JCP-3B-1001

Module Manual

Latest |V1.3

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About this Manual

The JCP-3B-1001 Module Specification provides an introduction to the basic functions of the JCP-3B-1001 module, including the electrical specifications of the module, RF performance, pin size,

and reference schematic design. Readers can refer to this document for the overall functional parameters of the module have a detailed understanding of the application.

Revision history

Version Information Management

Version	Time	Updating records	Editor
V1.0	2021.12.06	Initial version	
V1.1	2022.08.26	M.2 Change pin 2, 4, 32, 34, 36, 38, 40, 42 to NC	
V1.2	2022.9.26	Add static protection and EMI test data	
V1.3	2024.3.12	Update module package dimensions	Defoe Qiu

1. Overview

1.1 The JCP-3B-1001 module is a dual-mode Bluetooth +WiFi module from Wi-linktech. The module is mainly used on the Internet of Things data communication, through a wealth of peripheral interfaces to achieve data acquisition and control. The built-in Bluetooth dual-mode protocol stack and various application profiles can easily realize the user's Bluetooth device interconnection, data transmission, voice, music and other applications. In transparent transmission mode, the user's products can quickly dock with the module and communicate with the mobile device to realize intelligent control and management of the product.

JCP-3B-1001 based on Bluetooth Low Power 5.0 protocol, can be used for point-to-point data transparent transmission and encrypted transmission, users do not need to care about the transmission protocol, only need to make simple Settings to communicate. The module supports BLE (Up to Bluetooth 5.0) and BLE Mesh. Dynamic stack and protocol Profile configurations are supported, and product features can be configured via software, providing the ultimate flexibility. It also supports hardware OTA upgrades, allowing convenient product features to be rolled out and upgraded.

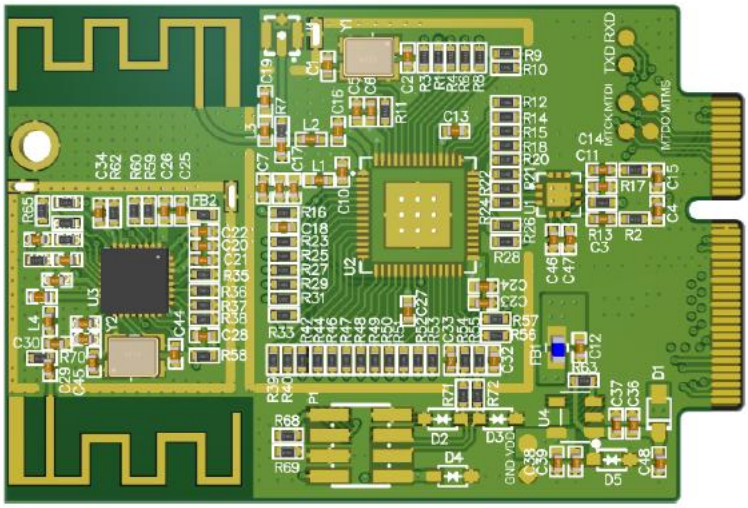


Figure 1: JCP-3B-1001 module

1.2. Functional features

Built-in MCU system-level chip, Xtensa® dual-core 32-bit LX7 microprocessor (supports single-precision floating-point arithmetic unit), supports clock frequencies up to 240MHz

384KB ROM, 512KB SRAM, 16KB RTC SRAM, Max built-in 8MB PSRAM

M.2 interface, easy to plug and plug reliable

Operating voltage/supply voltage: 3.0 ~5.0V

Module size: 31.15x46mm

Operating temperature: -40℃~+85℃

Wi-Fi

Compliant with Wi-Fi 802.11b /g/n

standard working channel center frequency range: 2412 ~ 2484MHz

in the 2.4GHz band support 20MHz and 40MHz bandwidth

0.4s protection interval

Support 1T1R mode, data rate up to 150Mbps

Support Wireless multimedia (WMM)

Frame aggregation (TX/RX A-MPDU, TX/RX A-MSDU)

Supports immediate block confirmation, sharding, and reorganization, and Beacon

automatically monitors 4 x virtual Wi-Fi interface

supports Infrastructure BSS Station mode, SoftAP mode and Station+SoftAP hybrid mode onboard high-performance PCB antennas, and supports IPEX external antennas

RF output power: 20.65 dBm

Antenna Gain: 3.00dBi

Bluetooth

Support Bluetooth BR/EDR/LE

Bluetooth Low power (Bluetooth LE): Bluetooth 5.0, Bluetooth mesh

support Long Range mode

Max transmits power up to :+20dBm(PA sharedwith Wi-Fi)

Receive sensitivity

-96.5dBm@BLE 1Mbps

-92.5dBm @BLE 2Mbps mode

-100dBm@ BLE 500kbps mode

-103.5dBm @BLE 125kbps

mode supports broadcast expansion, multi-broadcast, channel selection

Support UART communication interface

Support AT command board high

performance PCB antenna, and support IPEX seat external antenna

RF output power: 5.77 dBm

Antenna Gain: 3.00dBi

FCC 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.

Caution: Changes or modifications to this unit 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.

Module Letter

2.2 List of applicable FCC rules

FCC Part 15.247, FCC Part 15.407

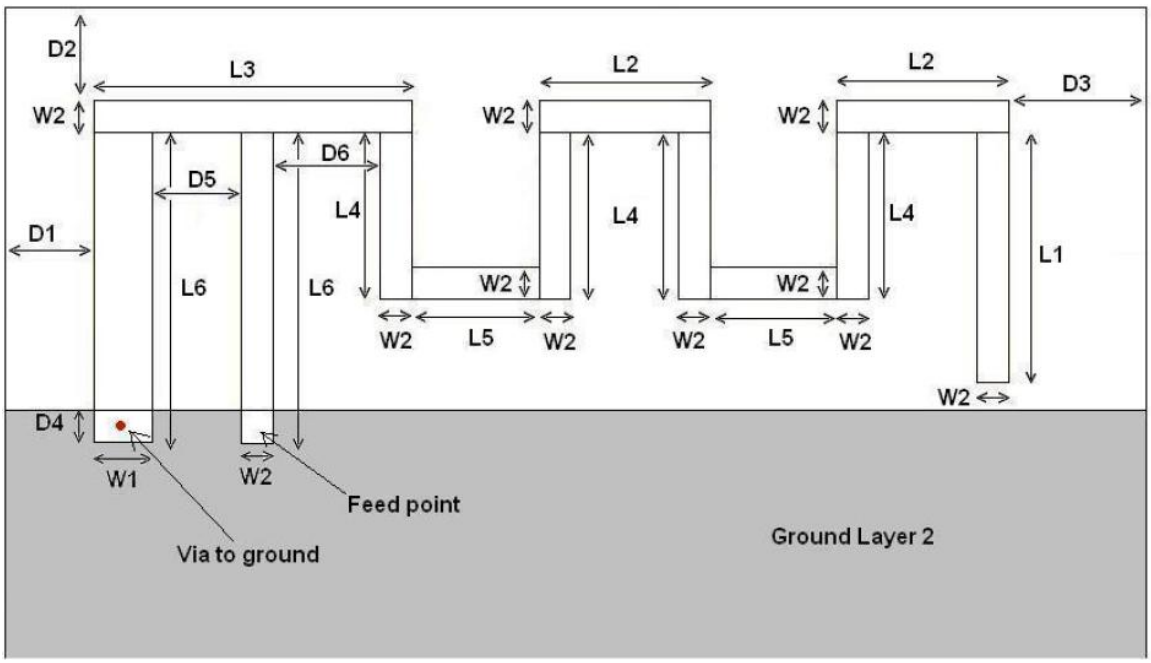
2.3 Summarize the specific operational use conditions

Item	Symbol	Min	Typ.	Max	Unit
Supply voltage	VDD	3.0	3.3	5	V
Supply current from external	TR	0.5	-	-	A
Operating temperature range	Topr	- 40	-	85	℃

2.4 Limited module procedures

This applicant applied for single modular certification.

2.5 Trace antenna designs



L1	3.95mm
L2	2.70mm
L3	5.00mm
L4	2.65mm
L5	2.00mm
L6	5.75mm
W1	0.90mm
W2	0.50mm
D1	1.38mm
D2	0.30mm
D3	2.24mm
D4	0.70mm
D5	1.40mm
D6	1.72mm

If you desire to increase antenna gain and either change antenna type or use same antenna type certified, 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.

2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of FCC RF Rules. This equipment should be installed and operated at a minimum distance of 20cm between the radiator and your body. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter

To be used in any other way, such as mobile to portable or with other transmitters simultaneously, requires additional evaluation, testing, or testing and Class 2 permissive change.

2. 7 Antennas

There are two same antennas, type: PCB antenna, gain is as below:

Frequency (MHz)	Peak Gain (dBi)	Efficiency (%)
2400	1.62	52.29
2410	1.71	52.17
2420	1.93	53.14
2430	1.98	54.16
2440	2.00	57.62
2450	2.17	59.64
2460	3.00	61.55
2470	2.38	60.64
2480	2.54	62.86
2490	2.30	59.85
2500	2.49	60.41

2.8 Label and compliance information

Labelling Instruction for Host Product Integrator

Please note that 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 FCC ID: TN7JCP-3B” any similar wording that expresses the same meaning may be used.

NOTE

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product Contains Transmitter module FCC ID: ******

2.9 Information on test modes and additional testing requirements

Test modes should take into consideration different operational conditions for a standalone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

Use the software RTLBTAPP to set the max power, OBW and another test parameter.

The host must Comply with Part 15 Subpart B compliant.

2.10 Additional testing, Part 15 Subpart B disclaimer

This module complies with FCC part 15. 247, if it is installed in a host device, the host product manufacturer is responsible for compliance with any other FCC rules that apply to the host not covered by the modular transmitting grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

2.11 Note EMI Considerations

The host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties

Use the software RTLBTAPP to set the max power, OBW and another test parameter.

For standalone mode, reference the guidance in D04 Module Integration Guide and for simultaneous mode see D02 Module Q&A Question 12, which permits the host manufacturer to confirm compliance.

2.12 How to make changes

This module is not permitted to change.