



深圳市中科无线技术有限公司

Shenzhen zhongke wireless technology Co.Ltd 电话: 0755-33118958

网址: www.zkant.com

产品规格书

Product Specification

客户名称 Customer Name: _____

项目名称 Project Name: 2.4-5.8G-PCB 内置天线

规格描述 Product Spec: ZK-2.4+5.8G-1.13IPEX-L50

版 本 REV: V1.0

日 期 Date: 2023.09.21

| | | |
|---------------|-------------|----------------|
| 制作 drawing | 审核 check | 批准 approved |
| 黄勇军 | 王玉美 | 蒋振华 |

客户承认 Customer Approve

| | | |
|-------------|----------------|----------------|
| 审核 check | 批准 approved | 承认 approval |
| | | |



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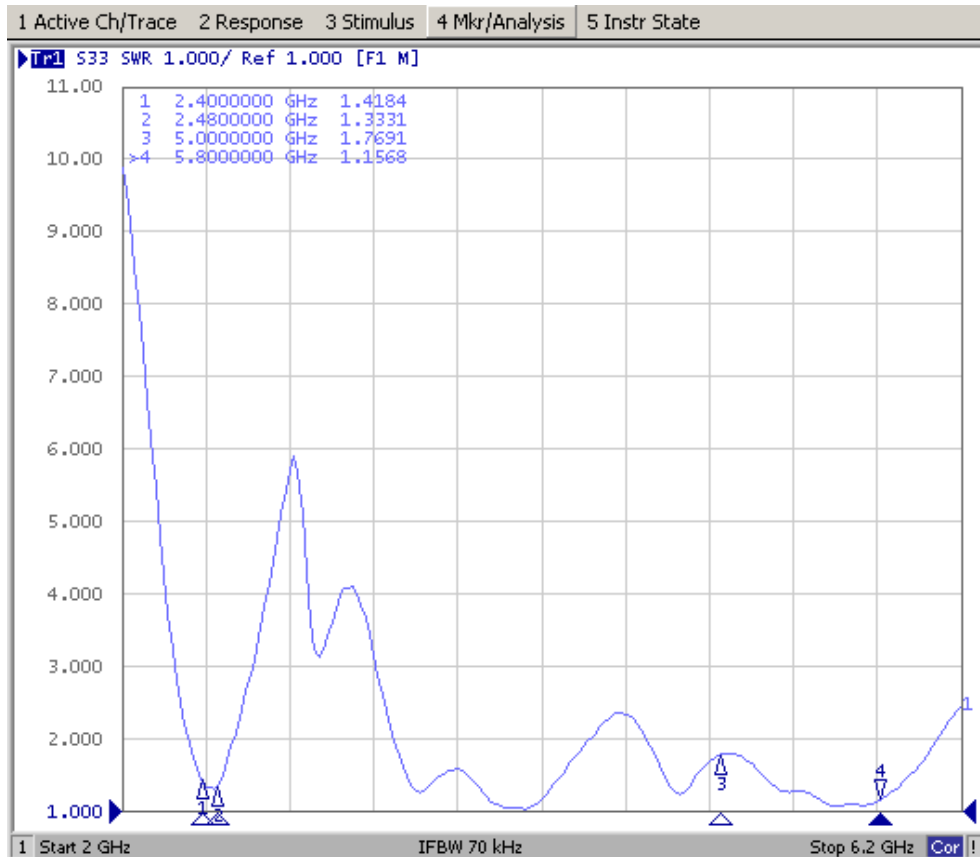
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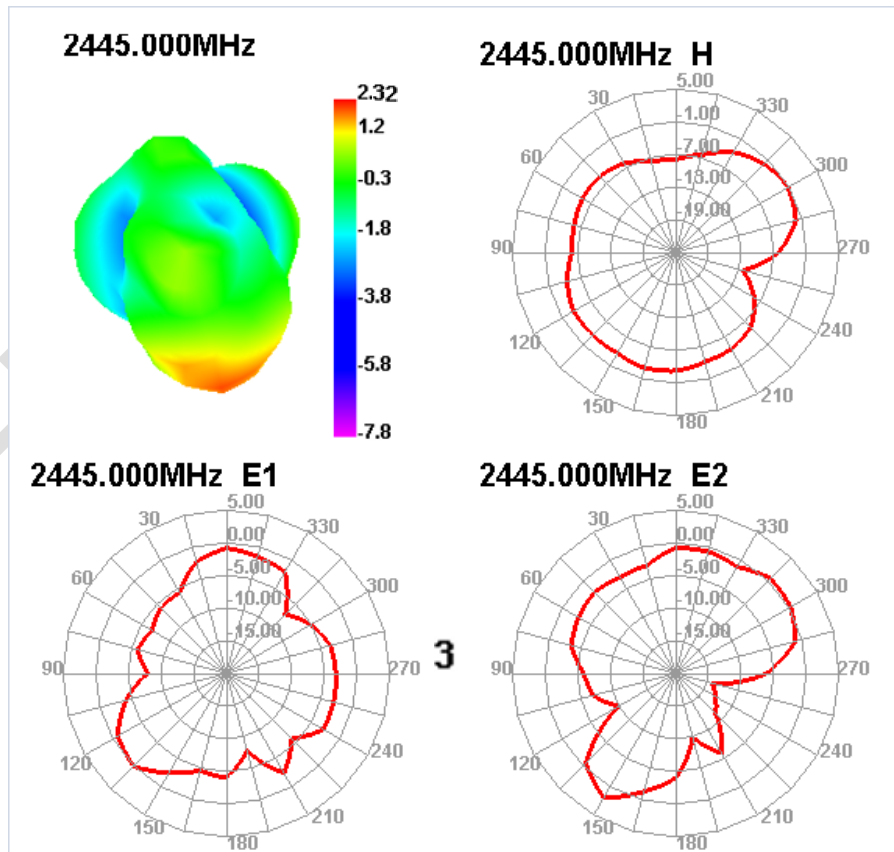
电性能指标 Electrical Performance Index

| 电器性能指标 | | Electrical Specifications | |
|--------|--|---------------------------|--|
| 频率范围 | | 2400-2500/5100-5850MHZ | |
| 电压驻波比 | ≤ 2.0 | VSWR | ≤ 2.0 |
| 增益 | 2.4G \leq 2.32 DBI 5.8G \leq 2.43 DBI | GAIN | 2.4G \leq 2.32 DBI 5.8G \leq 2.43 DBI |
| 辐射方式 | 全向 | Radiation | OMNI |
| 极化方式 | 线极化 | Polarizatin | LINEAR |
| 输入阻抗 | 50 Ω | Input Impedance | 50 Ω |
| 机械性能指标 | | Mechanical Specifications | |
| 接口形式 | IPEX-1 | Input connector | IPEX-1 |
| 天线材质 | FPC | Antenna materia | FPC |
| 工作温度 | -30 $^{\circ}$ C \sim +80 $^{\circ}$ C | Working Temperature | -30 $^{\circ}$ C \sim +80 $^{\circ}$ C |
| 工作湿度 | 40 \sim 85% | Working Humidity | 40 \sim 85% |
| 实物照片 |  | | |

测试报告 Test report**1. 天线驻波图天线效率****2. 天线效率**

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) | Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) | Gain (dBd) |
|------------|----------|-----------|------------|------------|------------|----------|-----------|------------|------------|
| 2400 | 46.6 | -2.81 | 2.23 | 0.08 | 5000 | 45.22 | -4.74 | 2.37 | 0.22 |
| 2405 | 47.04 | -2.77 | 2.27 | 0.12 | 5050 | 49.84 | -4.08 | 1.8 | -0.35 |
| 2410 | 46.88 | -2.78 | 1.98 | -0.17 | 5100 | 46.93 | -4.49 | 1.91 | -0.24 |
| 2415 | 47.14 | -2.76 | 2.06 | -0.09 | 5150 | 44.88 | -4.79 | 2.39 | 0.24 |
| 2420 | 46.74 | -2.8 | 1.84 | -0.31 | 5200 | 45.07 | -4.76 | 1.76 | -0.39 |
| 2425 | 46.36 | -2.83 | 2.19 | 0.04 | 5250 | 49.91 | -4.07 | 1 | -1.15 |
| 2430 | 47.8 | -2.7 | 1.98 | -0.17 | 5300 | 52.02 | -3.8 | 1.7 | -0.45 |
| 2435 | 47.71 | -2.71 | 2.26 | 0.11 | 5350 | 50.52 | -3.99 | 1.19 | -0.96 |
| 2440 | 50.28 | -2.48 | 2.28 | 0.13 | 5400 | 50.2 | -4.04 | 1.08 | -1.07 |
| 2445 | 51.33 | -2.38 | 2.32 | 0.17 | 5450 | 44.01 | -4.93 | 0.12 | -2.03 |
| 2450 | 50.32 | -2.47 | 2.3 | 0.15 | 5500 | 43.76 | -4.97 | 2.43 | 0.28 |
| 2455 | 50.68 | -2.44 | 2.05 | -0.1 | 5550 | 40.53 | -5.53 | 1.58 | -0.57 |
| 2460 | 50.49 | -2.46 | 1.98 | -0.17 | 5600 | 48.66 | -4.24 | 1.4 | -0.75 |
| 2465 | 49.75 | -2.52 | 1.62 | -0.53 | 5650 | 47.12 | -4.46 | 2.27 | 0.12 |
| 2470 | 49.61 | -2.53 | 1.57 | -0.58 | 5700 | 47.6 | -3.7 | 1.37 | -0.78 |
| 2475 | 51.98 | -2.33 | 1.66 | -0.49 | 5750 | 48.06 | -3.2 | 1.19 | -0.96 |
| 2480 | 53.11 | -2.23 | 1.75 | -0.4 | 5800 | 45.89 | -3.44 | 0.95 | -1.2 |
| 2485 | 54.21 | -2.14 | 1.63 | -0.52 | 5850 | 57.84 | -2.25 | 2.15 | 0 |
| 2490 | 52.27 | -2.3 | 1.22 | -0.93 | 5900 | 49.18 | -3.08 | 1.21 | -0.94 |
| 2495 | 53.07 | -2.24 | 1.34 | -0.81 | 5950 | 52.09 | -2.78 | 1.43 | -0.72 |
| 2500 | 49.48 | -2.54 | 1.11 | -1.04 | 6000 | 44.25 | -3.63 | 1.39 | -0.76 |

3. 天线方向图



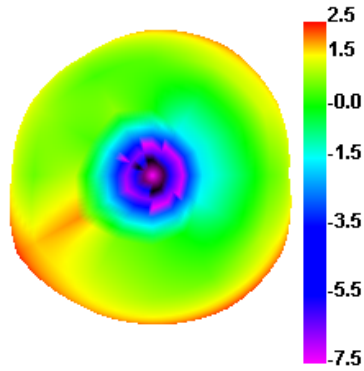


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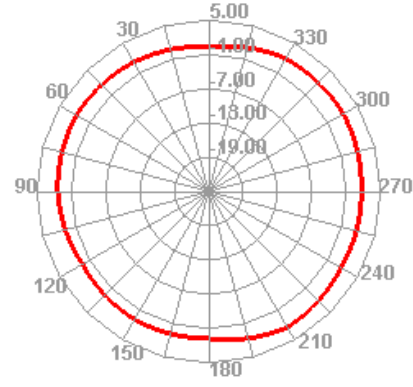
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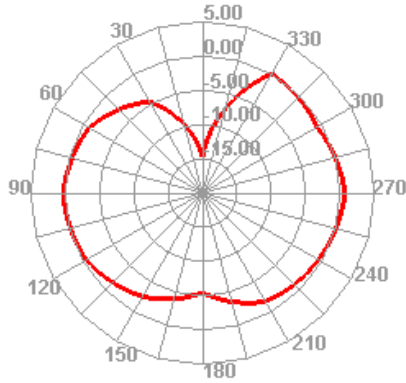
5500.000MHz



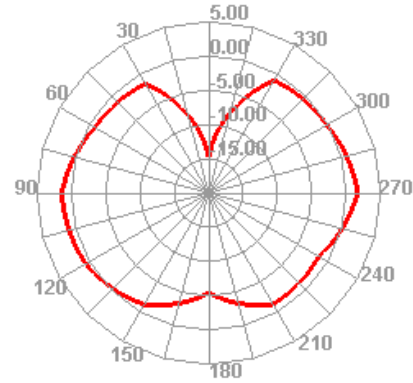
5500.000MHz H



5500.000MHz E1



5500.000MHz E2



zhongk



测试设备及原理 Testing Equipment and Principle

1. 测试设备:

网络分析仪 Network Analyzers :

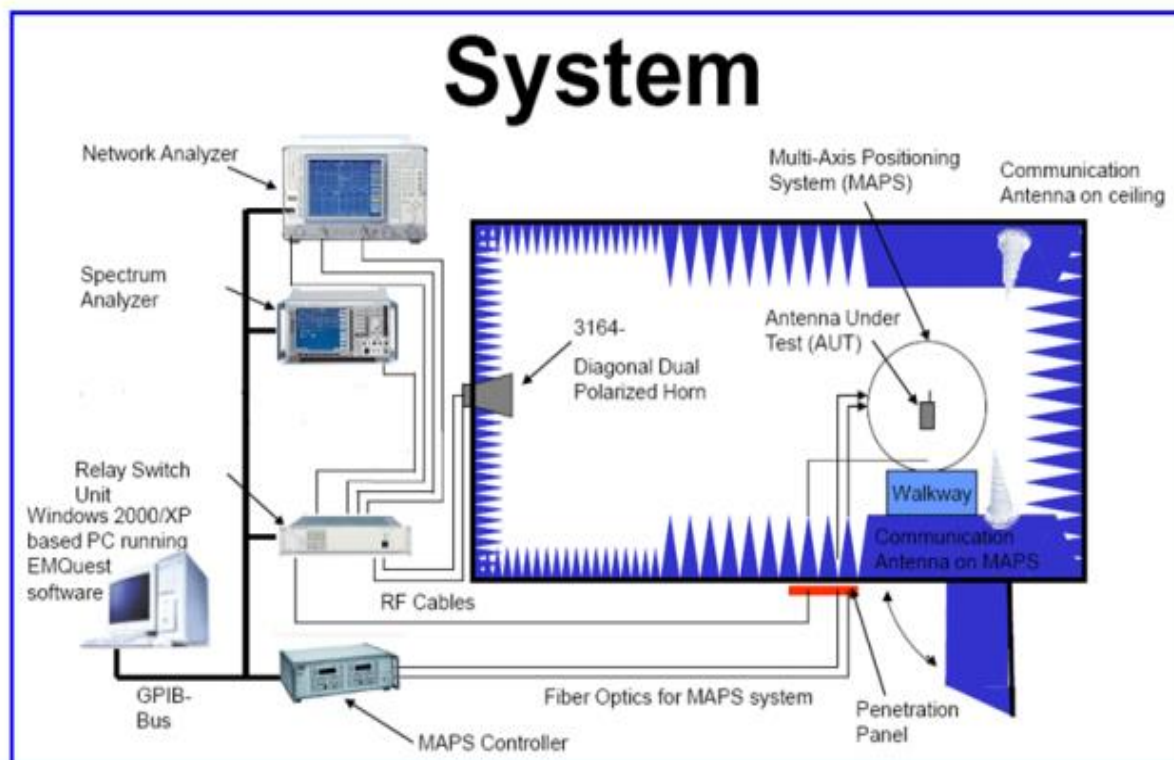
Agilent 8753D 5071B

综合测试仪 Communications Test Set:

Agilent E5515C CMW500 8820C

3D 暗室测试系统 3D Chamber Test System:

2. 测试原理:





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工程图纸 Product Drawing

zhongke wireless

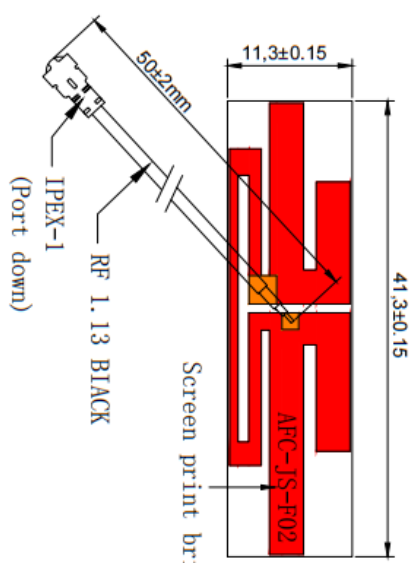
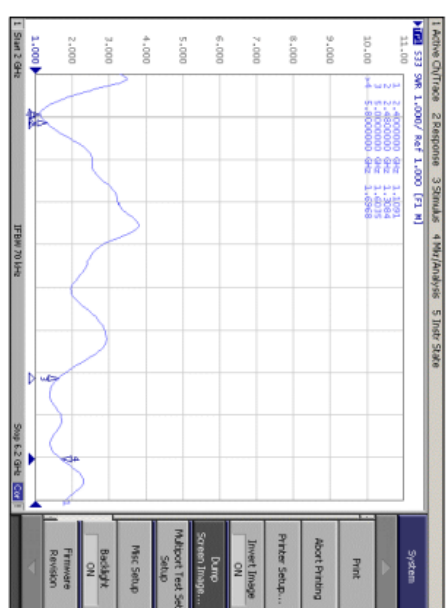


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| | | | | | | |
|--|-------|------|-------|--------|---------|-----------|
| A common square inch division (pick to GB/T 1804) | | | | | | |
| Tolerance class | 0.5-3 | >3-6 | >6-30 | 30-120 | 120-400 | >400-1000 |
| Maximum grade | 11 | 12 | 13 | 14 | 15 | 16 |
| Drawing products are in accordance with Mark with "*" before the key | | | | | | |
| MMS standards | | | | | | |

| | |
|------------------------|------------------------|
| Performance parameters | |
| Frequency Range | 2400-2500/5100-5900MHz |
| Band Width | 100/700MHz |
| Vswr | ≤2 |
| Gain | 20dB |
| Impedance | 50 OHM |
| Polarization | Vertical |
| Radiation | OMNIDIRECTIONAL |
| Max power | 10 W |
| Temperature | -35° — +80° |

Remarks

- The size marked in the picture is the required IQC size
- The assembly of parts must be firm and reliable
- The finished signal parameters must reach the specified value
- The product needs to be packed in a fixed number according to the requirements, and there should be no obvious signs of extrusion deformation during transportation

| | | | |
|--|--------------|---------|------------|
| ZKT Shenzhen Zhongke Wireless Technology Co., LTD | | | |
| Customer NO | A202571 | Item No | |
| Product Name | 2.4+5.8G FPC | | |
| Change record | | Date | 2023.06.29 |
| Scale | MM | Paper | A4 |
| Company | | Mapping | To examine |
| | | Page | 1/1 |



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可靠性测试报告 Reliability test report

| 测试项目 | | 测试方法 | 要求 | 结果 |
|------|---------------------------------------|---|--|------|
| C1 | V. S. W. R. 电性驻波比 | 设计网路分析仪参数进行测试 | 符合待测物规范 | pass |
| M1 | 天线增益 | 设计天线暗室参数进行测试 | 符合待测物规范 | pass |
| M2 | Vibration 震动 | GB / T2423. 48-2008 Amplitude: 0.03 inch (1.5mm); Freq: 20 to 80to 20 Hz3 directions; 2 hours for each direction 振幅 1.5mm; 频率 20~80~20Hz; 3个方向各 2H | 1. No Visual Damage 2. Frequency Tol. ≤5% 无明显外观不良; 频率偏移 ≤5% | pass |
| M6 | Random Drop 跌落 | GB / T2423. 8-1995 Single: Height: 1.0 Meter; 3 directions; 1 time for each direction 单支天线, 高 1m; 3个方向各 1次 | 1. No parts separated、fracture 2. Frequency Tol. ≤5% 产品无脱落、断裂; 频率偏移 ≤5% | pass |
| E3 | Dimension 尺寸 | Inspection of dimension, color, material, package, surface process. 检查尺寸, 颜色, 材料, 包装, 表面处理 | Directive DUT specification 符合待测物规范 | pass |
| E4 | Temperature and Humidity Chamber 恒温恒湿 | GB / T 2423. 3-2006 Temp: 80° C / 12 H; -40° C / 12H RH: ≥ 90%; Time: 24H 温度 80° C 测试 12H 转 -40° C 测试 12H; 湿度 ≥ 90%; 时间 24H | After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复 2H 后, 无明显外观不良; 频率偏移 ≤5% | pass |
| E5 | Thermal Shock 冷热冲击 | GB / T 2423. 22 - 2008 - 40° C (30 minutes) to + 80° C (30 minutes); Cycles: 24 -40° C 测试 30 分 转 80° C 测试 30 分为一个周期; 共 24 周期 | After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 恢复 2H 后, 无明显外观不良; 频率偏移 ≤5% | pass |
| R1 | Aging test 老化 | GB / T 2423. 2 - 2008 Temp: 80° C; Time: 24 hours 温度 80° C, 测试 24H | After 2 Hours Recovery 1. No Visual Damage 2. Frequency Tol. ≤5% 無明顯外觀不良; 频率偏移 ≤5% | pass |
| M1 | RoHS | With Reference to IEC 62321:2008 with flow chart 参考 IEC 62321 测试流程 | Directive RoHS 2015/863/EU 符合 RoHS 2015/863/EU 标准 | pass |



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产品名称/规

一、标签要求

| | |
|-------|-------|
| ***** | |
| 采购单号 | ***** |
| 物料编码 | ***** |
| 品名规格 | ***** |
| 数量/单位 | ***** |
| 备注 | ***** |

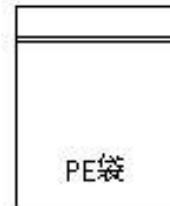
| | |
|-------|-------|
| ***** | |
| 采购单号 | ***** |
| 物料编码 | ***** |
| 品名规格 | ***** |
| 数量/单位 | ***** |
| 备注 | ***** |

二、装箱要求

作业说明:

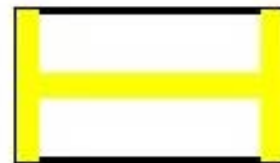
1. 内包装:

产品 50 PCS 一小袋

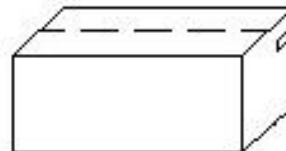


2. 外包装:

根据实际数量定数量/箱



纸箱



注意事项:

1. 是否要增设隔板、珍珠棉;
2. 标签的贴附, 如 ROHS 等;