

# 承認書

## APPROVAL SHEET

客 户  
CUSTOMER:

品 名 规 格  
DESCRIPTION: 2.4G-RUBBER ANTENNA

料 号  
PART NO.:

客 户 料 号  
CUS PART NO.:

日 期  
Date: 2023.1.07

文 件 版 本  
Revision: A/1

特高科技有限公司确认 TUKO TECHNOLOGY CO., LTD confirm			客户批准 Customer Approval
制作 Is used by	审核 Checked by	批准 Approval by	
朱万里	赵国春	Even	

联系电话: 0755 84160400 13544122582

※ 承认书一式两份, 惠蒙贵司承认签章

※ Approval in duplicate, please signed by your company.

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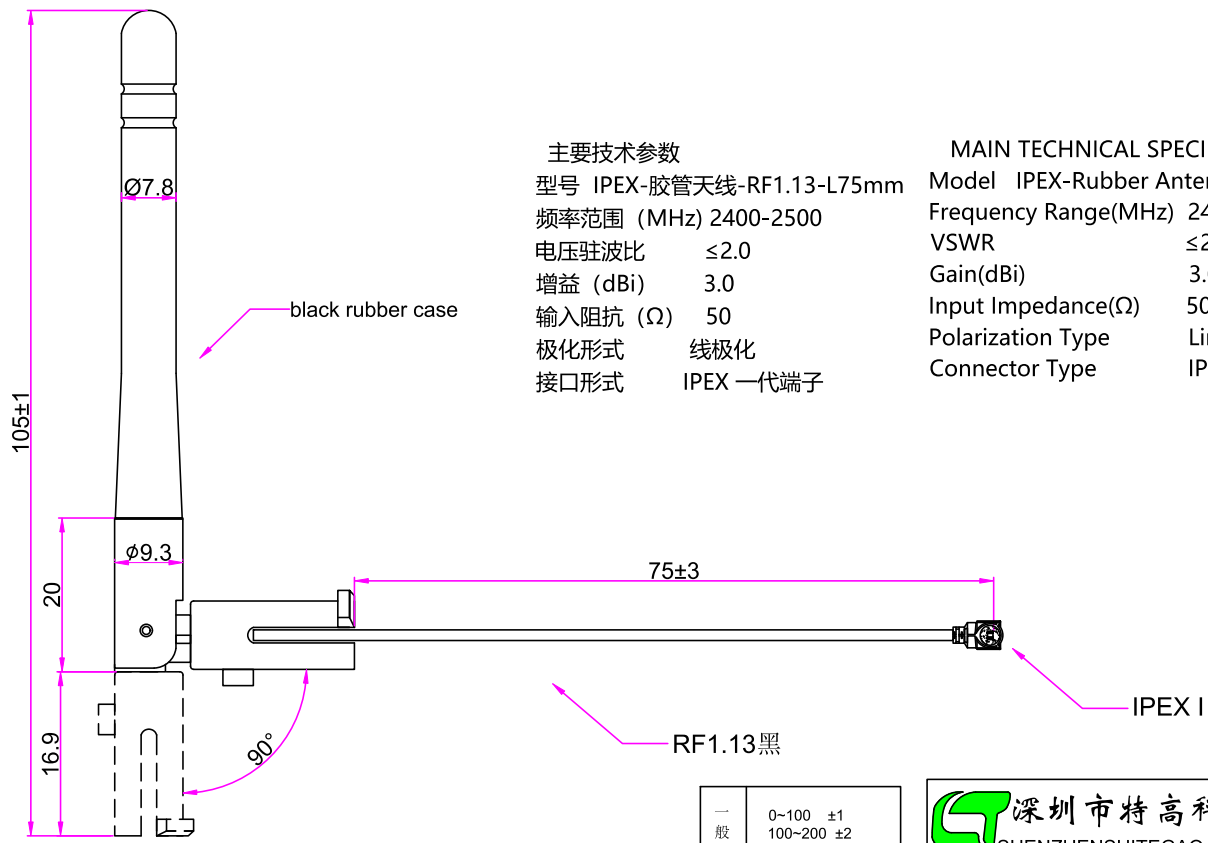
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# 产品图纸 (Product Drawing)

ROHS

REV	DATE	DESCRIPTION	NAME
A1	2023.1.7	原始版本	朱万里
A2			
A3			



主要技术参数

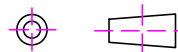
型号 IPEX-胶管天线-RF1.13-L75mm  
 频率范围 (MHz) 2400-2500  
 电压驻波比 ≤2.0  
 增益 (dBi) 3.0  
 输入阻抗 (Ω) 50  
 极化形式 线极化  
 接口形式 IPEX 一代端子

MAIN TECHNICAL SPECIFICATIONS

Model IPEX-Rubber Antenna-RF1.13-L75mm  
 Frequency Range(MHz) 2400-2500  
 VSWR ≤2.0  
 Gain(dBi) 3.0  
 Input Impedance(Ω) 50  
 Polarization Type Linear  
 Connector Type IPEX I

一般公差	0~100 ±1 100~200 ±2 200~300 ±3 300~ ±4 ANGULAR ±1°
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Unit:mm



深圳市特高科技有限公司 SHENZHEN SHITEGAO TECHNOLOGY CO., LTD.	
品名规格 (PRODUCT NAME)	IPEX-胶管天线-RF1.13-L75mm
料号 (PART NUMBER)	TZ01-0*
客户料号 (CUSTOMER P/N)	
绘图 (DRAW)	朱万里
审核 (CHECK)	
核准 (APP)	
版本 (REV)	A1
日期 (DATE)	2023.1.7
页码 (PAGE)	1/1

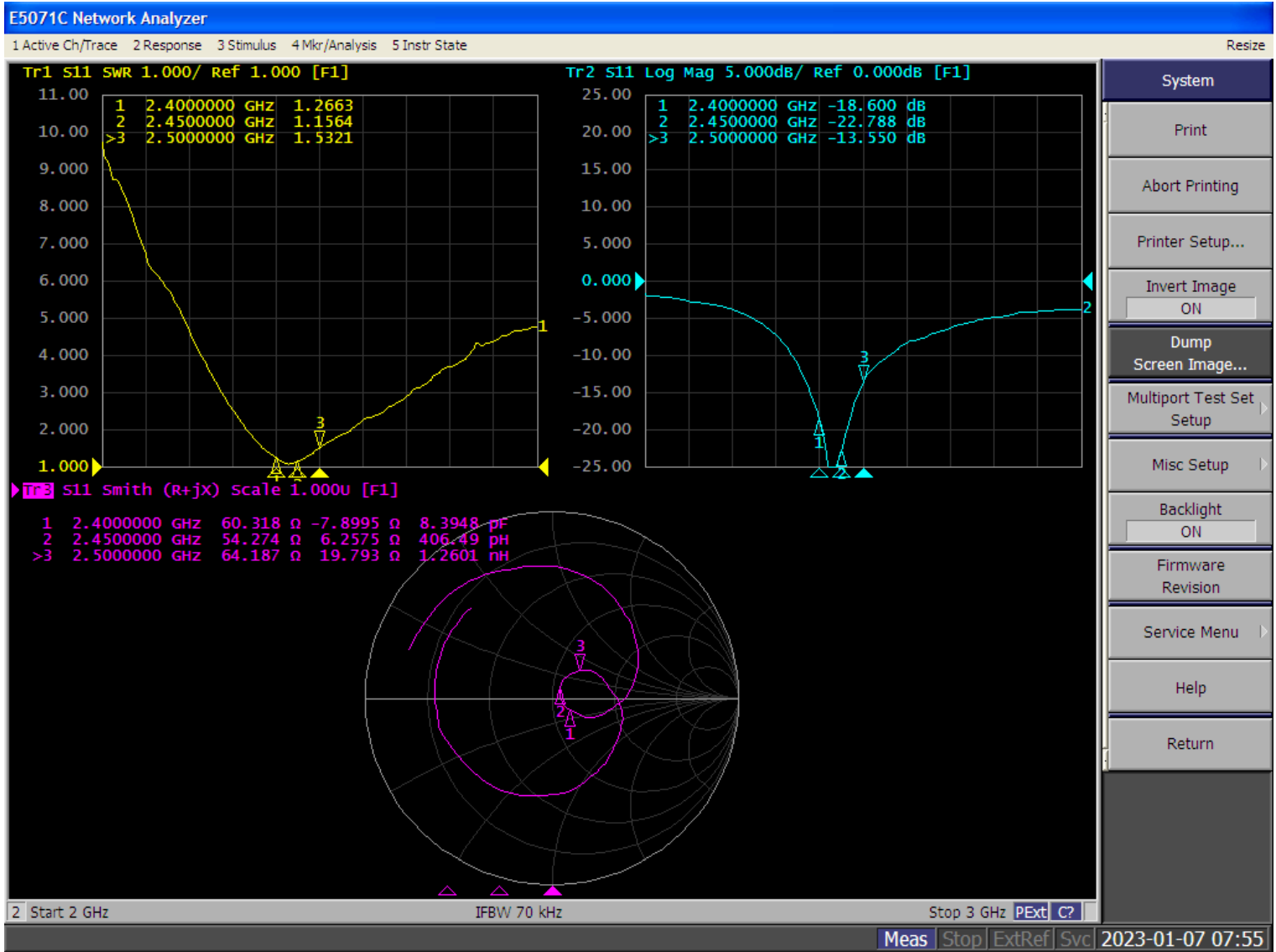
**电气性能指标 (ELECTRICAL)**

频率范围 Frequency Range (MHZ):	2400-2500
峰值增益 Peak gain (dBi):	3
电压驻波比 VSWR :	≤2.0
极化方式 Polarization Type :	Linear
辐射方向 Radiation :	Omni
阻抗 Input Impedance(Ω) :	50 Ohm

**机械性能指标 (MECHANICAL)**

天线尺寸 Size:	φ 9.3*105mm
天线颜色 Color:	Black
天线外壳材质 Cover material:	PET
核心材料 Core Material:	Brass
线材规格 Cable:	RF1.13 Black
线材长度 Cable length :	75mm
接头 Connector Type:	IPEX I
工作温度 Operating temperature:	-10°C~85°C
工作湿度 Operating humidity:	20~80%

## VSWR & Return loss & Smith

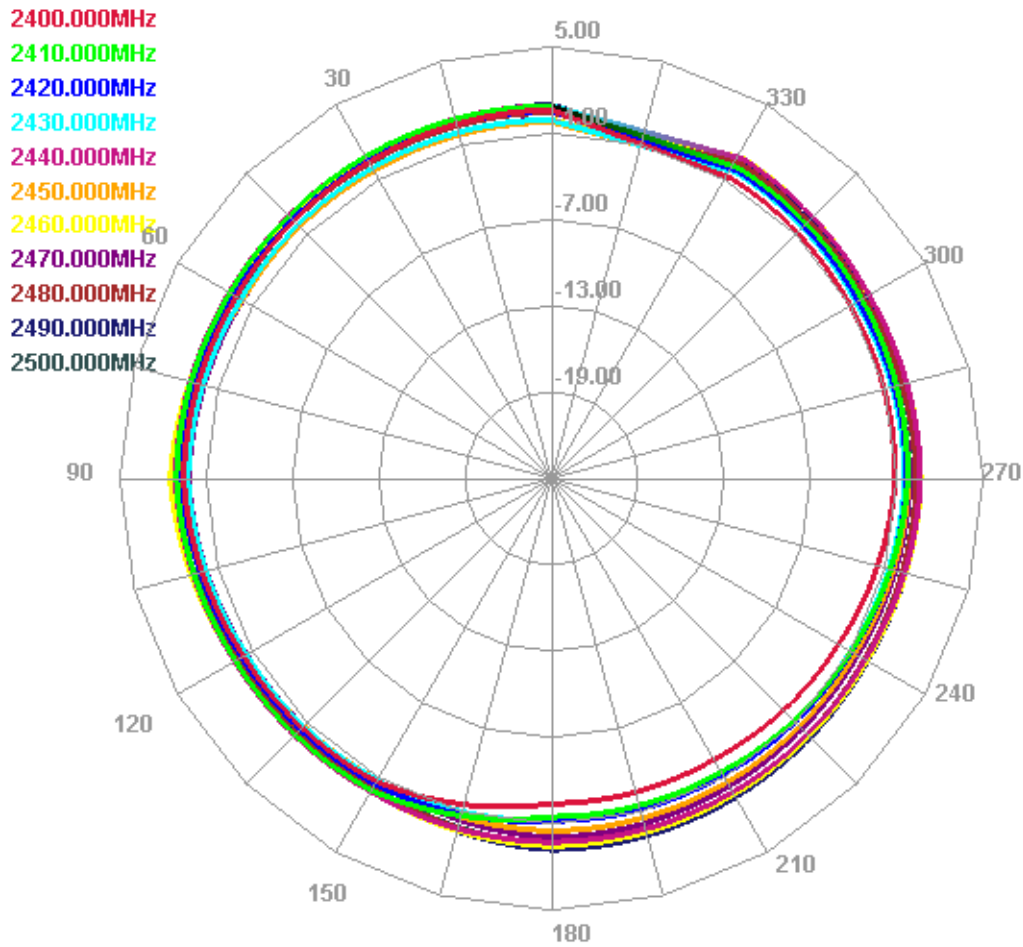


## 2D Radiation Pattern

### H-Plane Radiation

XY Plane (Theta90°/Phi0-360°)

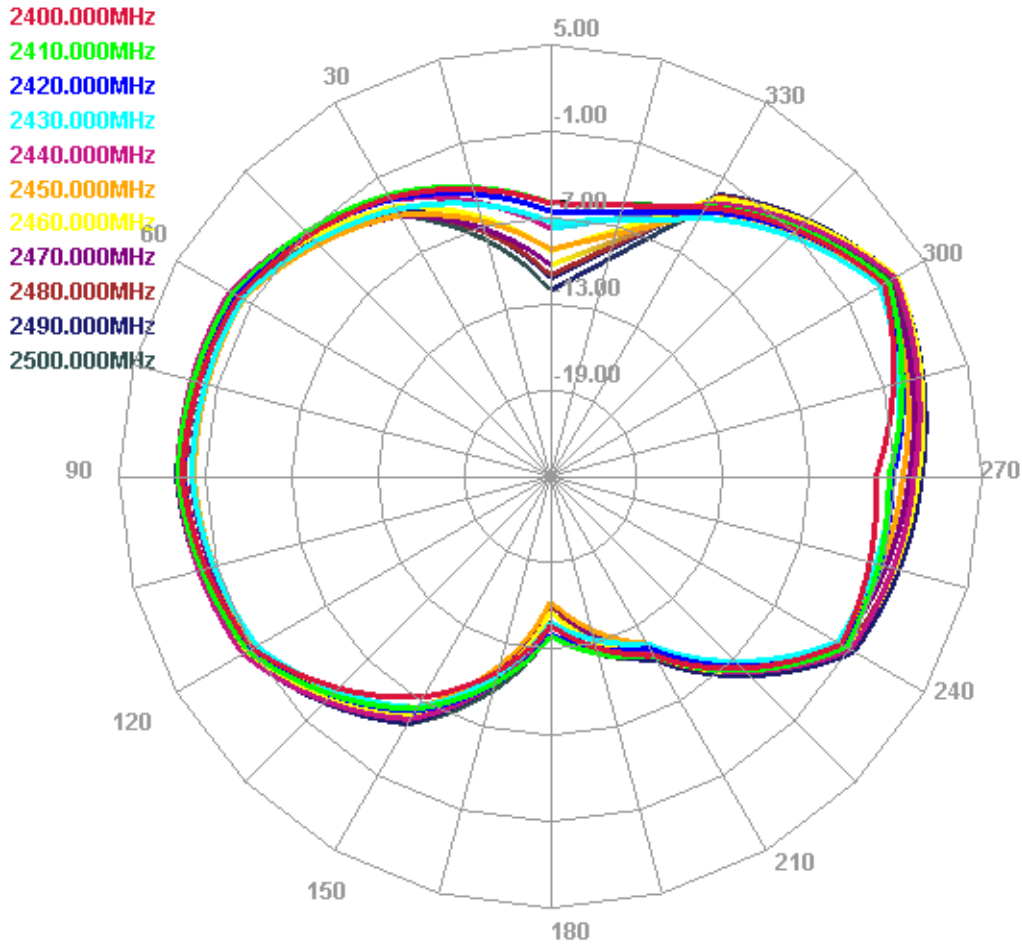
#### Horizontal



## E1 -Plane Radiation

XZ Plane (Theta0-360°/Phi0°)

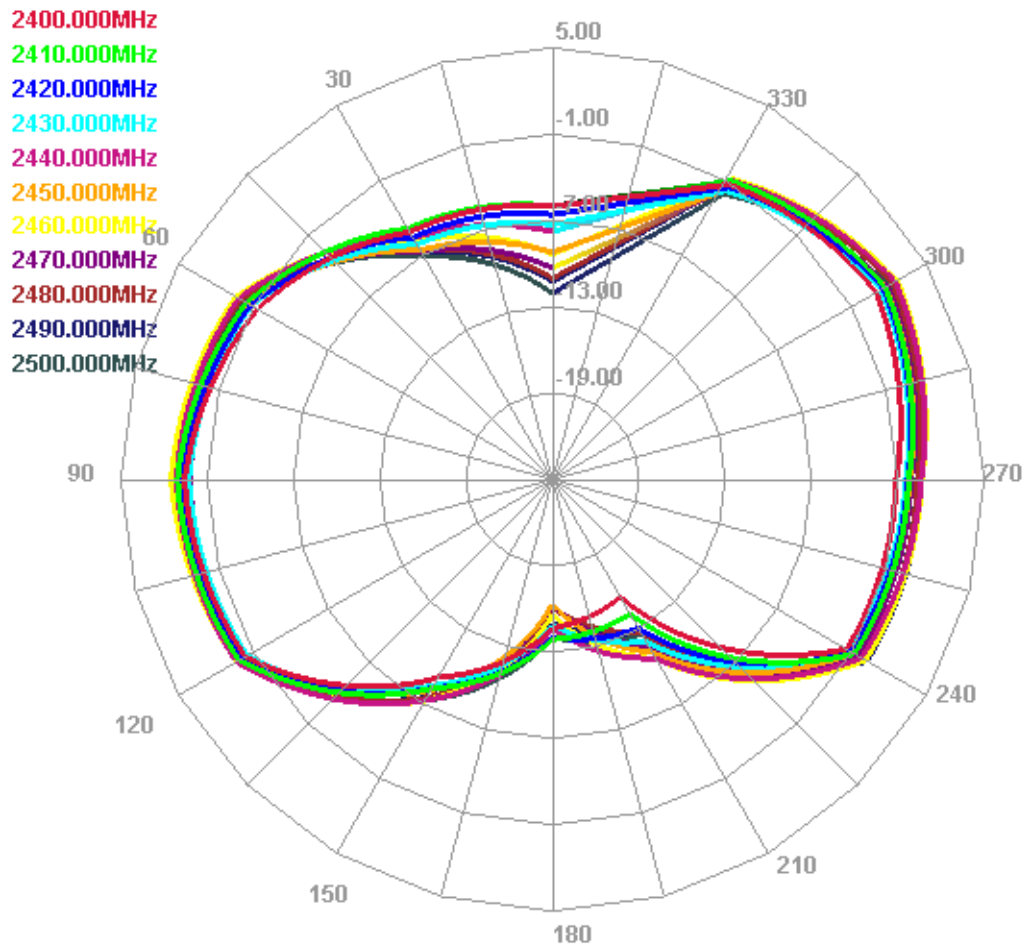
### E1 Face



## E2-Plane Radiation

YZ Plane (Theta0-360°/Phi90°)

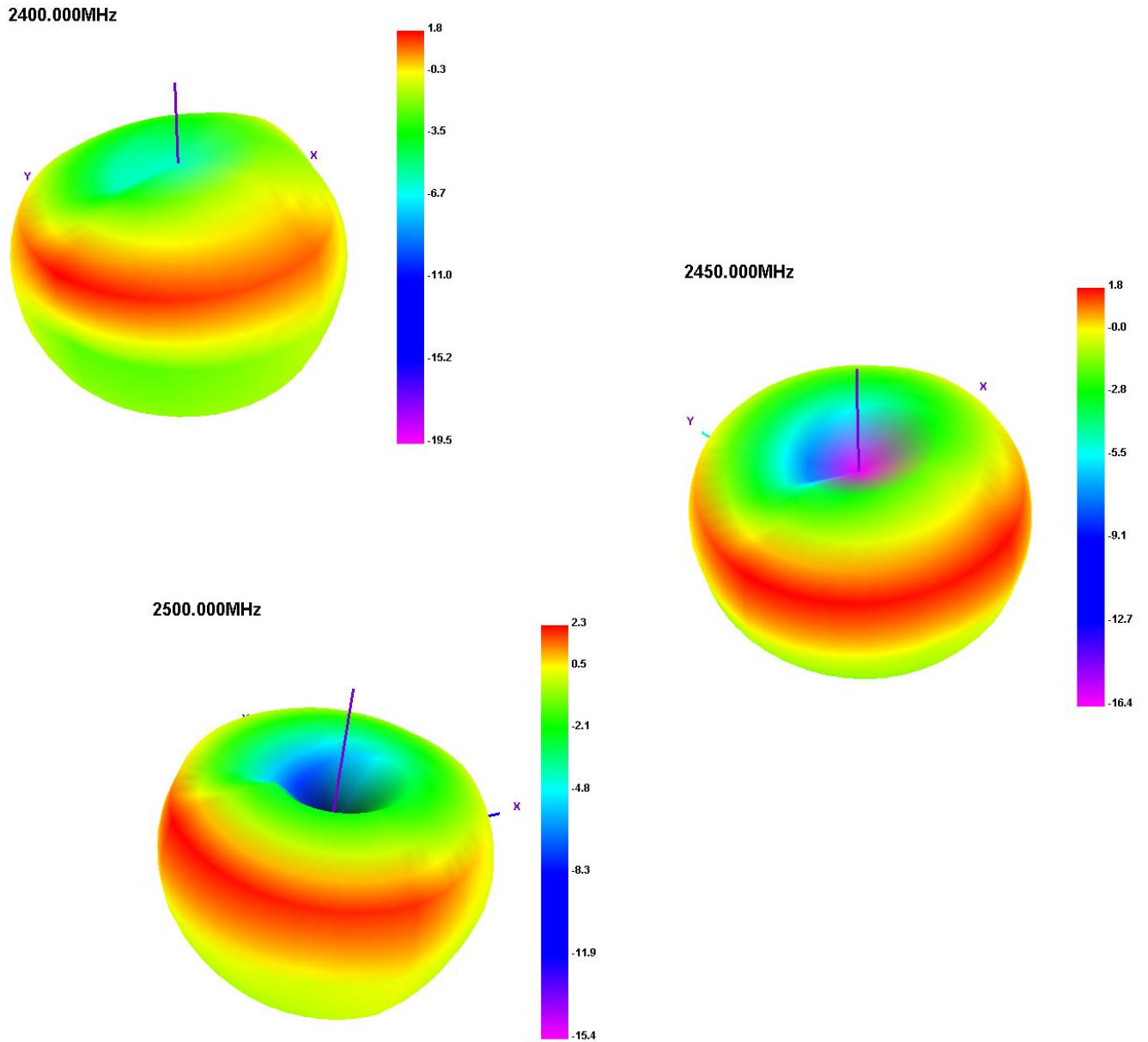
### E2 Face





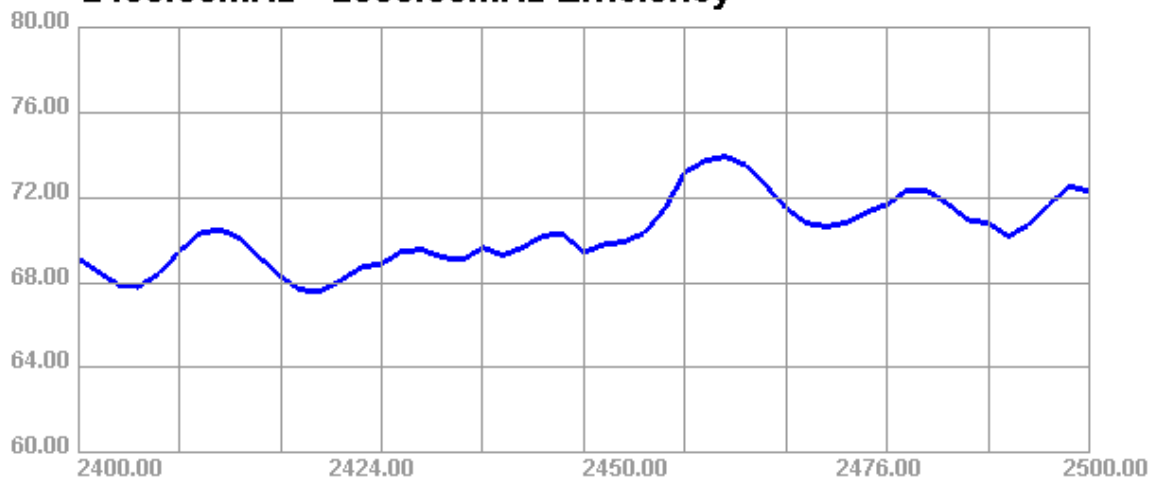
### 3D patterns

#### 1.Radiation patterns: 3D (2400/2450/2500MHz)

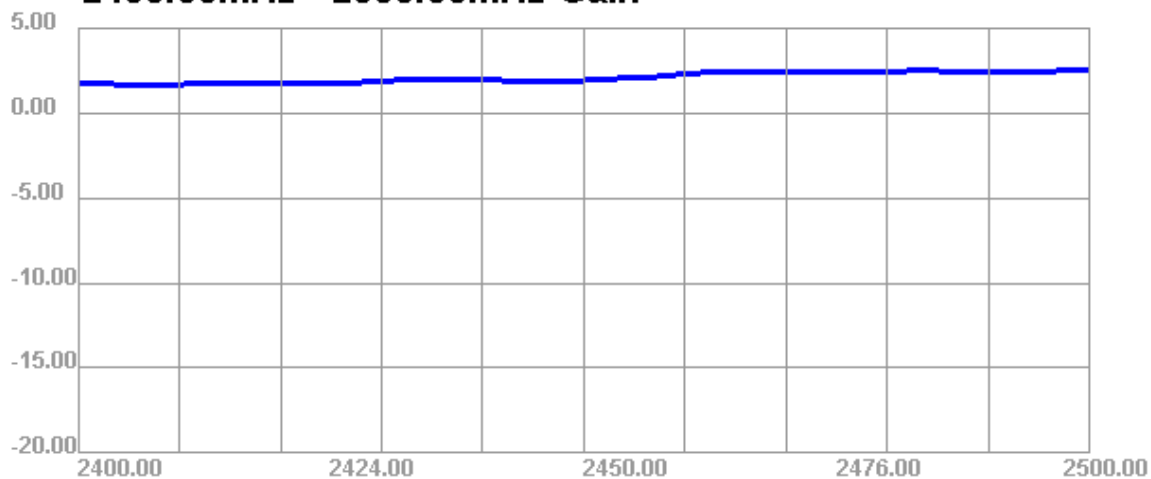


## 2. Antenna Efficiency/Gain

### 2400.00MHz - 2500.00MHz Efficiency



### 2400.00MHz - 2500.00MHz Gain



## 环境性能测试 (Environment performance test) :

项目	测试条件	测试结果
储存环境	在没有指定的情况下测试温度、湿度、气压如下： 1. 温度为-10℃~+85℃ 2. 相对湿度为45%-85% 3. 气压为86kpa-106kpa	电气机械性能正常
高低温试验	在70℃与-40℃之间进行5次循环，然后在正常条件下1-2H，检查外观质量。	尺寸应满足规定并应满足于机械、电气性能
耐恒定湿热试验	相对湿度95±3%，试验温度：40℃.持续2H作用后，试品取出后5min之内测定电气性能，试品在正常条件下1-2H，检查外观质量	尺寸应满足规定并应满足于机械、电气性能
振动试验	振频范围10-55HZ，位移幅值：0.35MM，加速度幅值：50.0M/S，扫频循环次数：30次	电气机械性能正常
跌落试验	1M高空按照互相垂直的轴方向自由跌落3次	电气机械性能正常

Project	Test condition	Test results
Storage environment	Test temperature, humidity, pressure without stated condition as follwings:1. Temperature: -10℃~+85℃;2. Relative humidity: 45%-85%;3, Pressure: 86kpa-106kpa	Electrical and mechanical performance normal
High and low temperature test	Having 5 times cycle between -40℃ to 70℃,Then in common condition 1-2 hours test exterior quality.	Measurement satisfied with electrical and mechanical performance normal.
Resistance constant hot and humid test	Relative humidity:95±3%, Test temperature: 40℃, last 2 hours , put it after 5 min test the electrical function . Test products during common condition 1-2 hours ,Then test exterior quality.	Measurement satisfied with electrical and mechanical performance normal.
Vibration test	Vibrate Frequency:10-55HZ; Distance :0.35mm;Acceleration :50.0m/s;Sweep frequency cycle:30 times	Electrical and mechanical performance normal
Fall test	From 1m height fall down 3 times freely (vertical direction)	Electrical and mechanical performance normal

产品规格 Product Type		RF113-F 单银		
结构图 Structure Drawing				
结构特性 Structure Characteristics				
结构 Structure	项目 Item	标准值 Standard Value		
内导体 Inner Conductor	材质 Material	镀银铜线 Silverplated Copper Wire		
	结构 Construction(mm)	7/0.085		
	标称外径 Nom.Dia(mm)	0.255±0.02		
	导体电阻 Conductor Resistance	≤ 482 Ω/km @ 20℃		
绝缘层 Insulation	材质 Material	聚全氟乙丙烯 FEP		
	标称外径 Nom.Dia(mm)	0.70±0.03		
	厚度 Thickness (mm)	0.22±0.03		
	颜色 Color(mm)	Transparent		
	绝缘电阻 Insulation Resistance	≥ 3000 MΩ/km		
外导体 Outer Conductor	材质 Material	镀锡铜线 Tinned Copper Wire 16/4*0.05		
	标称外径 Nom.Dia(mm)	0.92±0.05		
	编织覆盖率 Coverage Ratio(%)	90±5		
护套 Jacket	材质 Material	聚全氟乙丙烯 FEP		
	标称外径 Nom.Dia(mm)	1.13±0.05		
	厚度 Thickness (mm)	0.11±0.01		
电气性能 Electrical Characteristics				
项目 Item	标准值 Standard Value	项目 Item	频率 Frequency	标准值 Standard Value
阻抗 Impedanc (Ω)	50±2	衰减 Attenuation@20℃ (dB/m)	1GHz	2.20
电容 Capacitance(pF/m)	98		2GHz	3.10
速率 Velocity(%)	70		3GHz	3.80
驻波比 VSWR	≤1.30@DC-6GHz		4GHz	4.40
最大工作电压 Max.Operating Voltage(V)	1000		5GHz	4.90
额定电流 Current Rating(A)	0.13		6GHz	5.40
最大工作频率 Max.Operating Frequency(GHz)	6			
可靠性 Dependability				
最小弯曲半径(单次)Min.Bending Radius/Single		mm	5	
最小弯曲半径 (重复) Min.Bending Radius/Repeated		mm	10	
工作温度范围 Operating Temperature		℃	-55- +200	

包装 Packing	
包装方式 Packing Mode	纸盘 Papery Reel
包装长度 The Length of Each Reel(m)	1000
每盘段数 The Joints of Each Reel	≤4
最小段长 Min. Segment Length(m)	≥20
使用提示 Trips for Use	
存储环境 Storage Environment	温度: 30°C以下, 湿度: 20-65%    Temperature: Below 30°C, Humidity: 20-65%
最佳保存周期 The Best Save Cycle	2 个月, 2 个月以上上锡效果变差, 但电性能不受影响, 夏季高温高湿环境开剥后需尽快流转 2 months. After 2 months, the effect of tinning will become worse, but it will not affect the electrical performance. After stripping the wire in the high temperature and high humidity environment in summer, it needs to be used as soon as possible.
加工温度 Processing Temperature	可短时承受 260°C 的高温, 300°C 以上易发生分解, 400°C 以上发生显著的热分解 It can withstand a high temperature of 260°C for a short time, easily decomposes above 300°C and significantly thermally decomposes above 400°C.
铁氟龙收缩 Teflon Shrink	材料的固有属性, 绝缘 0.2mm 以下, 护套 0.3mm 以下 The inherent properties of the material, the insulation is less than 0.2mm, and the sheath is less than 0.3mm.
护套窜动 Jacket Taaverse	加工长度 (护套残留长度) 低于 5CM 时易发生 It is easy to occur when the processing length (sheath residual length) is less than 5CM.