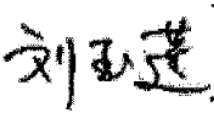


# 规格承认书

## SPECIFICATION FOR APPROVAL

|                 |                     |
|-----------------|---------------------|
| 客户名称 (CUSTOMER) | POWERMAX            |
| 客户型号 (MODEL NO) |                     |
| 客户料号 (PART NO)  |                     |
| 供方型号 (MODEL NO) | PCB Antenna L=65MM, |
| 供方料号 (PART NO)  | G121-02-D65-B1      |
| 最小包装量 (MPQ)     |                     |
| 品牌 (BRAND)      |                     |
| 送样日期 (DATE)     | 2023-05-30          |
| 样品数量 (QUANTITY) |                     |

| 供方确认                                                                                |                                                                                     |                                                                                     | 客户确认                |                  |                   |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------|------------------|-------------------|
| APPROVED SIGNATURES                                                                 |                                                                                     |                                                                                     | APPROVED SIGNATURES |                  |                   |
| 承办<br>PREPARED BY                                                                   | 审核<br>CHECKED BY                                                                    | 核准<br>APPROVED BY                                                                   | 检测<br>TESTED BY     | 审核<br>CHECKED BY | 核准<br>APPROVED BY |
|  |  |  |                     |                  |                   |

备注：送样时一式一份由供方手工签名和加盖公司公章，规格书需要提供纸档一份  
电子档一份。

地址：广东省惠州市仲恺高新区 9 号小区

电 话:0752-2619176

传真:0752-2619186

联系人:郑双旺

手机:13802875820

电子邮箱: zsw\_ele@163.com

公司网址: <http://www.desanwire.com/>

## 承认书项目表List of items

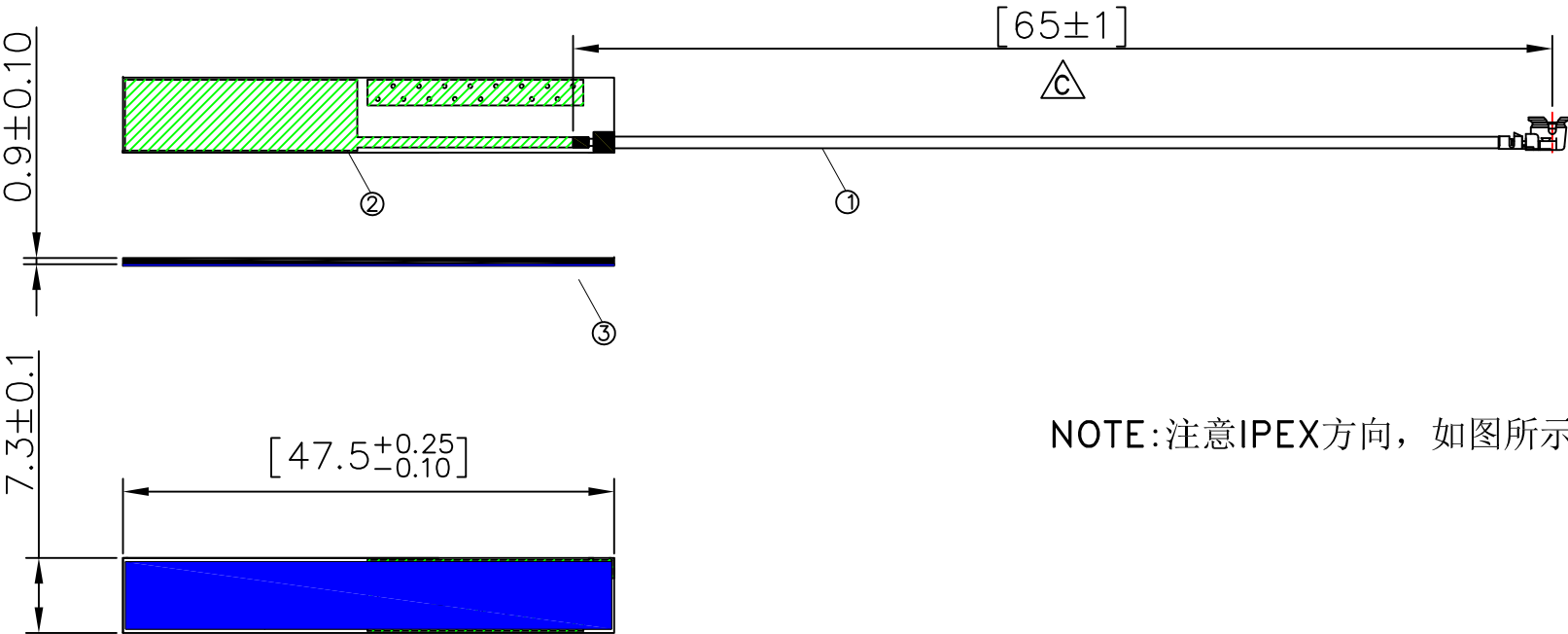
|   |                                       |          |
|---|---------------------------------------|----------|
| 1 | 承认书封面.....<br>APPROVAL Cover          | NO. 1    |
| 2 | 承认书项目表.....<br>APPROVAL List          | NO. 2    |
| 3 | 产品规格书.....<br>Product specification   | NO. 3    |
| 4 | 工程图面.....<br>Product drawings         | NO. 4    |
| 5 | 电性测试报告.....<br>Electrical test report | NO. 5~8  |
| 6 | 线材规格书.....<br>Cable spec.             | NO. 9~10 |
| 7 | PCB规格书.....<br>PCB spec.              | NO. 11   |

# Specification

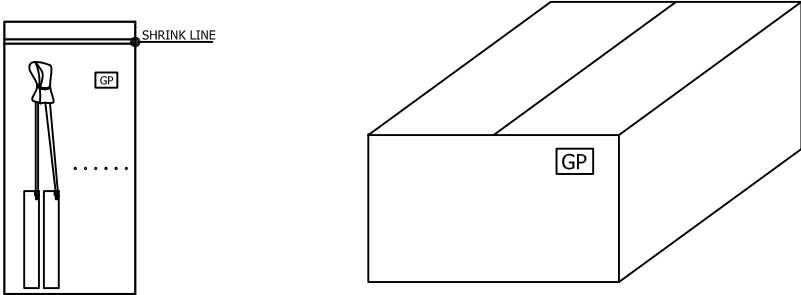
| A.Electrical Properties |                      |
|-------------------------|----------------------|
| Frequency Rang<br>频段    | 2400~2500MHz         |
| Impedance<br>阻抗         | 50Ω Nominal          |
| VSWR<br>电压驻波比           | 2.0 Max.             |
| Gain(peak)<br>增益（峰值）    | 2.23 dBi             |
| Radiation<br>辐射方式       | Omni-Directional/ 全向 |
| Polarization<br>极化方式    | Linear Vertical/ 垂直  |
| B.Physical Properties   |                      |
| Connector Type<br>连接方式  |                      |
| Cable Type<br>线材        | Ø1.13mm CABLE 灰色     |
| Antenna Body<br>天线本体    | PCB 黑色               |
| C.Environmental         |                      |
| Operating Temp<br>工作环境  | -40℃ ~ +65℃          |
| Storage Temp<br>存储环境    | -40℃ ~ +80℃          |

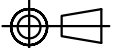
工程图

| REV. | 修 订 内 容    | 修订时间         |
|------|------------|--------------|
| A    | 新 版 发 行    | 2015.07.17   |
| B    | 变更端子方向     | 2015. 07. 28 |
| C    | 变更线材长度     | 2022. 09. 28 |
| D    | 变更PCB尺寸标示值 | 2022. 11. 9  |

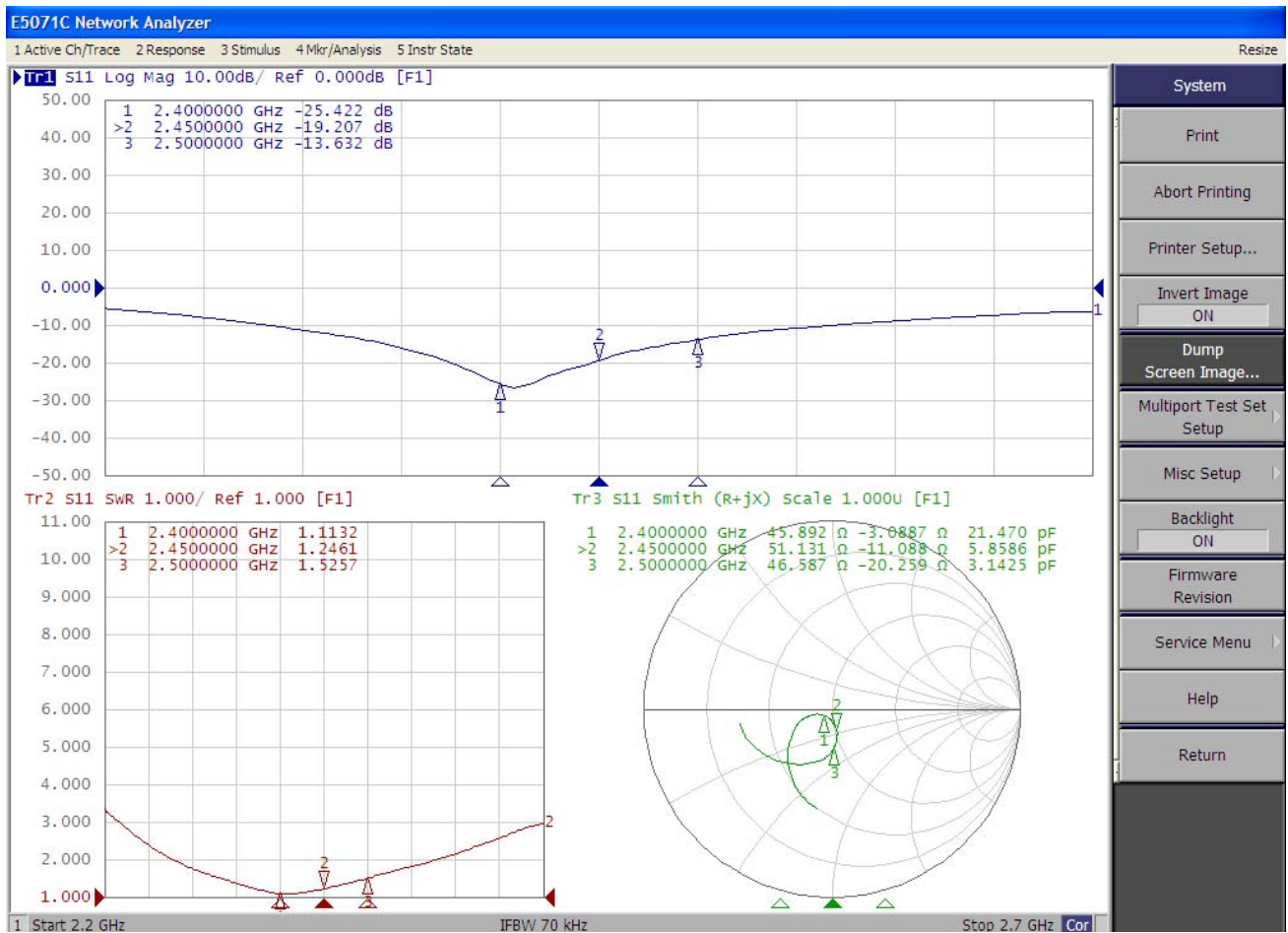


NOTE:注意IPEX方向, 如图所示



|                                              |           |                                                                                                                                                                                 |      |        |            |  |             |  |
|----------------------------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|------------|--|-------------|--|
| 4                                            | CONNECTOR | IPEX(20278-112R-13)                                                                                                                                                             | 1    |        |            |  |             |  |
| 3                                            | 泡棉双面胶     | T0.3mm                                                                                                                                                                          | 1    |        |            |  |             |  |
| 2                                            | BODY      | PCB L47.8*W7.3*T0.6mm 黑色                                                                                                                                                        | 1    |        |            |  |             |  |
| 1                                            | CABLE     | Ø1.13mm CABLE,GRAY                                                                                                                                                              | 1    |        |            |  |             |  |
| NO.                                          | PART NAME | DESCRIPTION                                                                                                                                                                     | Q'TY | REMARK |            |  |             |  |
| TITLE:                                       |           | <div>DeYi</div> <div>惠州德亿科技有限公司</div> <div>无线 高频 方案提供</div> <div>惠州市德亿科技有限公司</div>                                                                                              |      |        |            |  |             |  |
| P/N:                                         |           |                                                                                                                                                                                 |      |        |            |  |             |  |
| CUSTOMER:                                    |           |                                                                                                                                                                                 |      |        |            |  |             |  |
| DRAW NO.:                                    |           |                                                                                                                                                                                 |      |        |            |  |             |  |
| DIMENSIONS TOLERANCES UNLESS OTHERWISE NOTED |           | <div></div> <div>APPROVED</div> <div>CHECKED</div> <div>DRAWED</div> <div>2022.09.28</div> |      |        |            |  |             |  |
| 一般公差<br>TOLERANCE                            |           |                                                                                                                                                                                 |      |        | SHEET: 1/1 |  | SCALE: NONE |  |
|                                              |           |                                                                                                                                                                                 |      |        | UNIT: mm   |  | REV.A       |  |
|                                              |           |                                                                                                                                                                                 |      |        |            |  |             |  |
|                                              |           |                                                                                                                                                                                 |      |        |            |  |             |  |

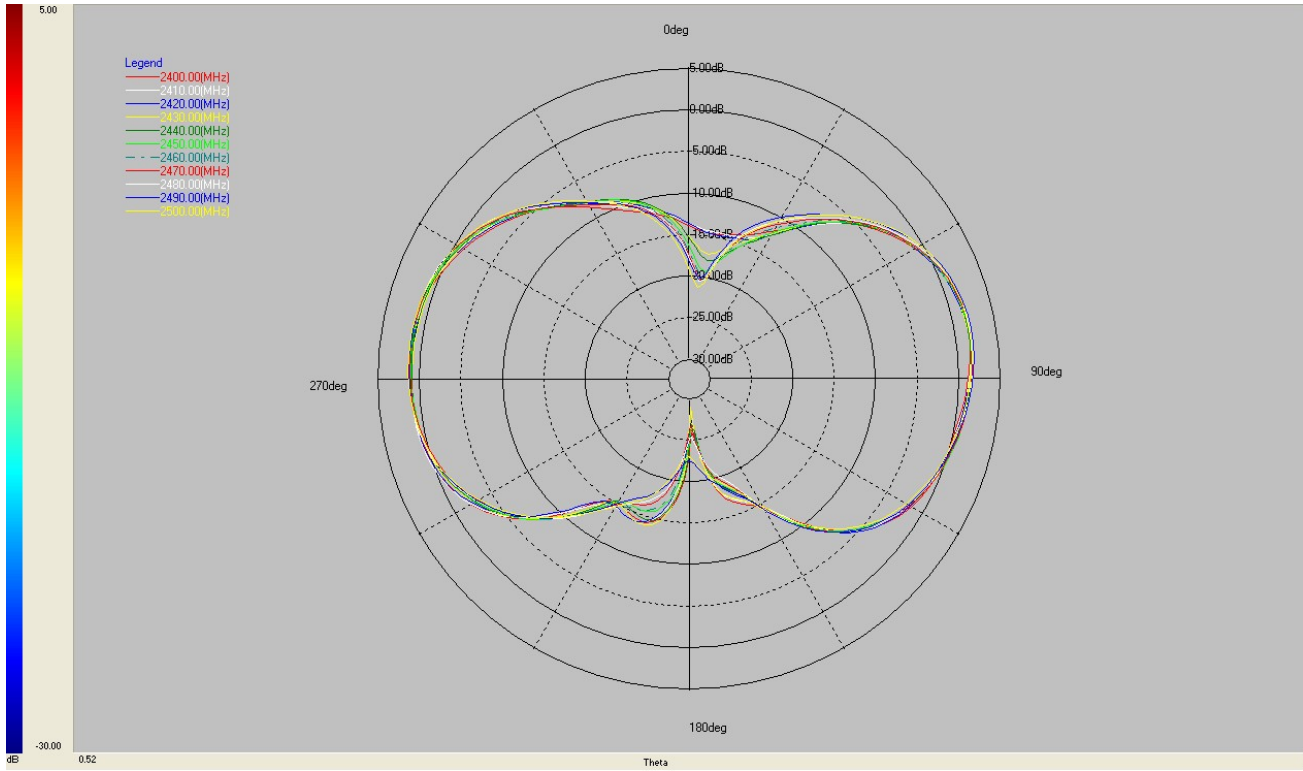
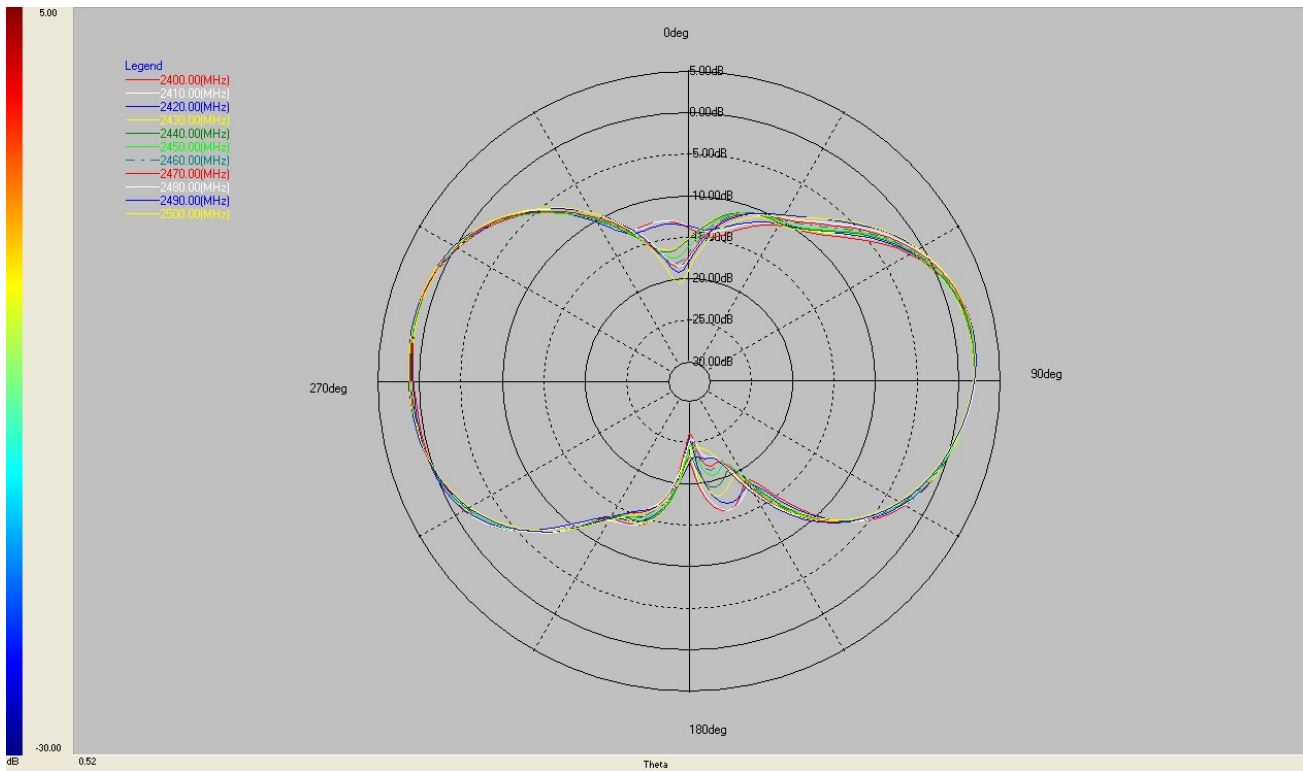
电压驻波比 VSWR:



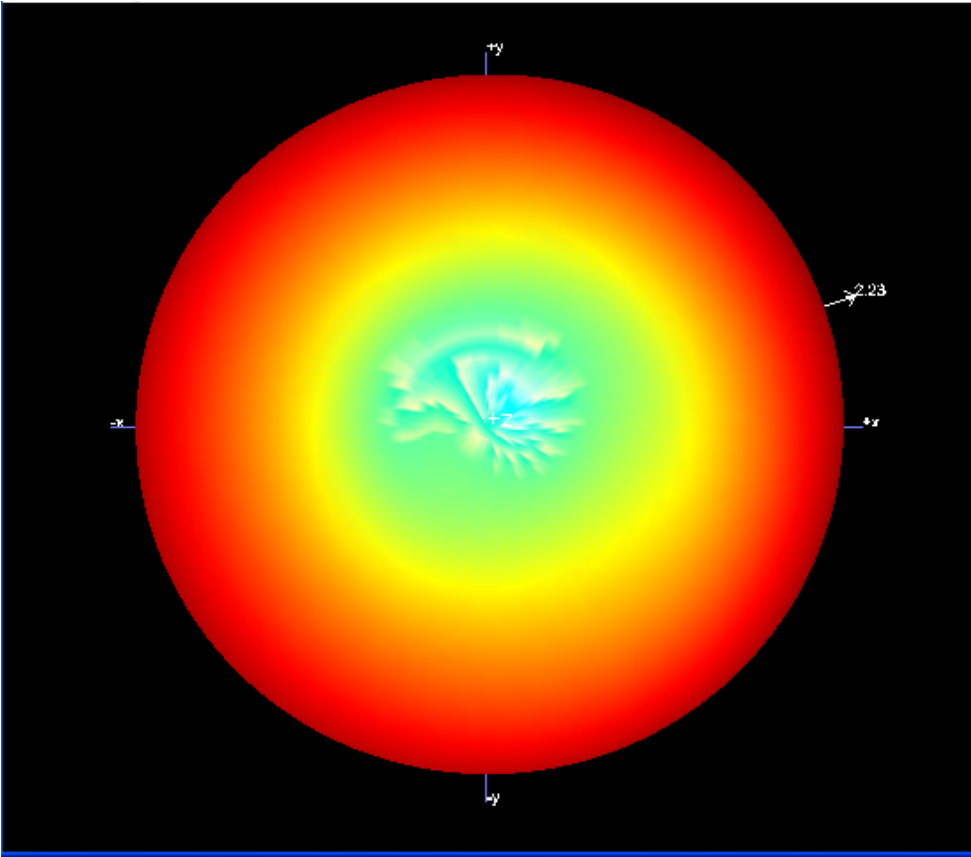
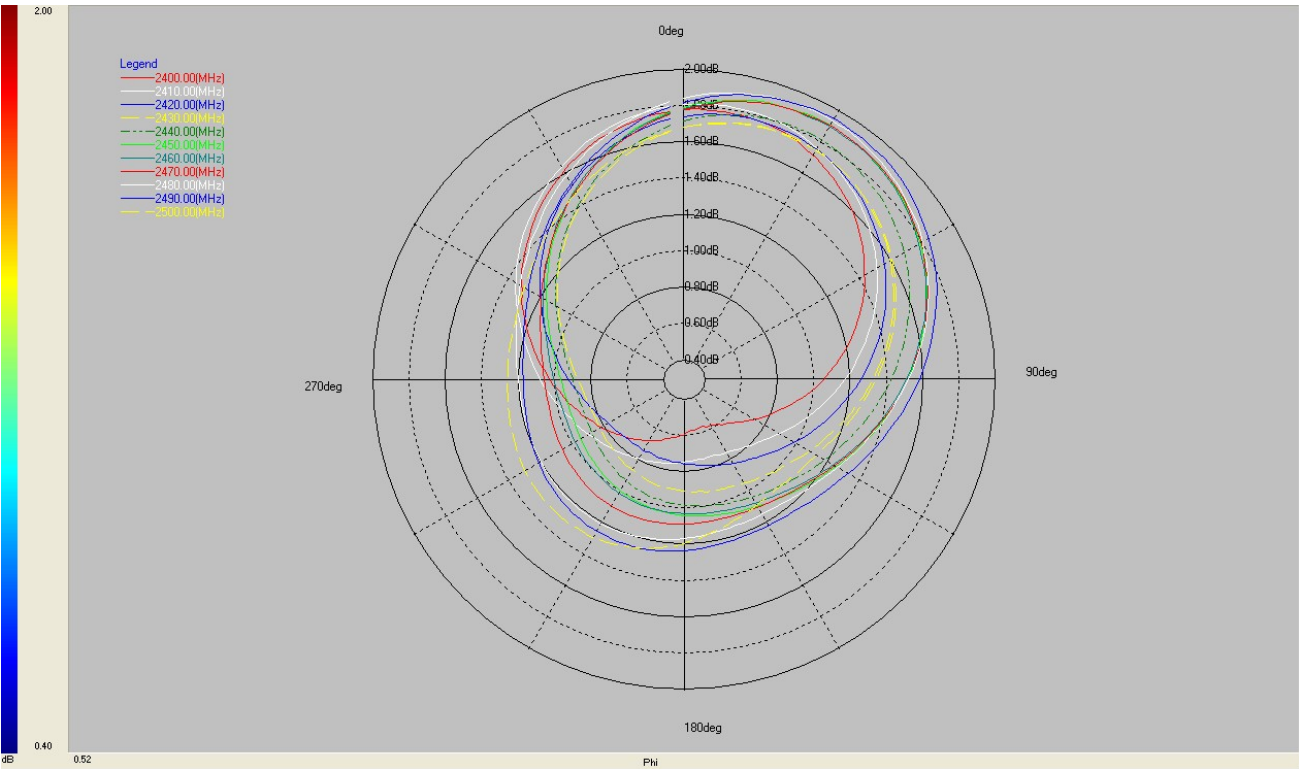
无源测试数据:

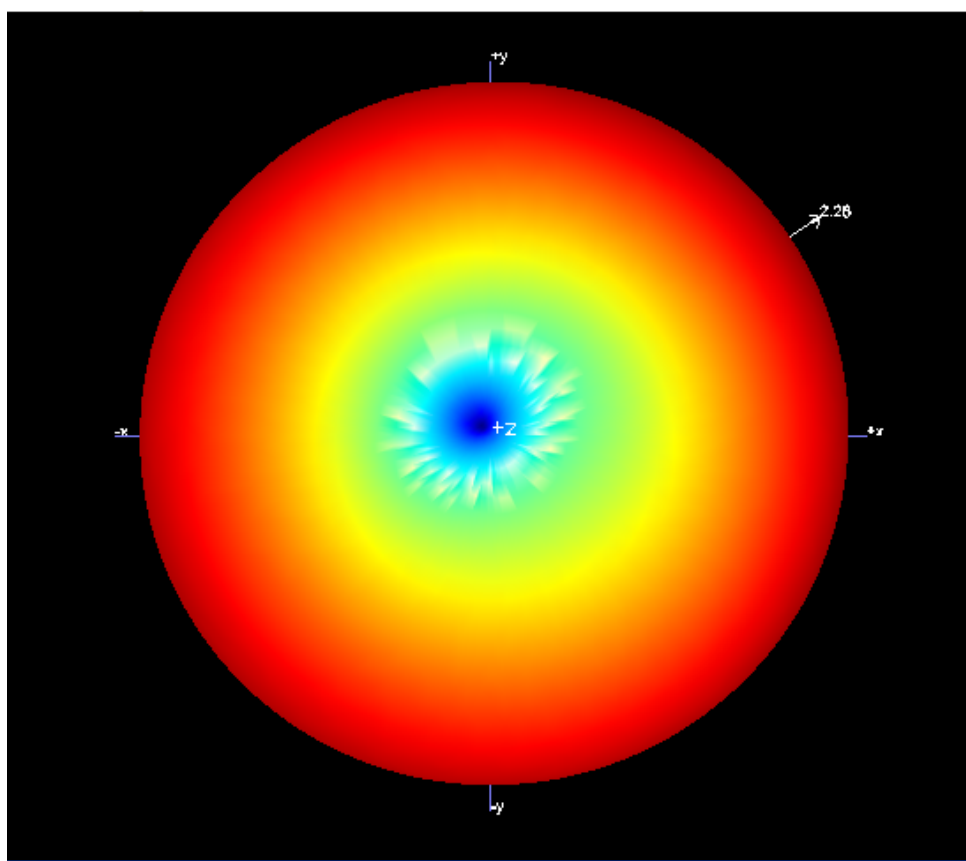
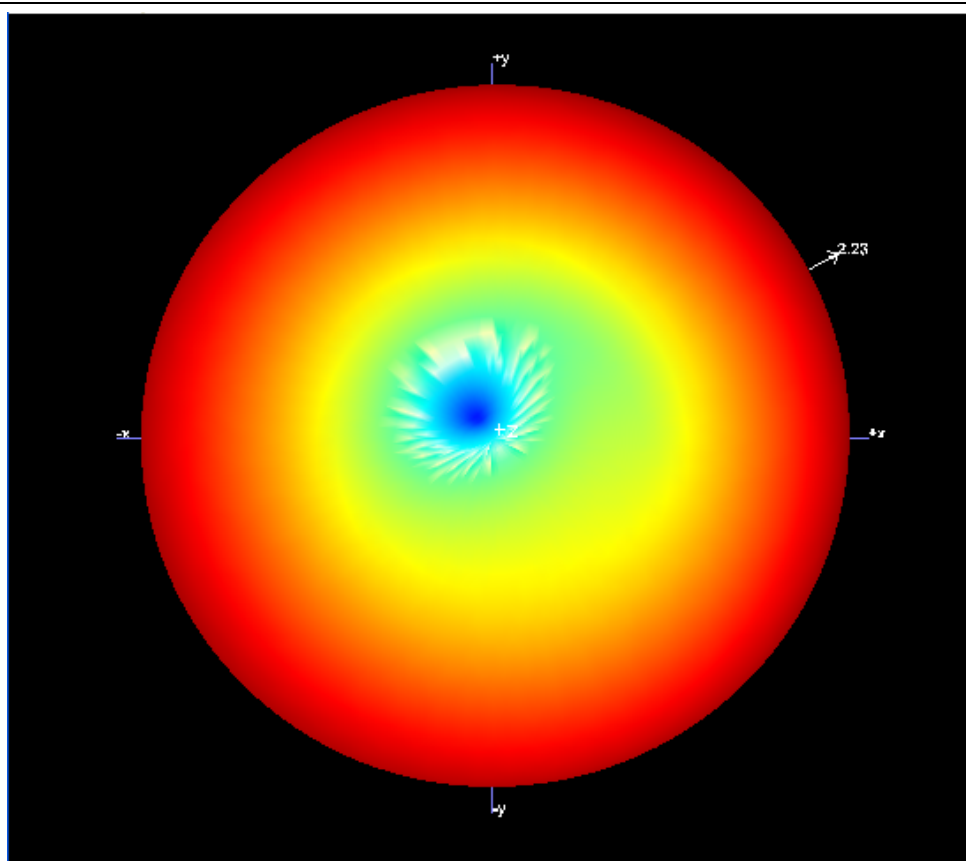
| Frequency(GHz) | Peak Gain (dBi) |
|----------------|-----------------|
| 2.400          | 2.23            |
| 2.450          | 2.23            |
| 2.500          | 2.23            |

惠州市德亿科技有限公司  
Huizhou DeYi Technology Co.,Ltd



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Huizhou DeYi Technology Co.,Ltd





# 江阴市源达电工材料有限公司

JIANGYIN CITY YUANDA ELECTRICAL MATERIAL CO., LTD.

中国江苏省江阴市青阳镇南陈村 邮编 214401

Nachen, Qingyang Town, Jiangyin City 214400, Jiangsu, China

## 1. 适用范围:

Scope

本规格书制定了 50  $\Omega$  FEP 绝缘射频电缆 YD113 系列的结构和电气特性。

This specification covers the construction and the electrical properties of YD113 series of 50  $\Omega$  FEP Insulation Coaxial Cable.

## 2. 结构/Construction:

单位/Unit:mm

| 项目/Item            |                                  | 详细资料/Details                                                                      |
|--------------------|----------------------------------|-----------------------------------------------------------------------------------|
| 导体/Conductor       | 材料/Material                      | 镀银铜线/Silver-coated Copper Wire                                                    |
|                    | 构成(根/mm)<br>Composition(No. /mm) | 7/0.080                                                                           |
|                    | 标称直径/NOM. O. D                   | 0.24 $\pm$ 0.03                                                                   |
| 绝缘层<br>/Insulation | 材料/Material                      | 聚全氟乙丙烯(自然色)<br>/FEP(Natural)                                                      |
|                    | 标称绝缘厚度/Nom. Thick.<br>(mm)       | 0.23                                                                              |
|                    | 标称外径/NOM. O. D                   | 0.70 $\pm$ 0.03                                                                   |
| 屏蔽层/Shield         | 材料/Material                      | 镀锡铜线/Tinned annealed copper wire                                                  |
|                    | 构成/Composition                   | 0.05 单线编织/Single Braid of 0.05                                                    |
| 护套/Jacket          | 材料/Material                      | 聚全氟乙丙烯/FEP                                                                        |
|                    | 标称护套厚度 / Nom. Thick<br>(mm)      | 0.10                                                                              |
|                    | 标称外径/Nom. O. D (mm)              | 1.13 $\pm$ 0.05                                                                   |
|                    | 颜色/Color                         | 按与客户确认的颜色/According to corresponding have approved by the suppliers and customers |

## 3. 电气特性(20℃时)/Electrical Properties(at 20℃)

| 项目/Item                    | 单位/Unit         | 详细资料/Details |
|----------------------------|-----------------|--------------|
| 导体电阻/Conductor Resistance  | $\Omega$ /km    | Max. 581     |
| 绝缘电阻/Insulation Resistance | M $\Omega$ . km | Min. 200     |
| 耐压强度/Dielectric Strength   | V(AC)/min       | 1000         |
| 静电容/Capacitance            | pF/m            | 105          |

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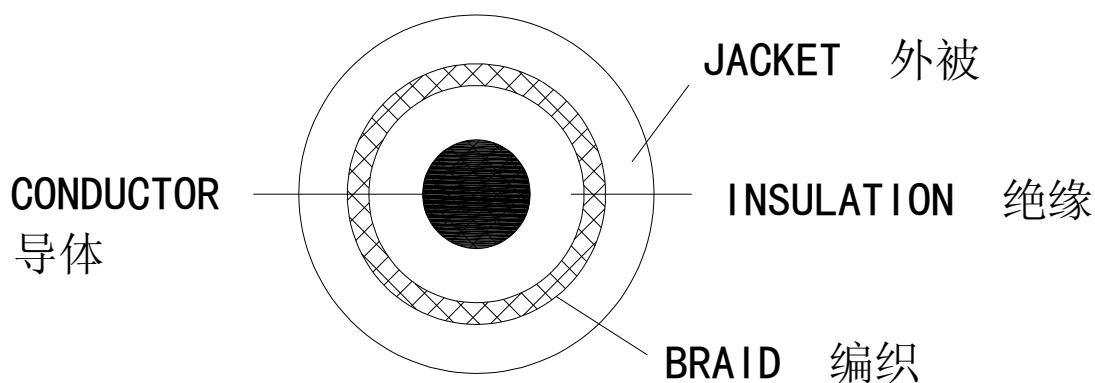
Nachen, Qingyang Town, Jiangyin City 214400, Jiangsu, China

|                                |          |              |      |
|--------------------------------|----------|--------------|------|
| 特性阻抗 /Characteristic Impedance | $\Omega$ | $50 \pm 2.0$ |      |
| 衰减/Attenuation                 | dB/m     | 1GHz         | 2.20 |
|                                |          | 2GHz         | 3.10 |
|                                |          | 3GHz         | 3.90 |
|                                |          | 4GHz         | 4.50 |
|                                |          | 5GHz         | 5.00 |
|                                |          | 6GHz         | 5.50 |
| 驻波比/Standing wave (0-6GHz)     | /        | $\leq 1.35$  |      |

## 4. 包装 Packing

标准单位包装长度为 1000 米/盘, 每盘最多允许 5 个接头, 接头最短长度 20 米, 在搬运过程中不能损坏包装.

Standard unit length of finished cable shall be 1000m on reel, frequency of joint max. 5/reel, the mini length is 20m. The finished cable shall be packed not be damaged during transportation



\*\*\*\*\*

本产品有时不适合车载用途的情况也有,所以使用前请先和本公司业务部门进行商谈.

This product is not suitable for automobile application in some cases. Please contact with our sales department before you use this product.

\*\*\*\*\*

规格书完

End of specification

## KB-6160/6160A/6160C (ANSI FR-4)

## 覆铜箔环氧玻纤布层压板

## Features 特点

- 兼容紫外光阻挡及光学自动检查功能,可提高 PCB 生产效率与准确性  
UVB and AOI (automatic optical inspection) compatible, so as to increase productivity and accuracy.
- 优良的耐热性能和机械性能  
Excellent heat resistance and mechanical properties
- 符合 IPC-4101C/21 的规范要求  
IPC-4101C/21 specification is applicable.

## General Properties 一般特性

| Test Item<br>测试项目                             | Unit<br>单位        | Test Method<br>(IPC-TM-650)<br>测试方法 | Test Condition<br>处理条件 | Specification<br>(IPC-4101C)<br>规格值 | Typical Value<br>典型值 |
|-----------------------------------------------|-------------------|-------------------------------------|------------------------|-------------------------------------|----------------------|
| Peel Strength (1 oz.)<br>铜箔剥离强度               | N/mm              | 2.4.8                               | 125℃                   | ≥0.70                               | 1.70                 |
|                                               |                   |                                     | Float 288℃ / 10 Sec    | ≥1.05                               | 1.75                 |
| Thermal Stress<br>热应力                         | Sec               | 2.4.13.1                            | Float 288℃/unetched    | ≥10                                 | 180                  |
| Bow / Twist<br>弯弓度/翘曲度                        | %                 | 2.4.22.1                            | A                      | ≤ 1.0                               | 0.17 / 0.35          |
| Flexural Strength<br>抗弯强度                     | N/mm <sup>2</sup> | 2.4.4                               | Warp                   | ≥415                                | 565                  |
|                                               |                   |                                     | Fill                   | ≥345                                | 416                  |
| Flammability<br>燃烧性                           | Rating            | UL94                                | UL94                   | UL94 V-0                            | V-0                  |
| Glass Transition (T <sub>g</sub> )<br>玻璃化转变温度 | ℃                 | 2.4.25                              | E-2/105 DSC            | ≥130                                | 135                  |
| Surface Resistivity<br>表面电阻                   | MΩ                | 2.5.17.1                            | C-96/35/90             | ≥1.0×10 <sup>4</sup>                | 1.0×10 <sup>6</sup>  |
| Volume Resistivity<br>体积电阻                    | MΩ-cm             | 2.5.17.1                            | C-96/35/90             | ≥1.0×10 <sup>6</sup>                | 1.0×10 <sup>8</sup>  |
| Dielectric Constant<br>介电常数                   | —                 | 2.5.5.2                             | Etched/@1 MHZ          | ≤5.4                                | 4.58                 |
| Loss Tangent<br>介质损耗                          | —                 | 2.5.5.2                             | Etched/@1 MHZ          | ≤0.035                              | 0.022                |
| Arc Resistance<br>耐电弧性                        | Sec               | 2.5.1                               | D-48/50+D-0.5/23       | ≥60                                 | 125                  |
| Moisture Absorption<br>吸水率                    | %                 | 2.6.2.1                             | D-24/23                | ≤0.35(min0.51mm)                    | 0.21                 |
|                                               |                   |                                     |                        | ≤0.80(max0.51mm)                    | 0.19                 |
| Z-Axis Expansion<br>Z-轴热膨胀系数                  | ppm/℃             | 2.4.24                              | E-2/105 TMA            | —                                   | 58/286               |
| TD                                            | ℃                 | 2.4.24.6                            | TGA                    | —                                   | 305                  |
| T-260                                         | min               | 2.4.24.1                            | TMA                    | —                                   | 10                   |

Remarks: Typical values for reference only 注: 典型值只作参考 Specimen Thickness: 1.6 mm 1/1 样品厚度: 1.6 mm 1/1

A = Keep the specimen originally without any process 保持原样,不作处理

C = Temperature and humidity conditioning 在恒温恒湿的空气中处理;

D = Temperature conditioning immersion in distilled water. 浸在恒温的水中处理

E = Immersing in distilled water with temperature control 在恒温的空气中处理;