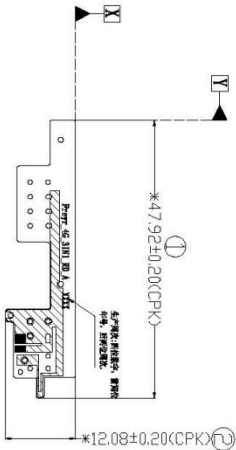
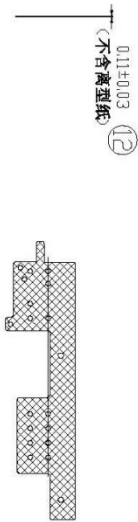


157 TRP



157 TIS



EC-PMD-QR-018		2		3		4		5		6		7																				
图号 DC-2305-021		<table><tr><td>Version</td><td colspan="2">Modifications</td><td>Modifier</td><td>Date</td></tr><tr><td>TA</td><td colspan="2">第1/2/3/4/5/6/7次打样图</td><td>邓平</td><td>23.06.19</td></tr><tr><td>TA</td><td colspan="2">第一次试产图纸</td><td>周加亮</td><td>23.05.28</td></tr><tr><td>TA</td><td colspan="2">L0:0试产图纸</td><td>邓平</td><td>23.06.21</td></tr></table>											Version	Modifications		Modifier	Date	TA	第1/2/3/4/5/6/7次打样图		邓平	23.06.19	TA	第一次试产图纸		周加亮	23.05.28	TA	L0:0试产图纸		邓平	23.06.21
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正面铜线 技术要求 1. 单面板, 电解铜, 亚光黑油(0.01-0.015mm); 3. 带*符号尺寸为重点尺寸; 4. 背胶用3M 467; 5. 基材使用PI, 半对半基材; 6. 铜箔厚0.5oz; 7. 镀金区域的镀金厚度为0.03UM以上, 镀镍厚度3-8UM 8. 未注倒圆角均为0.2, 工艺沿边为0.15mm; 9. 未注公差按一般公差表。 10. 材质需符合ROHS2.0+无卤+REACH要求, 盐雾试验48H不可有氧化现象。 11. 微粘膜包装。		反面背胶 <table><tr><td colspan="2">深圳市睿德通讯科技有限公司</td></tr><tr><td>PART NAME: RD022307-4G-3IN1-FPC</td><td>DATE: 23.06.21</td></tr><tr><td>PART NO: RD022307N087-4 (成品)</td><td>DRQW: 邓平</td></tr><tr><td>MATERIAL: PI+铜箔+油墨</td><td>CHECKED: 李港</td></tr><tr><td>FINISHING: AU/NI</td><td>APPROVED: 马超</td></tr><tr><td>UNIT:mm</td><td>COLOUR: 白色</td></tr><tr><td>SCALE: 1:1</td><td>TER: T:A</td></tr></table>											深圳市睿德通讯科技有限公司		PART NAME: RD022307-4G-3IN1-FPC	DATE: 23.06.21	PART NO: RD022307N087-4 (成品)	DRQW: 邓平	MATERIAL: PI+铜箔+油墨	CHECKED: 李港	FINISHING: AU/NI	APPROVED: 马超	UNIT:mm	COLOUR: 白色	SCALE: 1:1	TER: T:A						
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