YL-BLE01

User Manual

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1 -Product overview

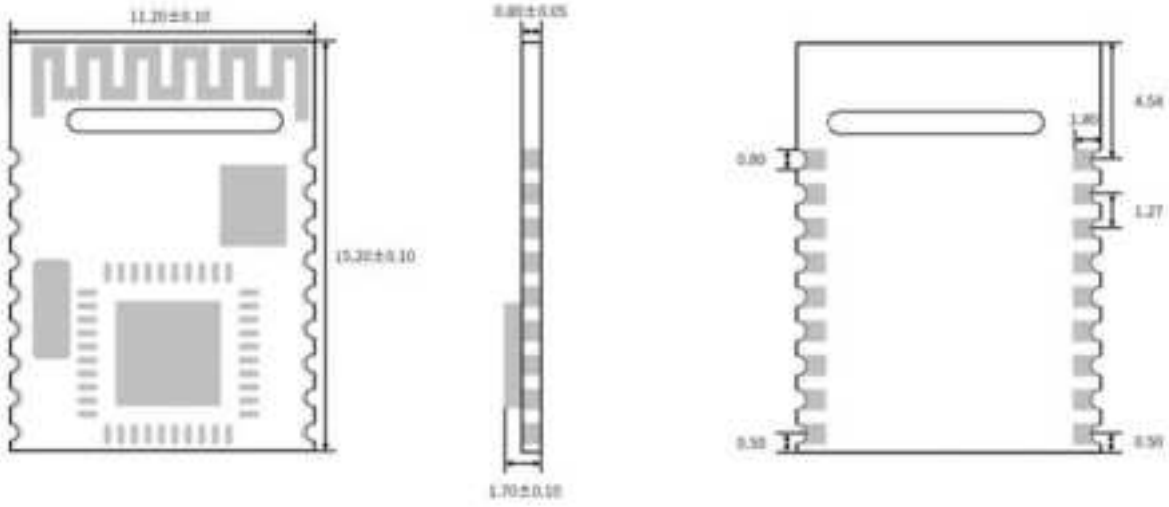
YLBLE01 is a low-power embedded Bluetooth module developed by Tianjin Yolin Technology Co.,Ltd. It can be widely applied in the field of E-bike wireless communication. The module has the characteristics of low power consumption, small size, long transmission distance, and strong anti-interference ability. The module is equipped with a high-performance serpentine antenna. The module adopts a hardware interface design in the form of a stamp half hole. This module can be used to develop consumer electronic products based on Bluetooth 4.2 (BLE, low-power Bluetooth).

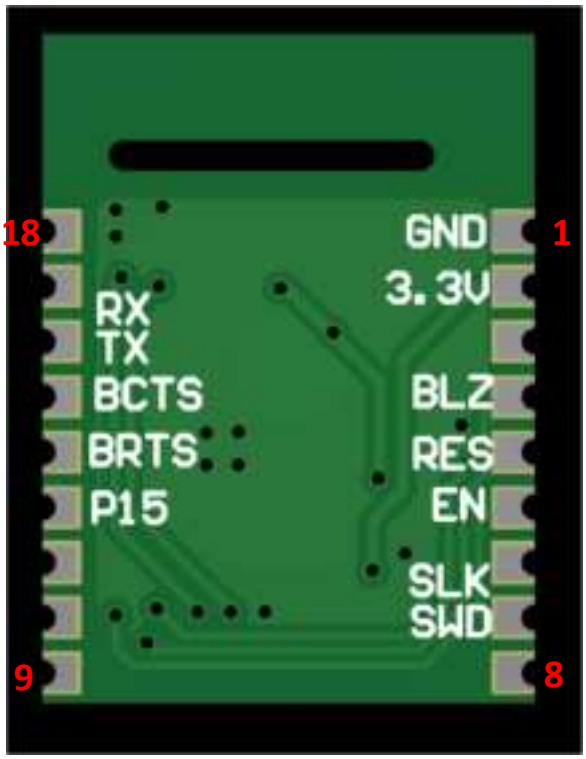
2 -Module parameters

2.1 Basic parameters

Working voltage	2.3~3.6V，Suggest using 3.3V
Working frequency band	2402MHz~2480MHz
Receiver sensitivity	-94dBm
Crystal frequency	16MHz
Packaging method	SMT（Stamp Half Hole）
Operation temperature	-20℃ ~ + 80 ℃
Storage temperature	-40℃ ~ + 125 ℃

2.2 Size packaging





Pin	Name	Function	Notes
1	GND	Power	GND
2	3.3V	module power supply	2.3~3.6V，Suggest using 3.3V
4	BLZ		
5	RES	Module reset, low level effective	
6	EN	Module Enable Control End	
7	SLK	INPUT/OUTPUT.	Serial wire clock signal. Can also be used as a GPIO (digital interface any route is not supported).
8	SWD	INPUT/OUTPUT.	Serial wire data signal. Can also be used as a GPIO (digital interface any route is not supported).
12	P15	I/O	
13	BRTS		
14	BCTS		
15	TX	Module serial port sender	
16	RX	Module serial port receiver	

3 -Cation:

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Operational use conditions

Working voltage 3.3V.
Working temperature range -20 ℃~80 ℃.

Antenna used

Antenna Type	Brand/ manufacturer	Model No.	Max. Antenna Gain
PCB Antenna	TianjinYolinTechnologyCo.,Ltd.	YLBLE01	1.84dBi

Notice to Host Product Manufacturer

Any deviation(s) from the defined parameters of the antenna trace, as described by this instruction, host product manufacturer must notify us that you wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.
Every new host configuration requires FCC Class II Permissive Change filing by the grantee.

Notice to Host manufacturer when installing our Limited Module and intend to use Contains FCC ID: 2AYOI-YLBLE01

Limited module procedure
The module doesn't have its own RF shielding, The host should provide the RF shielding to the modular, which belong to Limited module.
Standard requires: Clear and specific instructions describing the conditions, limitations and procedures for third parties to use and/or integrate the module into a host device (see Comprehensive integration instructions below).
Supply example as follows: Installation Notes:
(1). Power supply for the limited module with FCC ID: 2AYOI-YLBLE01 is DC 3.3V, when you use product with this module design, the power supply cannot exceed this value.
(2). When connect the module to the host device, the host device must be powered off.
(3). Make sure the module pins correctly installed.
(4). Make sure that the module does not allow users to replace or demolish.

Additional Testing and Grantee Evaluation for Host Product.
The module is limited module and complies with the requirement of FCC Part 15.247. According to FCC Part Subpart C section 15.212, the radio elements must have the radio frequency circuitry shielded.
However, Due to there is no shield for this module, this module is granted as a Limited Modular Approval.
A C2PC is required for new host application. Only Grantees are permitted to make permissive changes. Please contact us for further process with Tianjin Yolin Technology Co.,Ltd. The OEM integrators should follow the following C2PC test plan, Base on Module RF report “SHCR240900186701 under FCC ID: 2AYOI-YLBLE01.

For the host product installed this module exactly according to this guide, and did not make any hardware or software modifications to this module or modified the software but does not affect the radio characteristics,
Contact Information:
Company Name: Tianjin Yolin Technology Co.,Ltd.
Address: 52-1 Workshop,Yougu New Science Park,Jingfu Road E Pharmaceutical & Medical Devices Industrial Park BEDA, Beichen District, Tianjin, China
Contact Email: eng@yolintech.com
Contact Phone: 022-86838795

Test Plan for host Product:

This module does not contain a shield and therefore is limited. The host integrator will be required to file a Class II Permissive Change for each host specific installation. The following testing should be performed to demonstrate continued compliance.

1. Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15B. These tests should be based on ANSI C63.4 as guidance.

Item	Standard	Method	Remark
Conducted Emissions at Mains Terminals (150kHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	AC Power Line Conducted Emissions Voltage need to evaluate according to FCC Part 15.207(a) requirement when the host product is designed to be connected to the public utility (AC) power line.
Radiated Emissions (9KHz-30MHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	According to FCC Part15.33
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	According to FCC Part15.33
Radiated Emissions (Above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	According to FCC Part15.33 Test :1GHz to 5th harmonic of the highest frequency or 40 GHz, whichever is lower.
Test mode: Host normal operation and Bluetooth link mode.			

2.The host product will need to evaluate according to FCC Part 15 Subpart C 15.247 for Bluetooth:

(1). Maximum conducted power of channel 2402MHz-2480 MHz from the original grant is -2.62dBm at 2402MHz channel, followed by an in-host measurement to be made showing that the conducted powers must <-2.62dBm. base on the original report, the test mode of conducted power for host product should be setting as 2402MHz channel and 2Mbps.

(2). AC Power Line Conducted Emissions Voltage need to evaluate according to FCC Part 15.207(a) requirement when the host product is designed to be connected to the public utility (AC) power line. Test channel and data rate list as below：

Test Channels for Conducted Emissions	Date rate for Conducted Emissions
2402MHz	1Mbps, 2Mbps
2440MHz	1Mbps, 2Mbps
2480MHz	1Mbps, 2Mbps

(3). Radiated spurious emissions and band edge on channel 2402 and 2480MHz with the other co-located transmitters. The test modes for these tests need to be setting as below(Considering that the worst mode may exist at both 1Mbps and 2Mbps, it is recommended that the host product test all modes), These tests can be based on C63.10 as guidance and radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

Test Channels for RSE	Date rate for RSE	worst-case mode for RSE
2402MHz	1Mbps, 2Mbps	2Mbps
2440MHz	1Mbps, 2Mbps	2Mbps
2480MHz	1Mbps, 2Mbps	1Mbps

Test Channels for Band-edge	Date rate	worst-case mode for Band-edge
2402MHz	1Mbps, 2Mbps	1Mbps
2480MHz	1Mbps, 2Mbps	2Mbps

3. RF Exposure evaluation: The host product operating conditions must be such that there is a minimum separation distance of 20 cm (or possibly greater than 20 cm) between the antenna radiating structures and nearby persons. The host manufacturer is obligated to confirm the use conditions of the host product to ensure that the distance specified in the instructions is met. In this case the host product is classified as either a mobile device or a fixed device for RF exposure purposes.

If the modular transmitter is authorized to be used in a specific type of host platform and installed such that it can be operated at closer than 20 cm to users or nearby persons, please follow below guidance.

If the portable host product has only stand-alone mode, the maximum conducted power from the original grant is -2.62dBm(0.55mW), so it can meet SAR exemption requirements.

If the portable host product has multiple transmitters, it requires routine evaluation or SAR testing for the simultaneous transmission of the co-located transmitters according to KDB 447498. The potable host product shall be evaluated for ensuring to continue compliance FCC rule part 2.1093 & part 1.1310 by C2PC. The additional guidance for the portable host products is provided in KDB Publication 996369 D02 and D04.

For the host product is not installed according to this guide, the module certification will be invalid, and a new grant certification will be required for the host product.

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FCC&IC regulatory compliance statement

§15.19 Statement

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.

§15.21 Information to user

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

RF Exposure compliance statement

This Module complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Labelling Instruction for Host Product Integrator

Please notice that if the FCC and IC 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. For FCC, this exterior label should follow "Contains FCC ID: 2AYOI-YLBLE01". In accordance with FCC KDB guidance 784748 Labeling Guidelines.

§ 15.19 Labelling requirements shall be complied on end user device.
Labelling rules for special device, please refer to *§2.925, § 15.19 (a)(5)* and relevant KDB publications. For E-label, please refer to *§2.935*.

Installation Notice to Host Product Manufacturer

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application, a separate approval is required for all other operating configurations, including portable configurations with respect to *§2.1093* and difference antenna configurations.

Antenna Change Notice to Host manufacturer

the device has an integrated trace antenna.so host manufacturer can not change antenna.

FCC other Parts, Part 15B Compliance Requirements for Host product manufacturer

This modular transmitter is only FCC authorized for the specific rule parts listed on our grant, host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.
Please note that For a Class B or Class A digital device or peripheral, the instructions furnished the user manual of the end-user product shall include statement set out in *§15.105 Information to the user* or such similar statement and place it in a prominent location in the text of host product manual. Original texts as following:

For Class B

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.

For Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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