



SPECIFICATION FOR APPROVAL/产品承认书

Customer Name

客户名称: 深圳市理邦精密仪器股份有限公司

Customer P/N.

客户料号: _____

Product Description

产品描述: NANO WIFI天线

BGS P/N


博格斯料号: LBS-049B

Manufacturer

制造商: 深圳市博格斯通信技术有限公司

Approve Date

承认日期: 2023年11月2日

| BGS Sign and Seal/供应商签章 | Customer Sign and Seal/客户签章 |
|--|-----------------------------|
|  | |

| Change the content/变更内容 | Version/版本 | Date/日期 |
|-------------------------|------------|-----------|
| 初版 | RA | 2023/7/25 |
| 变更外形线路、线长 | RB | 2023/11/2 |
| | | |
| | | |

customer need to sign the paper or electronic file of the approval back to BGS before place the formal order to BGS. If there is no formal change or change notice, BGS acqu iesce that the customer approve and accept this specification of product .

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1. Antenna Specification/ 天线技术参数

| 1.1: Electrical Specification/ 电气特性 | |
|--|--|
| Freq.Range/ 频段范围 (MHz) | 5140-5860 |
| Impedance/ 阻抗 (Ω) | 50 |
| VSWR/ 驻波比 | 见驻波图 |
| Directional/ 辐射方向 | Omni directional |
| Polarization/ 极化方式 | Linear |
| Gain/ 增益 (dBi) | 5140-5860: $1.88 \leq \text{gain} \leq 5.91$ |
| 1.2: Mechanical Specification/ 机械指标 | |
| Material/ 材质 | FPC |
| RF Cable Type/ 射频线型号 | RF0.81 |
| Connector Type/ 连接器类型 | 四代端子 |
| 1.3: Environmental Specification/ 环境指标 | |
| Operation temp/ 工作温度 | $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ |
| Storage temp/ 储存温度 | $+19^{\circ}\text{C} \sim +23^{\circ}\text{C}$ |



2. Antenna Picture and Installation Instructions/天线图片及安装说明

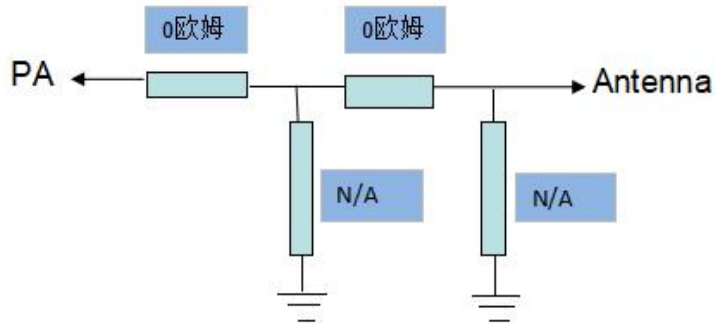
2.1: Antenna Picture/天线图片



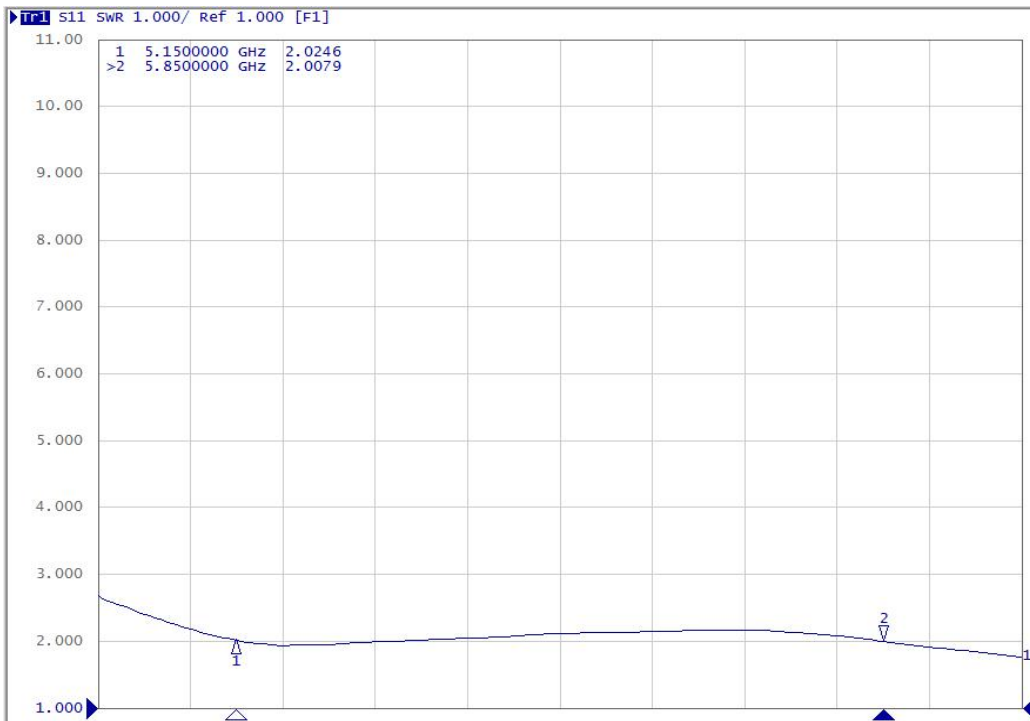


3. Test Report/测试报告

3.1: The matching circuits/匹配电路



3.2: VSWR /驻波图



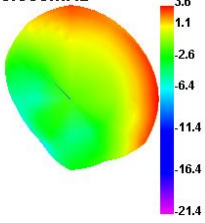


3.3: Antenna efficiency and gain/天线效率与增益

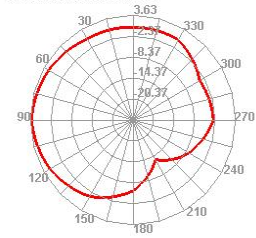
| Freq (MHz) | Effi (%) | Gain (dBi) | Freq (MHz) | Effi (%) | Gain (dBi) |
|------------|----------|------------|------------|----------|------------|
| 5140 | 63.72 | 3.63 | 5500 | 61.68 | 3.92 |
| 5160 | 60.14 | 2.95 | 5520 | 65.61 | 4.51 |
| 5180 | 61.16 | 3.12 | 5540 | 62.53 | 4.1 |
| 5200 | 65.02 | 3.59 | 5560 | 63.16 | 3.47 |
| 5220 | 57.47 | 3.13 | 5580 | 67.32 | 3.69 |
| 5240 | 65.89 | 3.86 | 5600 | 64.54 | 3.96 |
| 5260 | 69.67 | 4.2 | 5620 | 62.51 | 3.33 |
| 5280 | 62.61 | 4.04 | 5640 | 61.48 | 3.95 |
| 5300 | 56.68 | 4.64 | 5660 | 64.83 | 4.61 |
| 5320 | 54.74 | 4.58 | 5680 | 54.83 | 3.98 |
| 5340 | 58.37 | 4.14 | 5700 | 57.2 | 4.18 |
| 5360 | 55.22 | 4.43 | 5720 | 56.78 | 4.15 |
| 5380 | 61.77 | 4.29 | 5740 | 57.31 | 4.2 |
| 5400 | 67.17 | 3.96 | 5760 | 58.1 | 4.28 |
| 5420 | 66.07 | 4.69 | 5780 | 57.81 | 4.3 |
| 5440 | 61.33 | 3.53 | 5800 | 61.67 | 4.65 |
| 5460 | 63.06 | 4.16 | 5820 | 65.97 | 4.85 |
| 5480 | 64.43 | 4.7 | 5840 | 68.38 | 4.57 |
| | | | 5860 | 70.98 | 5.19 |

3.4: Directional diagram/方向图

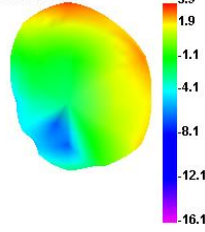
5140.000MHz



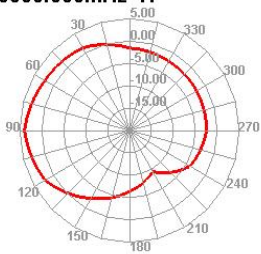
5140.000MHz H



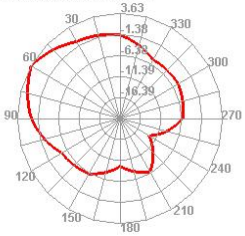
5500.000MHz



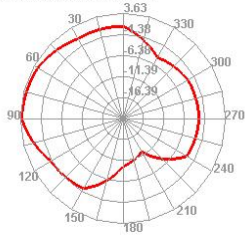
5500.000MHz H



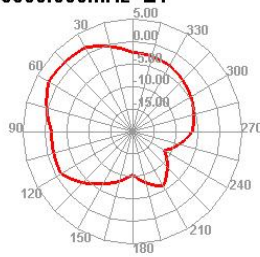
5140.000MHz E1



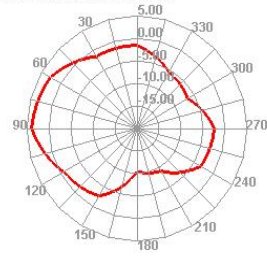
5140.000MHz E2



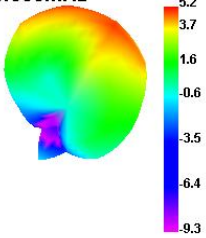
5500.000MHz E1



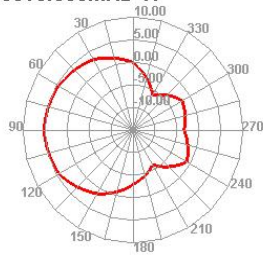
5500.000MHz E2



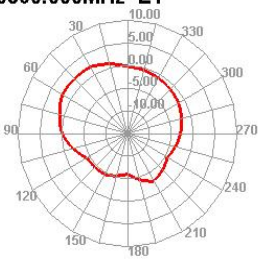
5860.000MHz



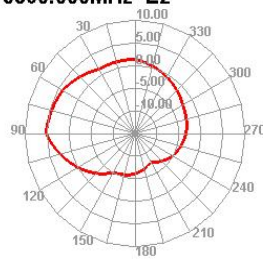
5860.000MHz H



5860.000MHz E1



5860.000MHz E2

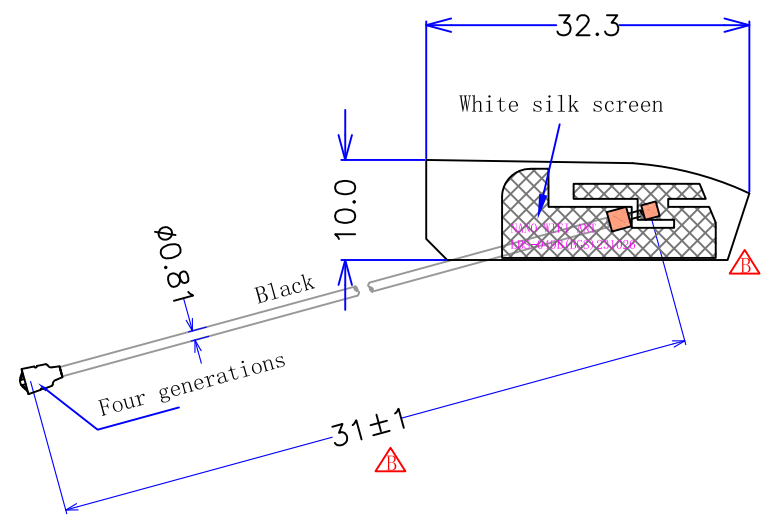


A






B

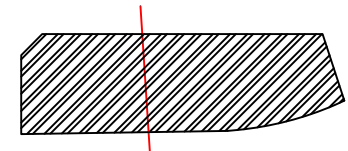
C

D



Front view

- Screen printing part
- Antioxidant part
- Empty membrane part
- Line section
- Part of gum



Back view

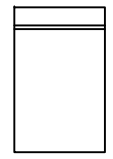
The backing is divided into tow sections

Note:
 1.Pack a small package for every 100 antenna components, a large package for every 10 small packages, and then pack it into boxes.
 2.If the silk screen printing content has added "+" or "-" is the mark used by our company to distinguish suppliers, but the product performance, material and processing technology are exactly the same.
 3.The thickness of FPC+adhesive + release paper is $0.22 \pm 0.08\text{MM}$; THE THICKNESS OF SINGLE FPC+ ADHESIVE BACKING IS $0.12 \pm 0.03\text{MM}$.

| | | | | | |
|---|-------------|--------------|--------------------|---|-----------|
| Change the shape of the line and the length of the line  | | Oct 25,2023 | |  深圳市博格斯通信技术有限公司 Shenzhen Bogesi Communication Ttechnology co.,ltd | |
| Modify content | Modify date | Product NO. | LBS-049B | Material is qualitative | FPC+CABLE |
| limits of tolerance; | Designer | Client NO. | NANO | Version of this | RB |
| Others less than ± 0.2 | Auditing | Part name | Antenna components | Item no. | LBS-049 |
| | Approve | Publish date | Jul 25,2023 |   | page 1/1 |

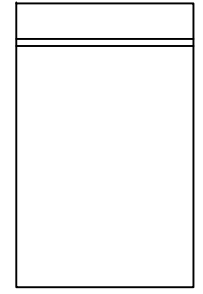
| NO. | PART NO. | NAME | DESCRIPTION | QT'Y |
|-----|--------------|-------|--|------|
| ② | LBS-048B-01A | FPC | FPC, front spray black oil, feed point antioxidant, single-sided adhesive 3M-9471 | 1 |
| ① | LBS-049B-20L | CABLE | ODO.81mm, black cover, peeled at one end, four generations of terminals at one end | 1 |

PE Sealed bag/PE封口袋

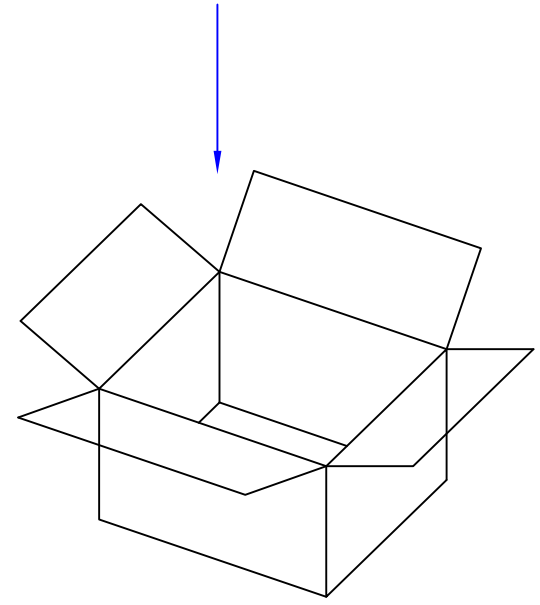


① 100 pcs/ small PE bag (bag size depends on product size)/
100个装一小袋 (包装袋尺寸依产品大小而定)

PE Sealed bag/PE封口袋



② 100 pcs small bag/big PE bag (bag size depends on product size)/
10小袋装一大袋 (包装袋尺寸依产品大小而定)



③ Final packing (carton size depends on product size and quantity)/
最后装箱 (纸箱尺寸依产品大小、数量而定)

Note:

1. 100pcs antenna in one small PE bag ,stick the label;
2. 1000pcs antenna (10 bags*100pcs) in one big PE bag ,stick the label;
3. Put them in the carton and stick the carton marks.

说明:

1. 每100个天线组件装一小包，贴标签；
2. 每1000个（10袋*100个）装一大包，贴标签；
3. 装箱，贴外箱标签。

| | | | | |
|-------------------------|----------------------|--|--------------|---|
| | |  深圳市博格斯通信技术有限公司 Shenzhen bogesi communication technology Co.,Ltd | | |
| Change the content/变更内容 | Change the date/变更日期 | Package Drawing/包装规范图 | | |
| Design/设计 | | | | |
| Approve/审核 | | | | |
| Reviewed/批准 | | Issue Date/发行日期 | Mar, 25 2023 |  Page 1 of 1 |



6.ROHS Report/ROHS报告

| Product Description 产品描述 | | NANO WIFI天线 | BGS P/N 博格斯料号 | | LBS-049B | | | Declaration Date 宣告日期 | | 2023/11/2 |
|-----------------------------|-------------------|---|---|------|----------|------|-----|--------------------------|--------------------------------|-------------------|
| No. 序号 | Part name 部件名称 | Homogeneous Material Name 均质材料名称 | The homogeneous material contains the value of RoHS restricted substance (ppm) 均质物料内含有RoHS限制物质的量值 (ppm) | | | | | | Certification number 检测报告编号 | Test date 检测日期 |
| | | | Cd | Pb | Hg | Cr+6 | PBB | PBDE | | |
| 1 | FPC | Electrolytic flexible copper-clad foil substrate 有胶柔性覆铜板 | ND | ND | ND | ND | ND | ND | SHAEC23001049106 | 2023/2/15 |
| 2 | | Solder resist ink/阻焊油墨 | ND | ND | ND | ND | ND | ND | ETR23701480 | 2023/7/13 |
| 3 | | 3M glue/3M胶 | ND | ND | ND | ND | ND | ND | SHAEC2217569205 | 2022/12/30 |
| 4 | Wire 线材 | RF coaxial cable/RF同轴电缆 | ND | ND | ND | ND | ND | ND | SZXEC23001776704 | 2023/8/8 |
| 5 | Terminals 端子 | Gold plating/电镀金 | ND | ND | ND | ND | ND | ND | A2230400553101001E | 2023/8/9 |
| 6 | | PBT/胶芯 | ND | 2.55 | ND | ND | ND | ND | ETR23705931 | 2023/8/4 |
| 7 | | Tin Phosphor Bronze/铜板 | ND | ND | ND | ND | ND | ND | A2230400553101002E | 2023/8/9 |

Notes:

Material analysis expansion table is similar to our company's machine type BOM, which describes the composition of each material provided by the supplier, and then conducts RoHS control on each component (or the supplier shall conduct RoHS compliance management on his supplier, and provide tripartite inspection certificate).

A complete material analysis expansion table that includes:

1. Material expansion table: component composition decomposition
2. Third-party verification report of each component

说明:

材质分析展开表类似于我们公司的机种BOM, 就供应商提供的每个物料进行组成说明, 然后就每一种组成进行ROHS控制 (或者说供应商要对他的供应商进行ROHS符合性管理, 提供每三方检测证明)。

一份完整的材质分析展开表, 它包括:

- 1 材质展开表:零件组成分解
- 2 各组成的第三方验证报告