

Product Specification

Product name: WIFI BLE module

Product model: C-3051L

Document no. :

File version: V1.0

Effective date:

(OEM) Integrator has to assure compliance of the entire end-product incl. the integrated RF Module. For 15 B (§15.107 and if applicable §15.107) compliance, the host manufacturer is required to show compliance with 15 while the module is installed and operating.

Furthermore the module should be transmitting and the evaluation should confirm that the module's intentional emissions (15C) are compliant (fundamental / out-of-band). Finally the integrator has to apply the appropriate equipment authorization (e.g. Verification) for the new host device per definition in §15.101.

Integrator is reminded to assure that these installation instructions will not be made available to the end user of the final host device.

The final host device, into which this RF Module is integrated" has to be labelled with an auxiliary label stating the FCC ID of the RF Module, such as "Contains FCC ID: 2AR7VC-3051L"

"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."

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.

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.

Module statement

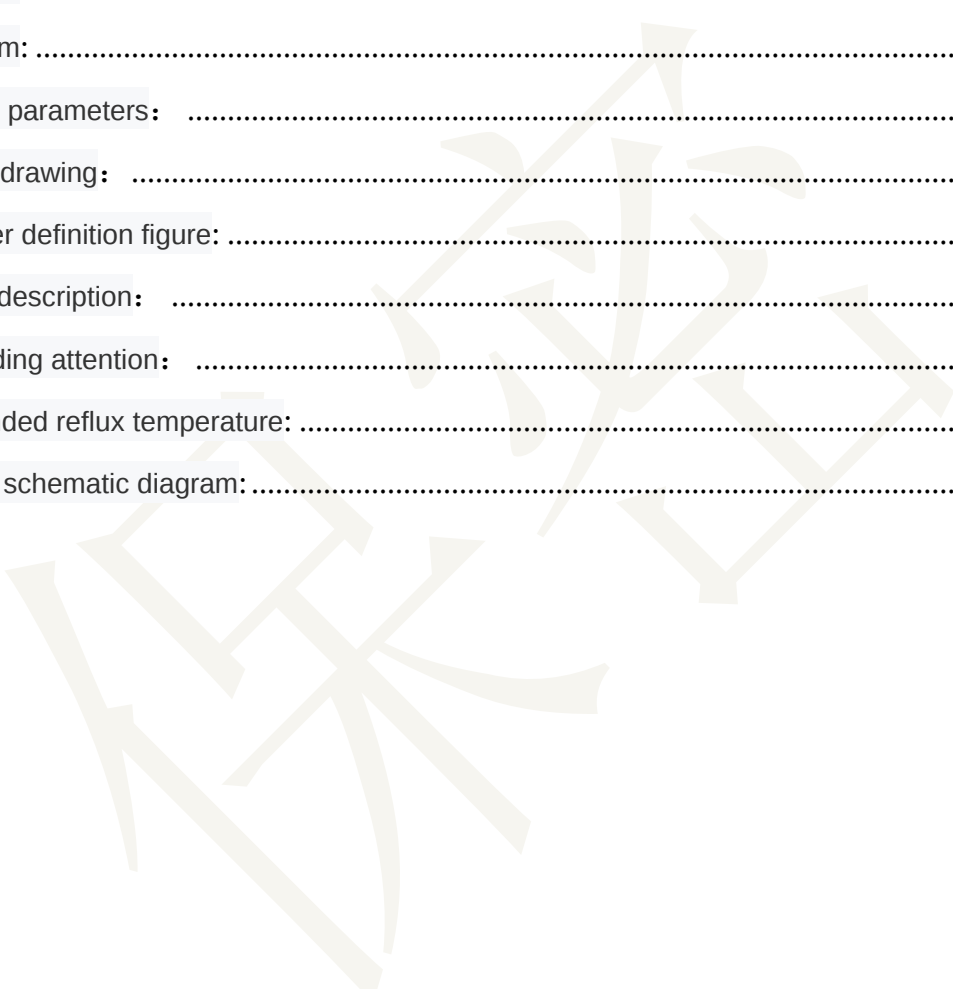
The single-modular transmitter is a self-contained, physically delineated, component for which compliance can be demonstrated independent of the host operating conditions, and which complies with all eight requirements of § 15.212(a)(1) as summarized below.

- 1) The radio elements have the radio frequency circuitry shielded.
- 2) The module has buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.
- 3) The module contains power supply regulation on the module.
- 4) The module contains a permanently attached antenna.
- 5) The module demonstrates compliance in a stand-alone configuration.
- 6) The module is labeled with its permanently affixed FCC ID label
- 7) The module complies with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.
- 8) The module complies with RF exposure requirements.

This transmitter/module must not be collocated or operating in conjunction with any other antenna or transmitter.

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1.Product Overview :

C-3051l adopts BK7251_QFN68 chip scheme of Shanghai botong company. Its internal technology integrates 2.4ghz wi-fi 1T1R advanced technology, which has the best power consumption performance, radio frequency performance, stability, universality and reliability, and is suitable for various applications and different product requirements.

C-3051l is the industry-leading wi-fi solution with ARM9 frequency: up to 180MHz, MCU integrates antenna switch, power amplifier, low-noise amplifier, filter, power management module, supports 802.11e and wmm-ps protocol, WPA, WPA2 and WAPI BLE4.2 security protocols..

2.Application Area:

Children's story machine

Universal low-power IoT sensor Hub

Universal low-power IoT recorder

Video streaming of the camera

OTT TV box/set-top box equipment

Music player - network music player - audio streaming device

Does the wi-fi toys

Wi-fi voice recognition device

Wear headphones

Smart socket

Home automation

Does Mesh network

Industrial wireless control

Baby monitor

Sensor network

Security ID tag

Health care

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3.fundamental characteristics:

※Support 802.11 b/g/n

--802.11b: 1, 2, 5.5, 11

--802.11g: 6, 9, 12, 18, 24, 36, 48, 54

--802.11n HT20: MCS0~7

--802.11n HT40: MCS0~7

※Support 802.11 b/g/n 1x1 agreement

※Support 20/40 MHz bandwidth and STBC

※Support STA/AP/Direct/Repeater network model

※Support SGI、 Green-Field Preamble and A-MPDU

※Support WPA,WPA2,WAPI **security mechanism**

※Support 50 MHz SDIO port

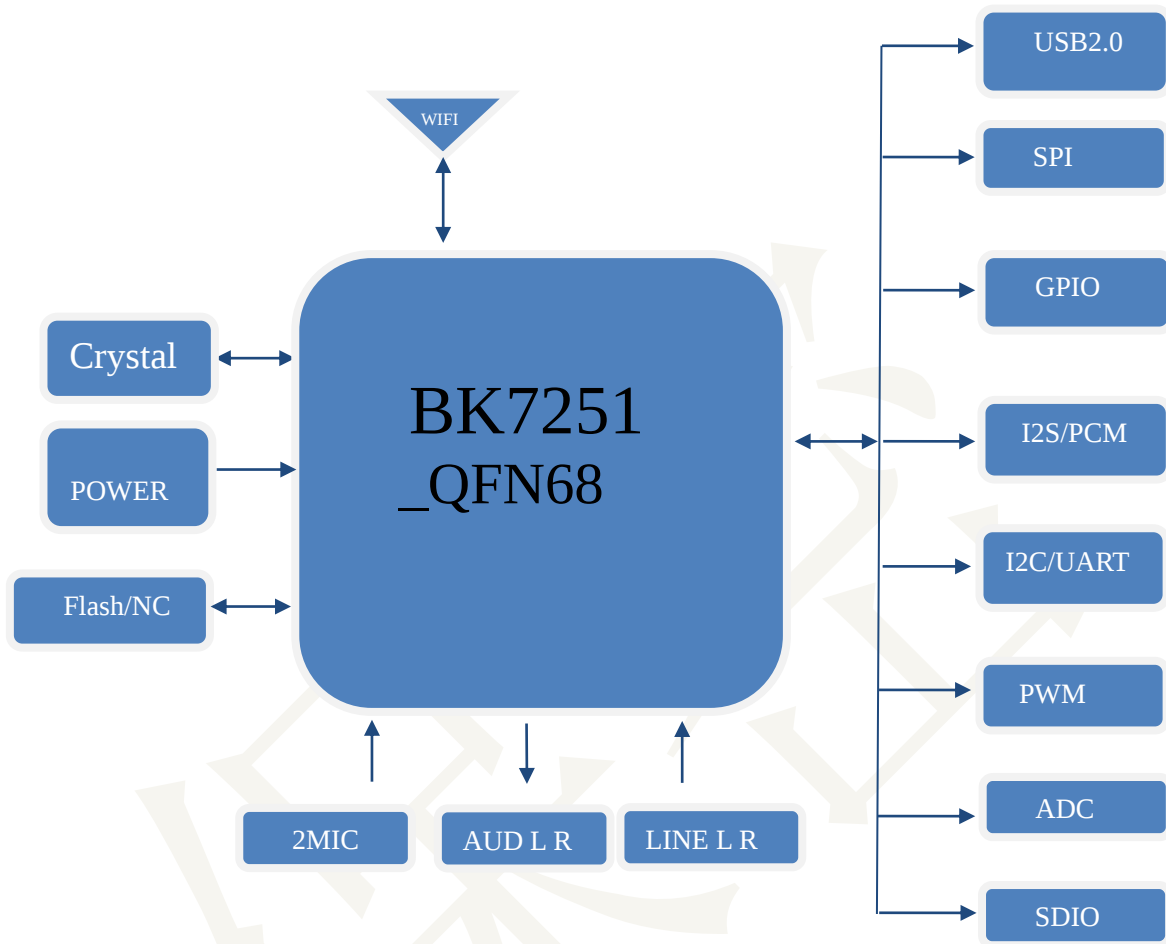
※FLASH on - chip, support transparent download

※Support UART, GPIO, SDIO,ADC,PWM,PCM/I2S,USB,I2C

※Support Piece of reply

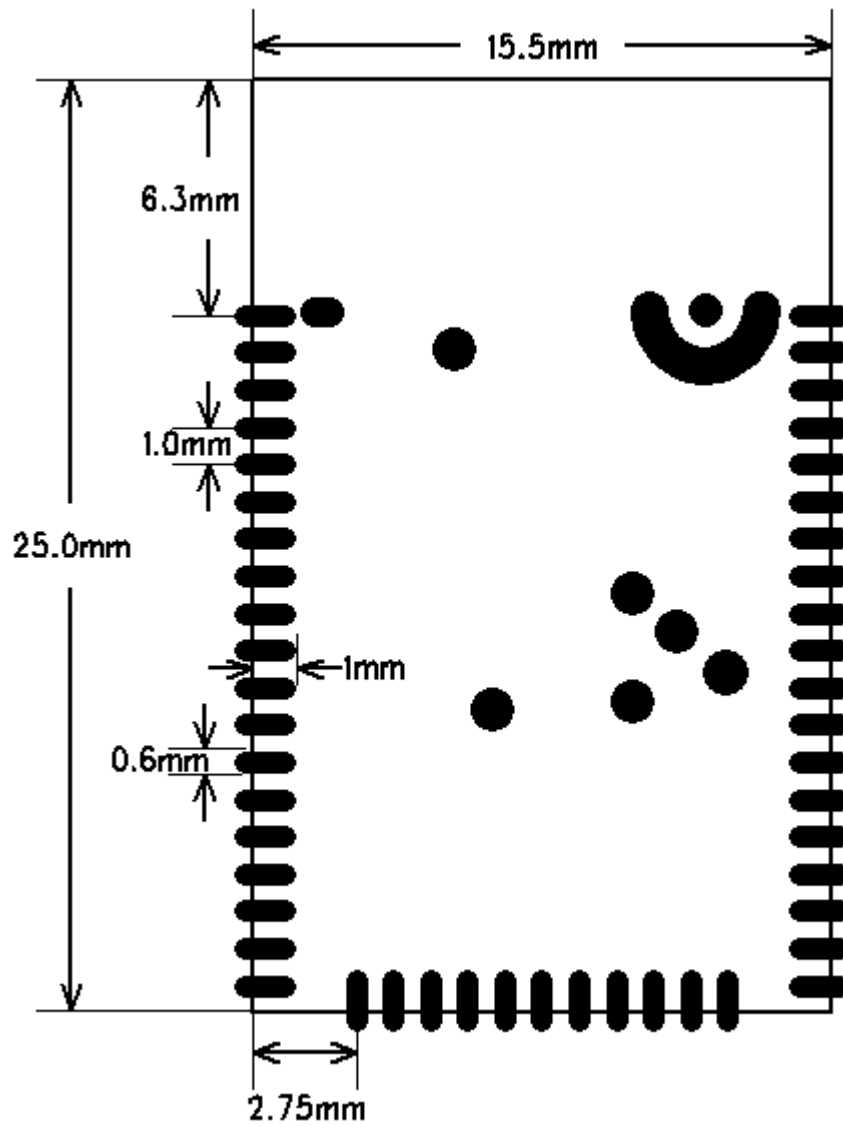
※Support Slice and reassemble

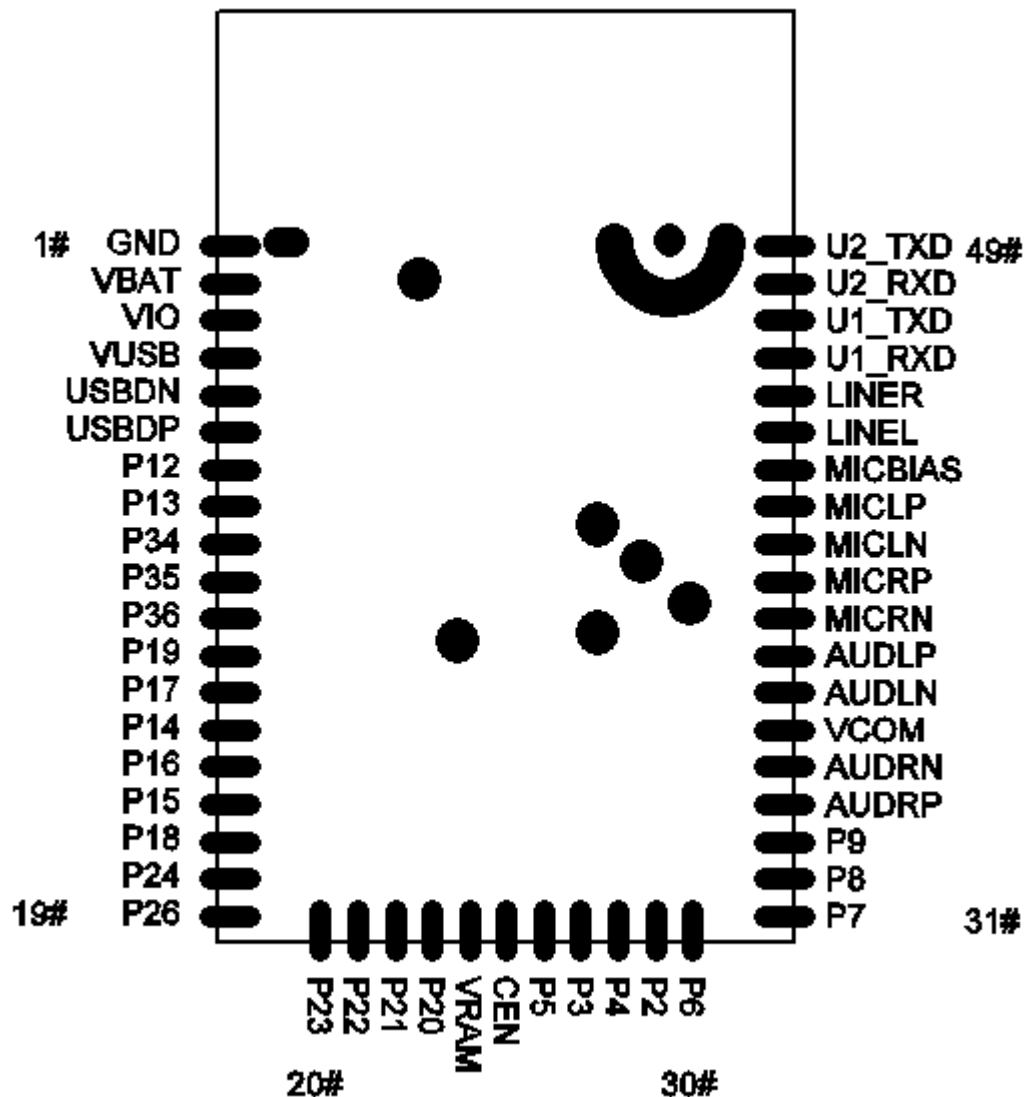
※Support Infrastructure BSS Station mode /SoftAP mode

4.Block diagram:

5.Performance parameter:

Wireless parameters	Model	C-3051L
	Standard authentication	FCC/CE
	Wireless standards	802.11b/g/n,1T1R
	Frequency domain	2.400GHz - 2.500GHz
	Transmitted power	IEEE802.11b 17 dBm
		IEEE802.11g 14 dBm
		IEEE802.11n 13 dBm
	Receive sensitivity	11b <-85dB 11g <-70dB 11n <-65dB
Hardware parameters	Antenna	Internal Antenna
	Working voltage	3.3V--4.2V
	Working current	<350MA
	Operating temperature	-10°C~55°C
	Storage temperature	-20°C~80°C
	WiFi transmission distance	<100 m
	Expansion interface	UART, GPIO, SDIO,ADC,PWM,PCM/I2S,USB,I2C,SDIO
Software Parameters	Size	25*15.5*3MM (LxWxH)SMD
	Wireless network type	AP Client Pattern
	Security mechanism	WPAI、WPA、WPA 2
	Encryption type	WEP64/WEP128
	Online update	Support

6.Module size drawing:

7.Module footer definition diagram:

8.Pin function description:

Pin	Symb	I/O	Description
1	GND	G	GND
2	VBAT	P	Power 3.3V-4.2V
3	VIO	O	VIO O IO voltage, 3.3 V
4	VUSB	P	VUSB I Chip power supply and charge power supply, 5V
5	USBDN	I/O	P28/RX_EN/USBDN
6	USBDP	I/O	P25/TX_EN/USBDP
7	P12	I/O	P12/ADC6 or UART1 CTS or ADC6
8	P13	I/O	P13/ADC7 or UART1 RTS or ADC7
9	P34	I/O	P34/ DVP D2 or SDIO Clock
10	P35	I/O	P35/ DVP D3 or SDIO CMD
11	P36	I/O	P36/ DVP D4 or SDIO Date 0
12	P19	I/O	P19/ SDIO D1 or QSPI IO3
13	P17	I/O	P17/ SDIO D0 or SPIMISO or QSPI IO1
14	P14	I/O	P14/SDIO Clock or SPI Clock or QSPI FLASH clock
15	P16	I/O	P16/SDIO CMD or SPI MOSI or QSPI IO0
16	P15	I/O	P15/ SDIO D3 or SPI CSN or QSPI FLASH CSN
17	P18	I/O	P18/SD_D2/QSPI_IO2 or SDIO D2 or QSPI IO2
18	P24	I/O	P24/ low power clock output or PWM 4 or QSPI RAM clock
19	P26	I/O	P26/ IrDA input or PWM 5 or QSPI RAM CSN
20	P23	I/O	P23/ADC or JTAG TDO, or QSPI IO0 FLASH download data output at download mode
21	P22	I/O	P22/CLK_26M/ JTAG TDI or QSPI IO1 FLASH download data input at download mode
22	P21	I/O	P21/ JTAG TMS or QSPI IO2 Flash download chip enable signal at download mode
23	P20	I/O	P20/ JTAG TCK or QSPI IO3 Flash download port clock signal at download mode
24	VRAM	O	VDDRAM IO Power supply for external PSRAM
25	CEN	I	CEN I Chip enable, active high
26	P5	I/O	P5/ I2S DOUT or ADC2
27	P4	I/O	P4/2S DIN or ADC1
28	P3	I/O	P3/ I2S SYNC or ADC4
29	P2	I/O	P2/ I2S Clock or ADC5
30	P6	I/O	P6/13 MHz clock output or PWM 0
31	P7	I/O	P7/Wi-Fi active output or PWM1
32	P8	I/O	P8/ Bluetooth active input or PWM 2
33	P9	I/O	P9/Bluetooth priority input or PWM 3
34	AUDRP	O	AUDRP O
35	AUDRN	O	AUDRN O
36	VCOM	O	Common mode output
37	AUDLN	O	AUDLN O
38	AUDLP	O	AUDLP O
39	MICRN	I	Microphone input right channel negative
40	MICRP	I	Microphone input left channel positive
41	MICLN	I	Microphone input left channel negative

42	MICLP	I	Microphone input rightchannel positive
43	MICBIAS	O	Microphone bias voltageoutput
44	LINEL	I	Line in left channel
45	LINER	I	Line in right channel
46	U1_RXD	I/O	P10/UART1 RX
47	U1_TXD	I/O	P11/UART1 TX
48	U2_RXD	I/O	P1/UART2 RX or I2C2SDA
49	U2_TXD	I/O	P0/UART2 TX or I2C2SCL

Notes:

1. I: Input
2. O: Output
3. P: Power
4. G: Ground

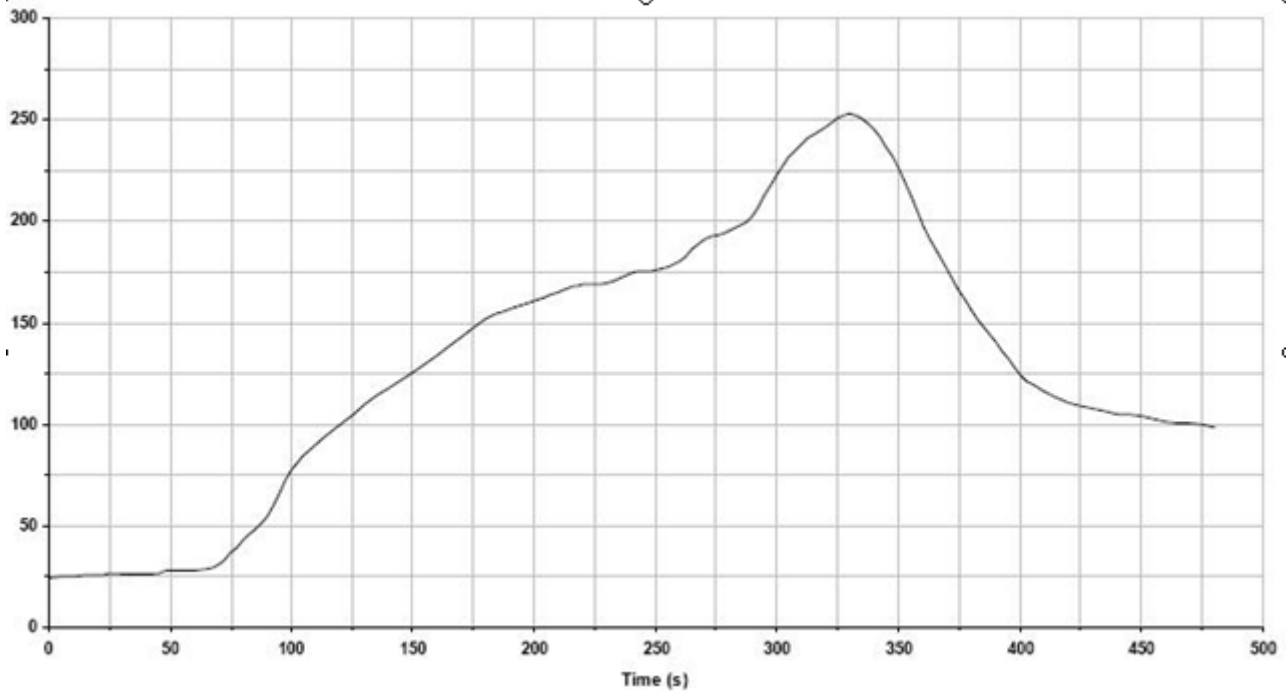
9.Matters need attention:

A.As for the use environment of WIFI, wireless signals are easily affected by the surrounding environment. For example, obstacles such as trees and metals will absorb wireless signals to some extent, so that the distance of data transmission is affected to some extent in practical applications.

B.It is recommended that the metal enclosure be not installed in the metal enclosure as it is shielded from radio frequency signals.

C.PCB board: as the metal will weaken the function of the antenna, when distributing the board to the module, it is strictly prohibited to lay the floor and wire under the module antenna. It is better if it can be hollowed out.

10. Recommended reflux temperature:



Key features of the profile:

- Initial Ramp=1-2.5°C/sec to 175°C equilibrium
- Equilibrium time=60 to 80 seconds
- Ramp to Maximum temperature (250°C)=3°C/sec Max
- Time above liquidus temperature(217°C): 45 - 90 seconds
- Device absolute maximum reflow temperature: 250°C

11. Application schematic:

Please refer to the application schematic diagram for reference only!