

保密等级：机密

# SPECIFICATION

## 产品规格书

### SKI.WB800DU2.7

IEEE 802.11b/g/n/ac/ax 1T1R USB Wi-Fi

Integrated BT 5.0

2.4G/5G Dual Band Module

| Approved by Shikun |                 |                |
|--------------------|-----------------|----------------|
| Checked by 审核      | Rechecked by 复审 | Approved by 批准 |
|                    |                 |                |

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| Approved by customer |                  |                   |
|----------------------|------------------|-------------------|
| Comments 确认意见        | Approved by 批准签字 | Company's seal 盖章 |
|                      |                  |                   |
| Customer's Name:     |                  |                   |

## REVISION HISTORY.

| VERSION | DATE      | BOARD ID       | PAGE | DESCRIPTION     | AUTHOR |
|---------|-----------|----------------|------|-----------------|--------|
| V0.1    | 2021.9.8  | SKI.WB800DU2.7 | All  | First Issued    | Larry  |
| V0.2    | 2021.9.18 | SKI.WB800DU2.7 | All  | Modify Pins Set | Larry  |
|         |           |                |      |                 |        |
|         |           |                |      |                 |        |
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## 1. Introduction (简介)

SKI.WB800DU2.7 module is based on AIC8800M solution. SKI.WB800DU2.7 is a Wi-Fi 6 / BT 5.0 combo low-power, high-performance and high-integrated dual band wireless communication module which is designed for meeting the customers' needs of small size and low cost. This module supports both WLAN and BT functions. Its WLAN/BT function supports the USB 2.0 interface, and its BT function supports the USB interface, and the module meets the requirements of standard protocol IEEE 802.11 b/g/n/ac/ax. Such units as power management, power amplifier and low-noise amplifier are integrated in the main chip of the module. Its WLAN PHY rate is up to 266.8Mbps@TX. The module can be applied in smart sound boxes, set-top boxes, game machines, printers, IP cameras, tachographs, and other smart equipment. This documentation describes the engineering requirements specification.

SKI.WB800DU2.7 模块基于 AIC8800D 方案。SKI.WB800DU2.7 是一款 Wi-Fi 6 / BT 5.0 组合的低功耗、高性能、高集成度双频无线通信模块，专为满足客户小尺寸、低成本的需求而设计。该模块支持 WLAN 和 BT 功能。WLAN/BT 功能支持 USB 2.0 接口，BT 功能支持 USB 接口，满足 IEEE 802.11 b/g/n/ac/ax 标准协议要求。本文档描述了工程要求规范。

## 2. Features (特性)

|                           |                     |
|---------------------------|---------------------|
|                           | IEEE Std. 802.11b/g |
|                           | IEEE Std. 802.11n   |
|                           | IEEE Std. 802.11ac  |
|                           | IEEE Std. 802.11ax  |
|                           | BT 5.0              |
| <b>Chip Solution</b> 芯片方案 | AIC8800D            |
| <b>Band</b> 波段            | 2.4GHz/ 5GHz        |
| <b>Dimensions</b> 尺寸      | 12.2mm×13mm×1.8mm   |

| <b>Model</b><br>型号 | <b>Installation Mode</b><br>安装方式 | <b>Protocol I</b><br>支持标准           | <b>Frequency</b><br>频段 | <b>Antenna</b><br>天线 | <b>Remark</b><br>备注    |
|--------------------|----------------------------------|-------------------------------------|------------------------|----------------------|------------------------|
| SKI.WB800DU2.7     | SMD                              | IEEE<br>802.11b/g/n/ac/ax<br>BT 5.0 | 2.4GHz/5GHz            | Stamp Hole *2        | 13mm×12.3mm<br>×1.95mm |

### 3. Block Diagram (结构框图)

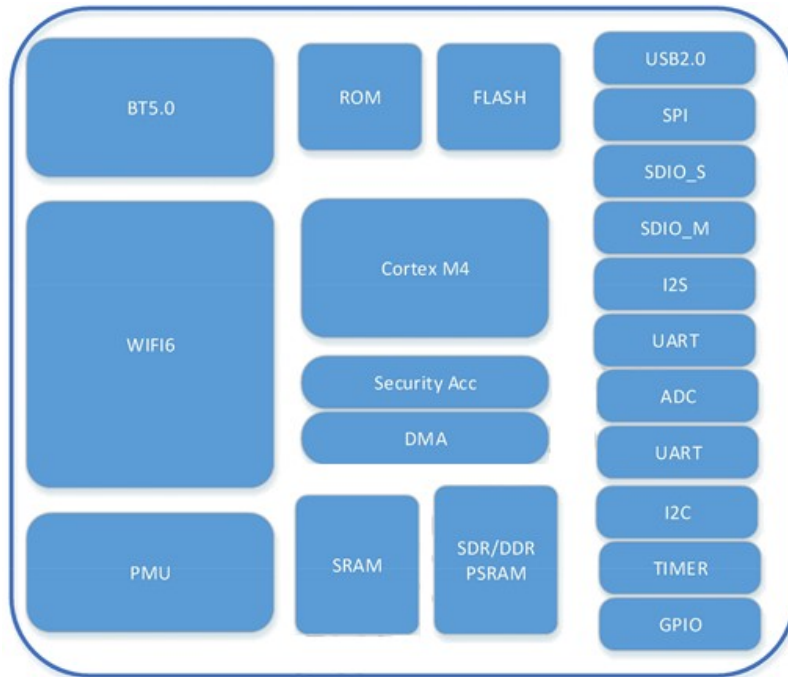
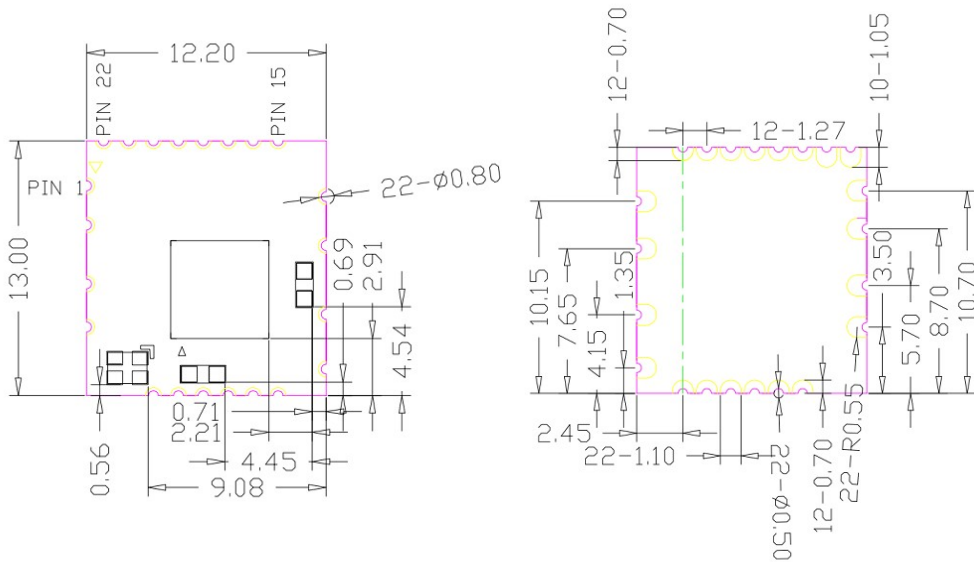


Figure 1 SKI.WB800DU2.7 Block Diagram

### 4. Package Outline and Mounting (外形及安装尺寸)



模组俯视图

模组底视图

## 5. Pin Definition (引脚定义)

| PIN | SYMBOL      | Type     | DESCRIPTION                               |
|-----|-------------|----------|---|
| 1   | GND         | G        | Grounded                                  |
| 2   | WLAN_BT_ANT | RF       | WLAN/BT RF I/O Port                       |
| 3   | BT_ANT      | RF       | BT RF I/O Port                            |
| 4   | GND         | G        | Grounded                                  |
| 5   | UART1_RTS   | I        | BT UART Port                              |
| 6   | UART1_CTS   | O        | BT UART Port                              |
| 7   | UART1_TX    | O        | BT UART Port                              |
| 8   | UART1_RX    | I        | BT UART Port                              |
| 9   | BT_WAKE_D   | O        | BT WAKE HOST                              |
| 10  | D_WAKE_BT   | I        | HOST WAKE BT                              |
| 11  | <b>VBAT</b> | <b>P</b> | <b>Voltage Input of Main Power Supply</b> |
| 12  | USB_DM      | I/O      | Wi-Fi USB DM Pin                          |
| 13  | USB_DP      | I/O      | Wi-Fi USB DP Pin                          |
| 14  | GND         | G        | Grounded                                  |
| 15  | NC          | -        | *Floating                                 |
| 16  | NC          | -        | *Floating                                 |
| 17  | NC          | -        | *Floating                                 |
| 18  | CHIP_EN     | I        | Chip Enable                               |
| 19  | H_WAKE_D    | I        | HOST WAKE WLAN                            |
| 20  | D_WAKE_H    | O        | WLAN WAKE HOST                            |
| 21  | UART0_TX    | O        | UART 0 Port                               |
| 22  | UART0_RX    | I        | UART 0 Port                               |

\*Floating = Don't connected to ground

## 6. Product Pictures (实物图片)

正视图 (top view)

背视图 (bottom view)

## 7. Key Materials (关键物料)

| 序号 | 关键件名称 | 型号                   | 规格/材料     | 备注 |
|----|-------|----------------------|-----------|----|
| 1  | 集成电路  | AIC8800D             | 48-QFN    |    |
| 2  | PCB   | SKI.WB800DU2.7       | FR-4,4LAY |    |
| 3  | 晶体振荡器 | CN4026M00012T2115181 | 26MHz     |    |

## 8. General Requirements (一般要求)

| No. | Feature                        | Description      |
|-----|--------------------------------|------------------|
| 8-1 | Operation Voltage 工作电压范围       | 3.3V+/-0.3       |
| 8-2 | Current Consumption 最大电流       | TBD              |
| 8-3 | Ripple 纹波                      | TBD              |
| 8-4 | Operation Temperature 工作温度范围   | -20°C to +80°C   |
| 8-5 | Antenna Type 天线类型              | External antenna |
| 8-6 | SDIO 2.0/USB2.0/UART Interface | USB2.0 接口        |
| 8-7 | Storage Temperature 存储温度       | -40°C to +85°C   |

## 9. Electrical Characteristics (电气特性)

除非另有说明，电气规范试验都在下列条件下进行：

环境条件温度：25°C ± 5°C；

电源电压：模块输入电压 3.3V+/-0.3；

The Test for electrical specification was performed under the following condition unless otherwise specified:

Ambient condition Temperature :25°C ± 5°C；

Power supply voltages: 3.3V+/-0.3 input power at the Module;

### 9.1 WLAN Parameters

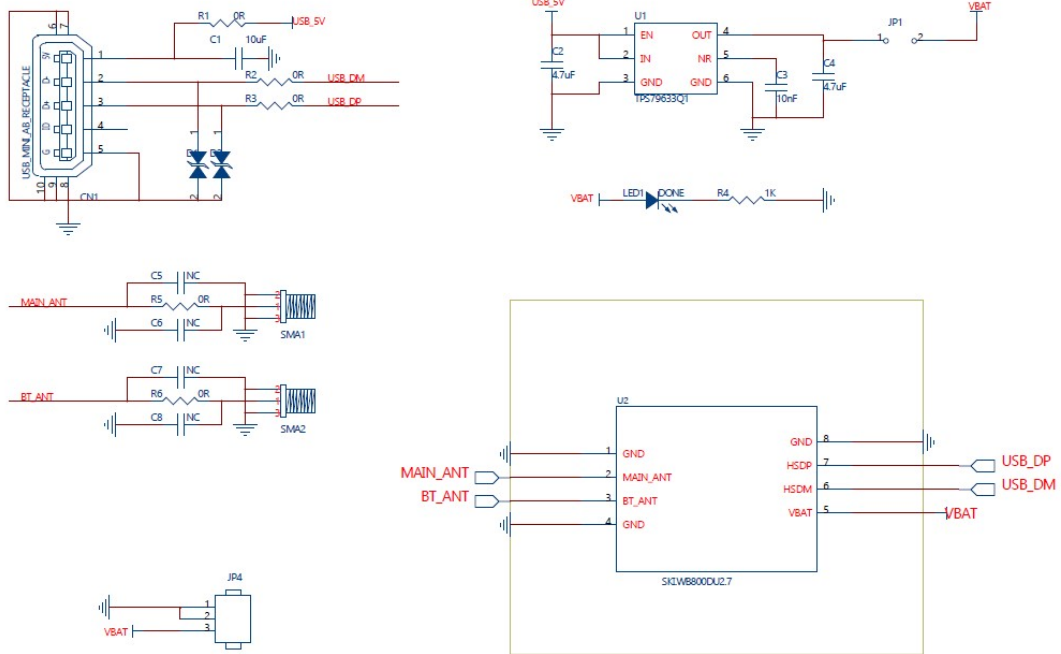
| Mode         | Protocol Standard | Description                                 |
|--------------|-------------------|---|
| Modulation   | 802.11 ac/ax      | OFDM/OFDMA With 256-QAM, 64-QAM, 16-QAM,    |
|              | 802.11 ax         | OFDM/OFDMA 1024-QAM                         |
|              | 802.11 b          | DSSS With DQPSK, DBPSK, CCK                 |
|              | 802.11 g/n        | OFDM/OFDMA With 64-QAM, 16-QAM, QPSK, BPSK  |
| Data rate    | 802.11 a/ac       | HT/VHT 20,40 : MCS0-MCS9                    |
|              | 802.11 ax         | HE20/40 : MCS0-MCS11                        |
|              | 802.11 b          | 1,2,5.5,11Mbps                              |
|              | 802.11 g          | 6,9,12,18,24,36,48,54Mbps                   |
|              | 802.11 n          | HT20 : MCS0-MCS7, 72.2Mbps                  |
| Output Power | 802.11 ax         | TDB (5GHz@ HE40 MCS9)                       |
|              | 802.11 ax         | TDB (5GHz@ HE20 MCS9)                       |
|              | 802.11 b          | 18dBm ± 1.5dBm (2.4GHz@11Mbps)              |
|              | 802.11 g          | 15dBm ± 1.5dBm (2.4GHz@54Mbps)              |
|              | 802.11 n          | 16dBm ± 1.5dBm (2.4GHz@HT40, MCS7)          |
|              | 802.11 ax         | 15dBm ± 1.5dBm (2.4GHz@HE40, MCS9)          |
| Receiver     | 802.11 ax         | TDB (5GHz@ HE40 MCS9)                       |
|              | 802.11 ac         | TDB (5GHz@ VHT40 MCS9)                      |
| Sensitivity  | 802.11 b          | -85dBm ± 1dBm (2.4GHz@11Mbps, CCK, 8%PER)   |
|              | 802.11 g          | -73dBm ± 1dBm (2.4GHz@54Mbps, OFDM, 10%PER) |
|              | 802.11 n          | -72dBm ± 1dBm (2.4GHz@HT40, MCS7, 10%PER)   |
|              | 802.11 ax         | -67dBm ± 1dBm (2.4GHz@HE40, MCS9, 10%PER)   |



## 9.6 Bluetooth Section

| Mode                 | Description                                      |
|----------------------|--|
| Modulation           | GFSK(1Mbps), $\pi/4$ -DPSK(2Mbps), 8DQPSK(3Mbps) |
| Output Power         | $0 \leq \text{Output Power} \leq +13\text{dBm}$  |
| Receiver Sensitivity | GFSK, 0.1% BER 1Mbps -95dBm                      |

## 10. Reference Design (参考设计)



### 10.1 External Antenna

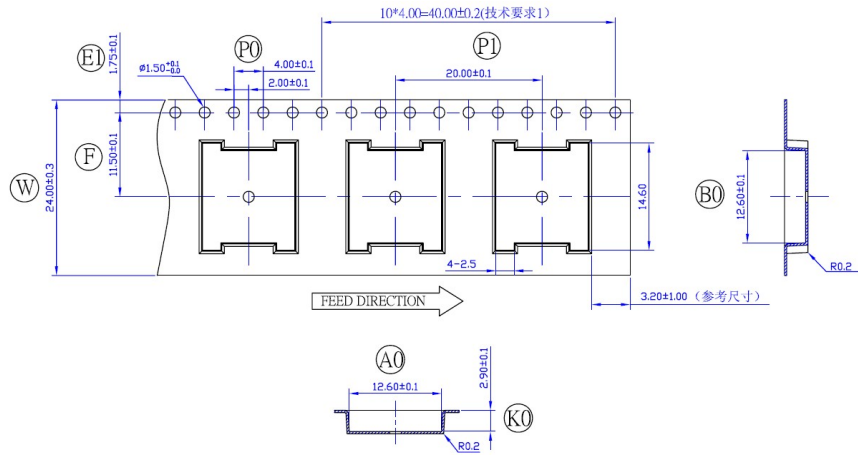
When the customer selects an external antenna, the external antenna selected must meet the parameter requirements specified in Table 10-1-1.

Table 10-1-1 Requirements on External Antenna Parameters

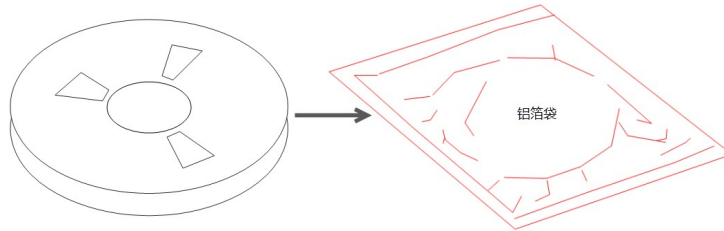
| Item                        | Parameter    |
|-----------------------------|--------------|
| Antenna operating frequency | 2.4GHz/ 5GHz |
| Impedance                   | 50Ω          |
| Return Loss                 | ≤-10dB       |

## 11. Package (包装)

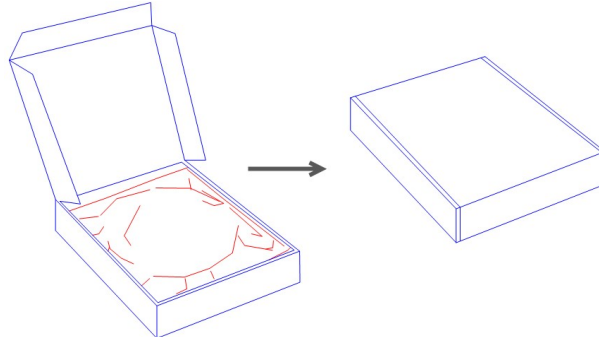
(1) 编带包装



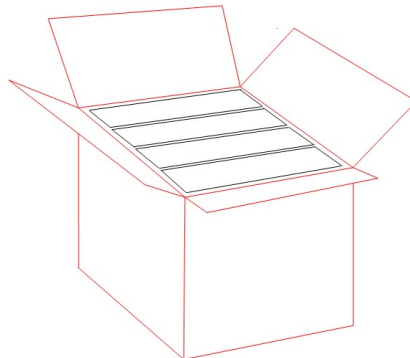
(2) 胶带包装



(3) 内盒包装



(4) 外箱包装 354\*250\*362mm



(5) 最小包装量 1000PCS/盘\*4 盘/箱=4000PCS/箱