

# 深圳卓隆智能电子有限公司

## 承 认 书 APPROVAL SHEET

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                          |     |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------------------|-----|
| 产品描述:<br>Part Description    | 生产厂家:<br>Vendor: 深圳市合胜智联有限公司                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                   | 版本:<br>Description: A/1  |     |
|                              | 产品名称:<br>Product Name: 蓝牙天线                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                   | 所承认项目:<br>Project: _____ |     |
|                              | 物料代码:<br>Part No. HS-TX006                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                          |     |
| 附件:<br>Attachments           | <div><div><input type="checkbox"/> 规格书<br/>Spec</div><div><input type="checkbox"/> 尺寸测试报告<br/>FAI Report</div><div><input type="checkbox"/> QC工程图<br/>QC engineering drawing</div></div> <div><div><input checked="" type="checkbox"/> 工程图纸<br/>Drawing</div><div><input type="checkbox"/> 可靠性测试报告<br/>Reliability Report</div><div><input type="checkbox"/> 材质证明书<br/>Material Verification Sheet</div></div> <div><div><input checked="" type="checkbox"/> 样品<br/>Sample</div><div><input type="checkbox"/> CPK 报告<br/>Cpk Report</div><div><input type="checkbox"/> RoHS 认证报告<br/>RoHS Certification Report</div></div> <div><div><input type="checkbox"/> 包装方式<br/>Packing Content</div><div><input type="checkbox"/> RoHS声明<br/>RoHS declaration</div></div> |                   |                          |     |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                          |     |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                          |     |
| 供应商批准栏:<br>Supplier approved | 制成/日期:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 工程/日期:            | 品质/日期:                   | 盖公章 |
|                              | 邓树华<br>2023-03-30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 秦志祥<br>2023-03-30 | 高永强<br>2023-03-30        |     |
| 客户批准栏:<br>customer approved  | 结构/日期:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 工程/日期:            | 品质/日期:                   | 盖公章 |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                          |     |
| 承认条件:<br>ApprovalCondition   | <div><div><input type="checkbox"/> 承认<br/>Approved</div><div><input type="checkbox"/> 拒绝承认:<br/>Reject</div></div> <div><div><input type="checkbox"/> 颜色与丝印承认<br/>Color and Design</div><div><input type="checkbox"/> 临时承认:<br/>Temporary Approved</div></div> <div><div><input type="checkbox"/> 条件承认:<br/>Condition Approved</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                        |                   |                          |     |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |                          |     |
| 分发部门:<br>Distribute          | <div><div><input type="checkbox"/> 供应商</div><div><input type="checkbox"/> _____加工厂</div><div><input type="checkbox"/> 品质部</div></div> <div><div><input type="checkbox"/> 项目部</div><div><input type="checkbox"/> 采购部</div><div><input type="checkbox"/> 售后部</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |                          |     |
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## 1. Indication

This report contains the electrical and mechanical performance of the proposed Internal antenna to support program. The antenna is covering the bands. (see Figure1)

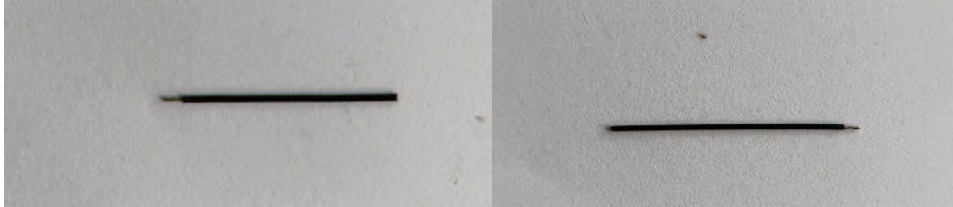


Figure 1: Proposed Antenna

## 2. Electrical Performance

### 2.1 Matching Circuit Description

N/A

### 2.2 Test Set-up

The antenna was evaluated using the customer provided bar phone. Figure 2 shows the antenna mounted on the test fixture. This section of the report describes the testing on this test fixture.

Figure 2: Antenna Mounted on ZW86S Test Fixture

#### 2.2.1 VSWR

VSWR measurements ( $S_{11}$ ) were performed using E5071C Network Analyzer and the previously described test fixture. A ferrite-loaded coaxial cable was used to mitigate surface currents on the outside of the cabling. The testing was performed in free space.

#### 2.2.2 TRP/TIS/Gain/Efficiency/Radiation Patterns

Those test items were measured in the Zhengxinliang Communication Technology anechoic chamber. The chamber provides less than  $-40$  dB reflectivity from 800 MHz through 6 GHz and 25cm diameter spherical quiet zone. The measurement results are calibrated using both dipole and leaky wave horn standards.

### 2.3 Measurement Data

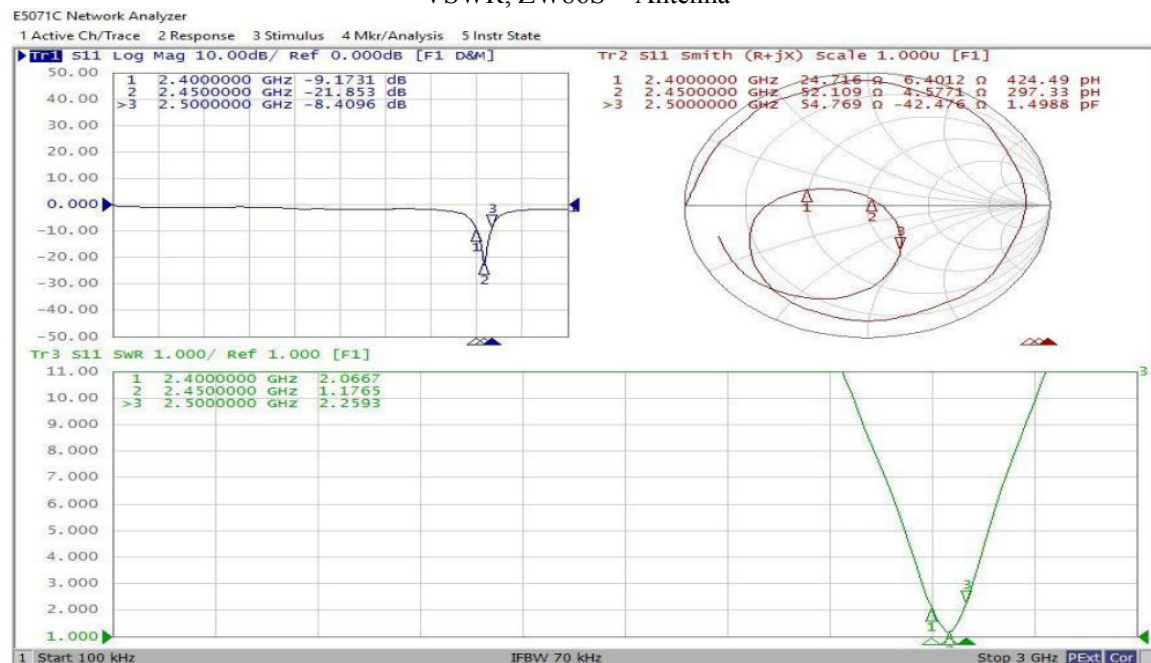
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| Passive Test For WIFI2.4 |             |              |               |               |            |            |             |             |                |                |
|--------------------------|-------------|--------------|---------------|---------------|------------|------------|-------------|-------------|----------------|----------------|
| Freq<br>(MHz)            | Effi<br>(%) | Effi<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | UHS<br>(%) | DHS<br>(%) | Max<br>(dB) | Min<br>(dB) | Attenut<br>Hor | Attenut<br>Ver |
| 2400                     | 8.88        | -10.52       | -5.81         | -7.96         | 4.427      | 4.454      | -5.81       | -19.81      | 50.79          | 51.06          |
| 2410                     | 8.44        | -10.74       | -6.94         | -9.09         | 4.096      | 4.339      | -6.94       | -20.29      | 50.62          | 51             |
| 2420                     | 8.78        | -10.57       | -6.51         | -8.66         | 4.224      | 4.556      | -6.51       | -21.32      | 50.93          | 51.41          |
| 2430                     | 8.83        | -10.54       | -6.51         | -8.66         | 4.182      | 4.651      | -6.51       | -21.72      | 51.4           | 51.56          |
| 2440                     | 8.82        | -10.55       | -7.2          | -9.35         | 4.148      | 4.668      | -7.2        | -27.47      | 51.33          | 51.65          |
| 2450                     | 8.62        | -10.64       | -7.22         | -9.37         | 4.07       | 4.55       | -7.22       | -22.11      | 51.12          | 51.51          |
| 2460                     | 8.06        | -10.94       | -7.11         | -9.26         | 3.768      | 4.293      | -7.11       | -24.47      | 51.08          | 51.25          |
| 2470                     | 7.58        | -11.2        | -7.41         | -9.56         | 3.532      | 4.045      | -7.41       | -21.47      | 51.17          | 51.42          |
| 2480                     | 8.42        | -10.75       | -7.13         | -9.28         | 3.922      | 4.495      | -7.13       | -20.08      | 51.6           | 51.62          |
| 2490                     | 8.51        | -10.7        | -6.56         | -8.71         | 3.854      | 4.657      | -6.56       | -22.47      | 51.55          | 51.51          |
| 2500                     | 7.69        | -11.14       | -6.69         | -8.84         | 3.438      | 4.249      | -6.69       | -22.6       | 51.33          | 51.49          |

## 2.4 Attachment of Electrical Measurement Data

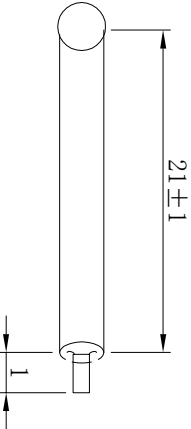
### 2.4.1 S11 Parameter-BT

#### VSWR, ZW86S Antenna



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| REV. | DATE       | DESCRIPTION | ECN NO. | NAME |
|------|------------|-------------|---------|------|
| A/0  | 2022-06-28 | 新发行         | ---     | Andy |



|    |              |      |          |  |             |  |  |  |      |     |     |    |
|----|--------------|------|----------|--|-------------|--|--|--|------|-----|-----|----|
| 核准 |              | 客户名称 | 卓隆       |  | 深圳市合胜智联有限公司 |  |  |  |      |     |     |    |
| 审核 | 李力           | 客户料号 |          |  |             |  |  |  |      |     |     |    |
| 制作 | YUHANQOIIANG | 产品名称 | 蓝牙天线     |  |             |  |  |  | 文件编号 | 版本  | 页次  | 单位 |
| 日期 | 2023. 03. 30 | 产品编号 | HS-TX006 |  |             |  |  |  |      | A/1 | 1/1 | mm |