



深圳市大熊智能有限公司

SHEN ZHEN DA-XIONG INTELLIGENT Co., LTD

DX-2002 蓝牙技术手册

深圳市大熊智能有限公司

Shenzhen DA-XIONG Intelligent Co., LTD

DX-2002 蓝牙模块

DX-2002 Bluetooth Module

Technical manual

V2.0.7

V2.0.7	2022/3/30	—	Even



0755-29129210



<http://www.bluetoothdx.com>



1. 概述



DX2002. Bluetooth module is designed for intelligent wireless data transmission by Shenzhen Daxiong Intelligent Co., LTD. It is configured with 256Kb space and follows V5.1 BLE Bluetooth specification. Supports AT commands. Users can change parameters such as the baud rate and device name of the serial port as required.

This module supports UART interface and supports

Bluetooth serial port transparent transmission, with low cost, body

Small volume, low power consumption, high sensitivity of receiving and receiving

Point, only with a few peripheral components can be real

Now its powerful function.

2. 模块默认参数 Default module parameters: :

蓝牙协议Bluetooth protocol	Bluetooth Specification V5.1 BLE
工作频率Working frequency	2.4GHz ISM band
通信接口Communication interface	UART
供电电源Power supply	3.3V
天线antenna	PCB onboard antenna or external DB antenna (default PCB antenna)
通信距离communication distance	80M
外观尺寸Appearance of size	19.6(L)mm x 13.0 (W)mm x 2.1(H) mm
蓝牙认证Bluetooth certification	FCC CE ROHS REACH
蓝牙名称Bluetooth name	DX2002
串口参数serial port parameters	115200
空中升级Air upgrade	support
Work temperature	MIN:-20℃ - MAX:+70℃





3. 应用领域Application areas:

DX2002 模块同时支持 BT5.1 BLE 协议，可以同具备 BLE 蓝牙功能的 iOS 设备直接连接，支持后台程序常驻运行。主要用于短距离的数据无线传输领域。DX2002

模块成功应用领域：

- | | |
|-------------|------------|
| ★蓝牙无线数据传输 | ★蓝牙扫描枪 |
| ★手机、电脑周边设备 | ★手持 POS 设备 |
| ★医疗设备无线数据传输 | ★智能家居控制 |
| ★蓝牙打印机 | ★蓝牙遥控玩具 |

It is mainly used in the field of short distance wireless data transmission. DX2002

Module successful application areas:

- ★ Bluetooth wireless data transmission ★ Bluetooth scanning gun
- ★ Mobile phone, computer peripherals ★ Handheld POS devices
- ★ Wireless data transmission of medical equipment ★ Smart home control
- ★ Bluetooth printer ★ Bluetooth remote control toy





4. 功耗参数 Power consumption parameters

Broadcast interval广播时间间隔500ms			
模式mode	状态 state	电流 current	功耗 Power Dissipation
深度睡眠模式 Deep sleep pattern	Sleep mode	1.2	uA
低功耗模式 Low power mode	Discoverable	346	uA
低功耗连接 Low power connection	connection	1.9	mA
全速运行模式 Full speed running mode	Normal mode	4.5	mA
数据透传Data passthrough	Connected	9.1	mA

注：透传数据时电流会根据数据量大小与透传时间间隔而波动，这里以透传数据**100字节、10ms**间隔为例。

Note: The current fluctuates according to the amount of data and the interval of transparent transmission. Here, the interval of 100 bytes and 10ms is taken as an example.

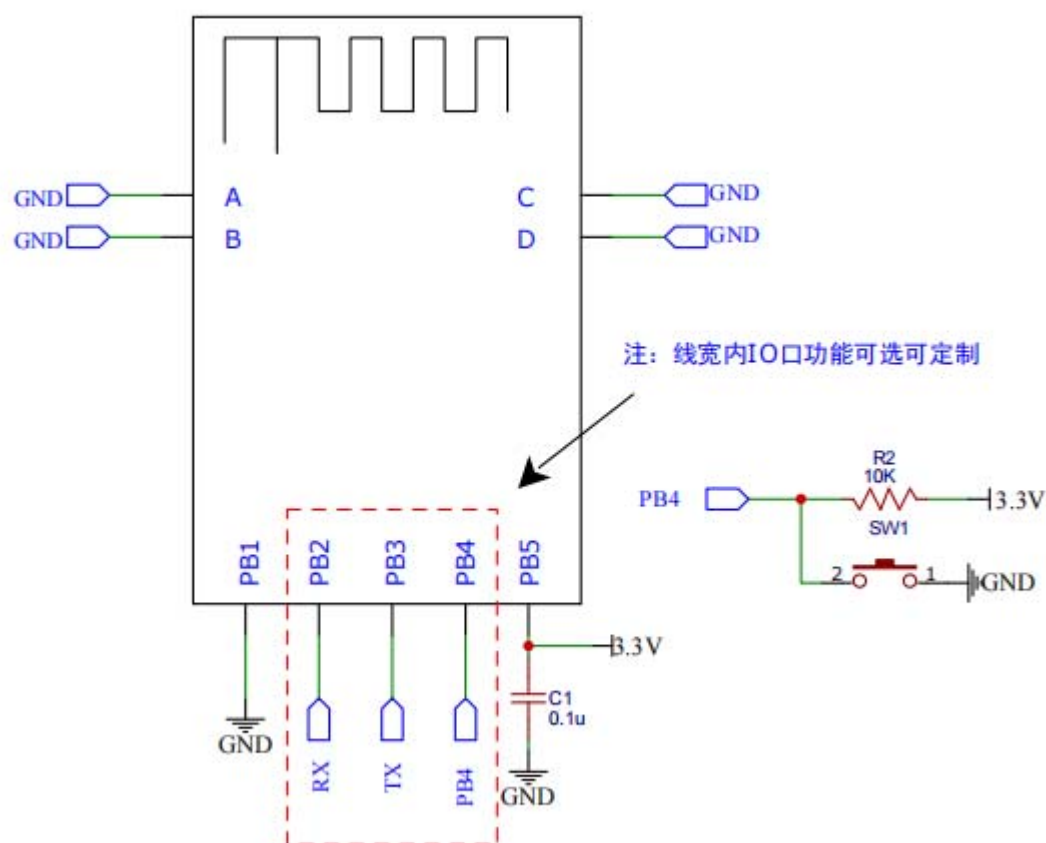
5. 射频特性 Radio frequency characteristics

Rating	Value	Unit
BLE TX POWER	-19.5~+2.5	dBm
BLE sensitivity	-94	dBm





6. 模块引脚说明及典型电路图 Module pin description and typical circuit diagram::





7. 引脚功能描述Pin function description::

8.1 IO引脚功能Pin function

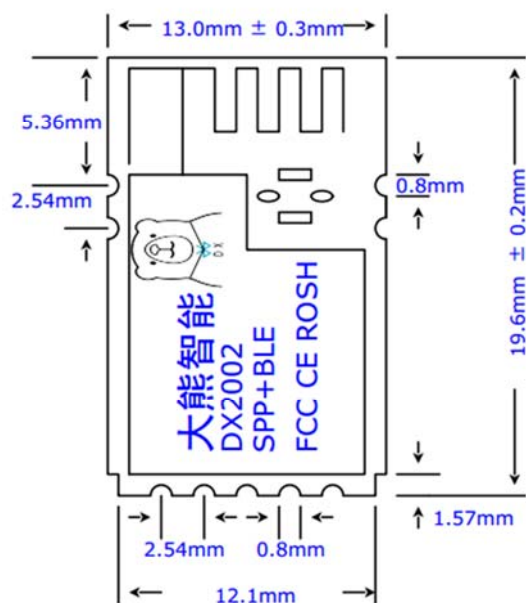
Pin number	Pin name	Remark
1	PB1	GND
2	PB2	串口数据输入 RX/可定制IO Serial port data input RX/ Customizable IO
3	PB3	串口数据输出 TX/可定制IO Serial port data input TX/ Customizable IO
4	PB4	可定制IO口 默认为复位IO 低电平有效 Customizable IO port By default, the IO low level is enabled
5	PB5	Vcc V3.3
6	A、B、C、D	-



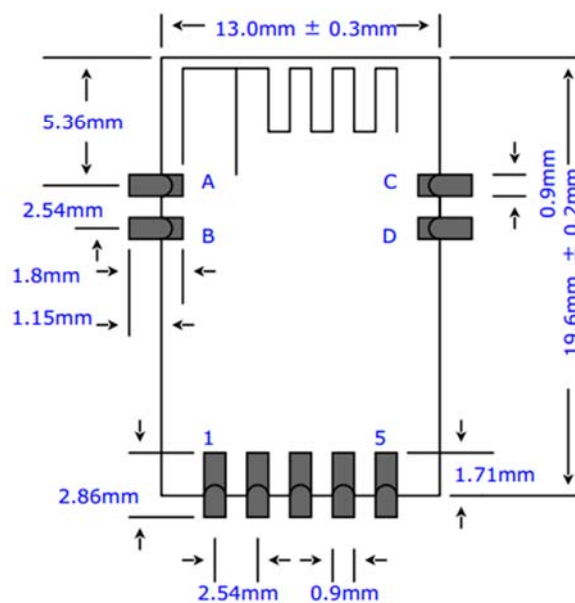


8. 外形尺寸图outline drawing:

加屏蔽罩厚度 $3\text{mm} \pm 0.2\text{mm}$



PCB 封装图



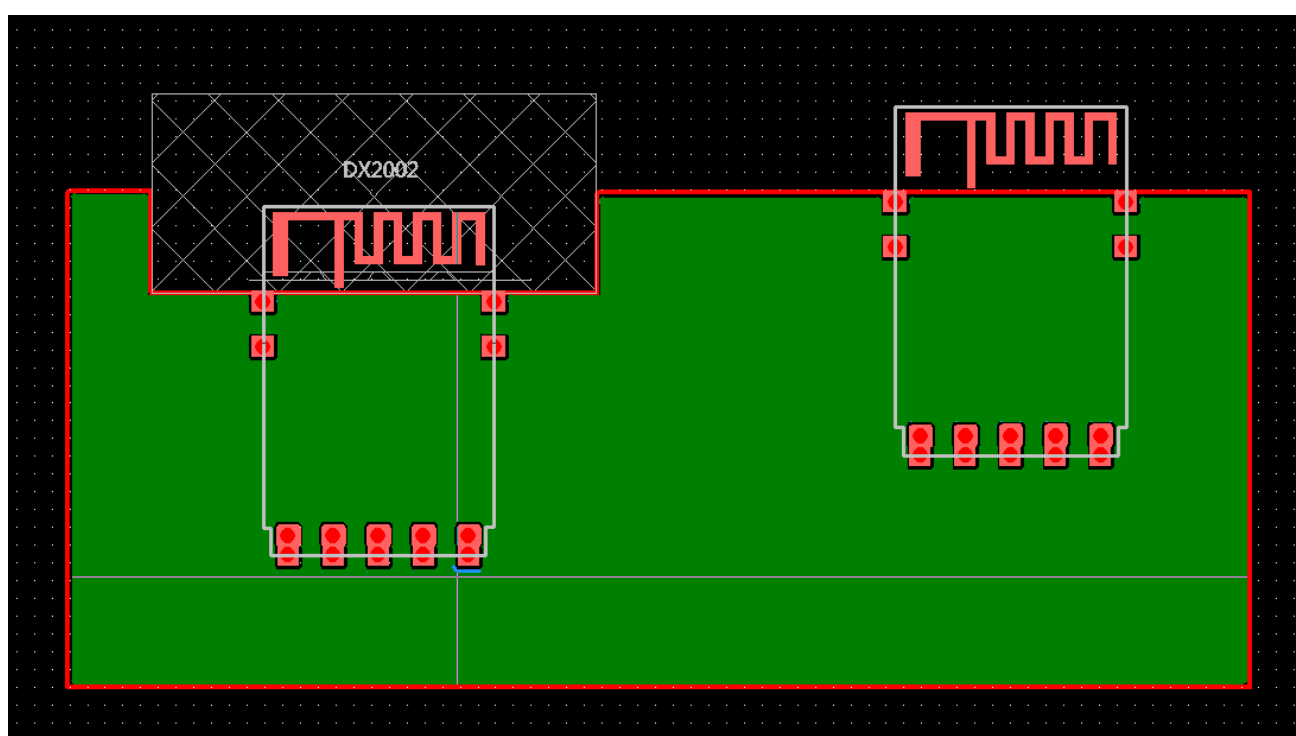


9. LAYOUT Notes

DX2002 Bluetooth module works in 2.4g wireless band, should avoid the influence of various factors on wireless transceiver, pay attention to the following points:

1. Avoid using metal shell for products surrounding Bluetooth. When using part of metal shell, try to keep the antenna part of the module away from the metal part. Keep the metal wires or screws inside the product away from the antenna part of the module.
2. The antenna part of the module should be placed around the PCB of the carrier board, not allowed to be placed in the board, and the carrier board below the antenna is empty, parallel to the antenna, not allowed to lay copper or wire, or directly expose the antenna part of the carrier board.
3. It is recommended to use insulation material to isolate the module mounting position on the substrate, such as placing a TopOverLay on the position.

PCB





FCC Statement

FCC standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

PCB antenna with antenna gain 2.0dBi or integral antenna (Male IPEX connector) with antenna gain 0.8dBi

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AQJL-DX2002 Or Contains FCC ID: 2AQJL-DX2002 "

When the module is installed inside another device, the user manual of the host must contain below warning statements;

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
- Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with limit modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.209 & 15.207 ,15B Class B requirement, then the host can be sold legally.

