

T102_V1.1 Wi-Fi Module

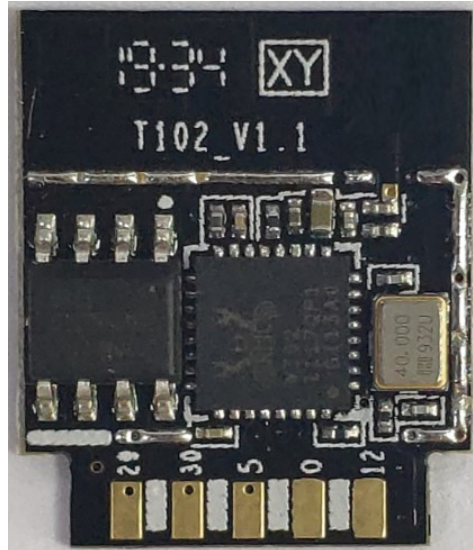
1. Product Brief

T102_V1.1 is a low power embeded Wi-Fi Module. It contains a Wi-Fi Soc(RTL8710BN) and integrate Network protocol stack. T102_V1.1 Embeded ARM-CM4 MCU , 2Mbyte Flash , 256Kbyte SRAM。 T102_V1.1 runs RTOS , integrate all Wi-Fi MAC and TCP/IP protocol stack.

1.1 Feature

- ✧ Embeded ARM_CM4 MCU
 - CPU: 125MHz
- ✧ Voltage : 3.0V-3.6V
 - Peripheral : 9×GPIOs, 1×UART, 5×PWM
- ✧ Wi-Fi
 - 802.11 b/g/n
 - Channel 1-14@2.4GHz
 - Support WPA/WPA2
 - 802.11b +16dBm max output power.
 - Support STA/AP/STA+AP
 - Support SmartConfig (include Android and IOS)
 - PCB Antenna
 - Operating temperature : -20°C to 70°C

1.2 Material Object

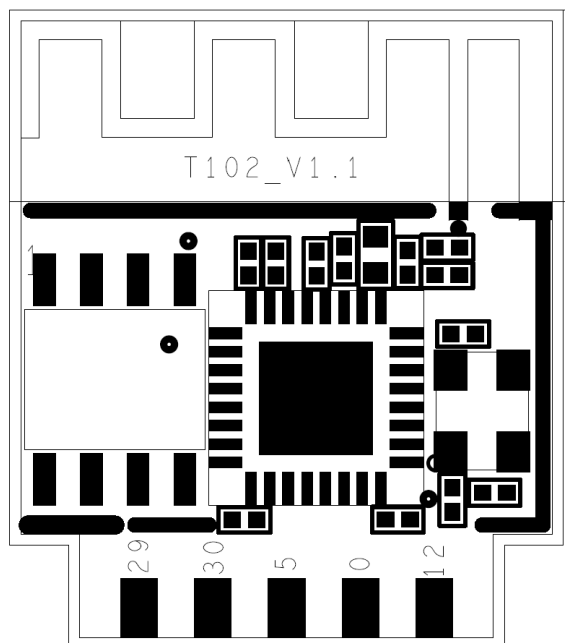


Picture 2 T102_V1.1 front view

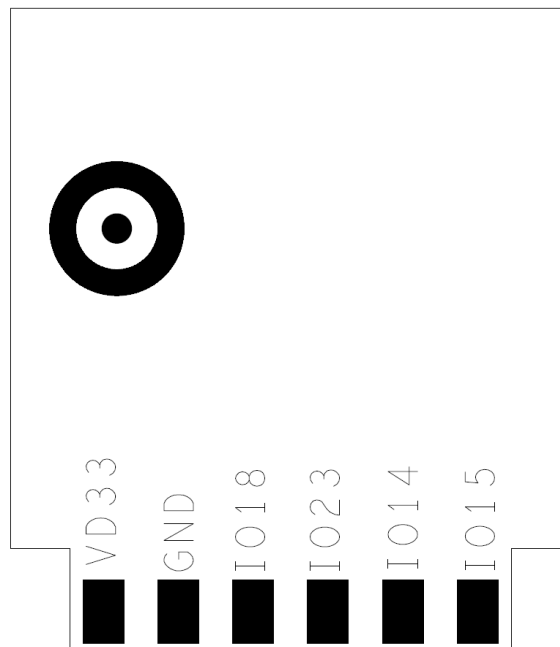
2. Module Interface

Pin

T102_V1.1 has 2 11 pins , the width between two pins is 2mm:



Picture 3 T102_V1.1 Front



T102_V1.1 rear view

view Pin definition :

Table 1 T102_V1.1 Pin

Index	Symb	IO Type	Feature
1	VDD	P	Module Power(3.3V)
3	GND	P	Module GND
5	A18	I/O	GPIO_A18/UART0_RXD
7	A23	I/O	GPIO_A23/UART0_TXD
9	A14	I/O	GPIO_A14/PWM0
11	A15	I/O	GPIO_A15/PWM1
2	A12	I/O	GPIO_A12/PWM3
4	A0	I/O	GPIO_A0/PWM2
6	A5	I/O	GPIO_A5/PWM4
8	A30	I/O	GPIO_A30/DEBUG_LOG_TX
10	A29	I/O	GPIO_A29/DEBUG_LOG_RX

3. Electrical parameters

3.1 Absolute Electrical parameters

Parm	Description	Min	Max	Unit
Ts	storage temperature	-20	85	°C
VCC	Voltage	-0.3	3.6	V

3.2 Work condition

Para	Description	Min	Normal	Max	Unit
Ta	Operating Temperature	-20	-	70	°C
VCC	Operating Voltage	3.0	3.3	3.6	V
V _{OL}	IO Low level	-	-	VCC*0.1	V
V _{OH}	IO High Level	VCC*0.8	-	VCC	V
I _{max}	IO current	-	-	16	mA

3.3 Wi-Fi Tx Power

Symb	Para			Normal	Unit
	Model	Speed	Tx Power		
I _{RF}	11b	11Mbps	+16dBm	288	mA
I _{RF}	11g	54Mbps	+14dBm	258	mA
I _{RF}	11n	MCS7	+13dBm	251	mA

3.4 Wi-Fi Rx Power

Symb	Para		Normal	Unit
	Model	Speed		
I _{RF}	11b	11Mbps	119	mA
I _{RF}	11g	54Mbps	122	mA
I _{RF}	11n	MCS7	122	mA

3.5 Working Power Consumption

Work model	Work status, Ta=25°C	AV	MAX.	UNIT
Smart config	WI-FI led fast flash	123	413	mA
AP config	WI-FI Led slow flash	140	413	mA
Connected	Wi-Fi Led on	19.6	413	mA
Reconnected	Wi-Fi Led off	70	413	mA

4. RF Characteristic

4.1 Basic RF characteristic

Para	Description
Frequency	2.412~2.484GHz
Wi-Fi Standard	IEEE 802.11b/g/n(channel 1-14)
Speed	11b:1,2,5.5, 11 (Mbps) 11g:6,9,12,18,24,36,48,54(Mbps) 11n:BW20_MCS7 65Mbps 11n:BW40_MCS7 135Mbps
Antenna	PCB Antenna

4.2 Wi-Fi output power

para		Min	Normal	Max	Unit
Model	Speed				dBm
802.11b CCK Mode	11M	14	16	18	dBm
802.11g OFDM Mode	54M	12	14	16	dBm
802.11n OFDM Mode	BW20_MCS7	11	13	15	dBm
802.11n OFDM Mode	BW40_MCS7	11	13	15	dBm
Frequency Error		-10	-	10	ppm

4.3 Wi-Fi Rx Sensitivity

Para		Min	Normal	Max	Unit
Model	Speec				dBm
PER<8% , RX , 802.11b CCK Mode	11M	-	-86	-80	dBm
PER<10% RX , 802.11gOFDM Mode	54M	-	-73	-67	dBm
PER<10%RX , 802.11nOFDM Mode	BW20_MCS0	-	-89	-83	dBm
PER<10%RX , 802.11nOFDM Mode	BW20_MCS7	-	-71	-65	dBm

5. Antenna Info

5.1 Antenna Type

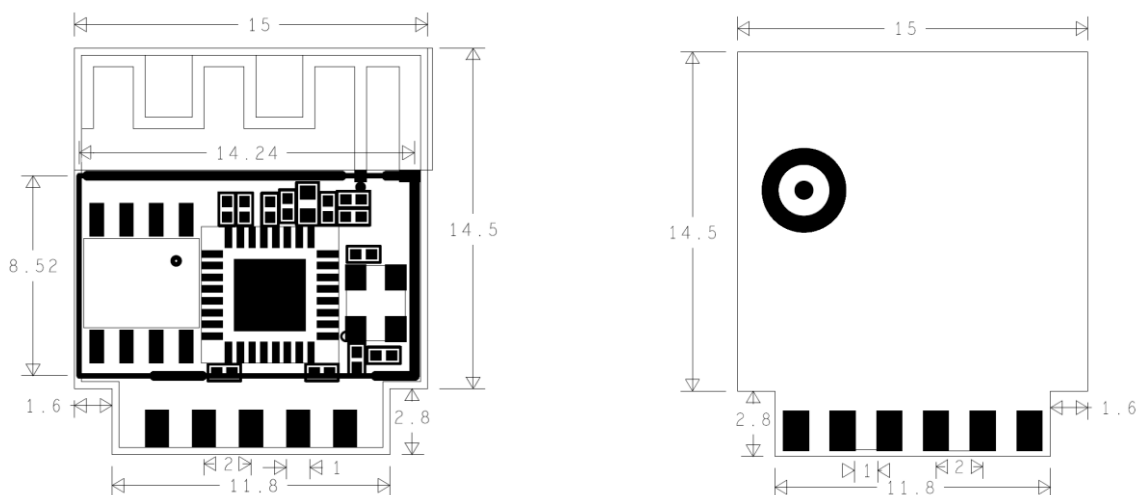
PCB Antenna

5.2 Reduce Antenna interfere

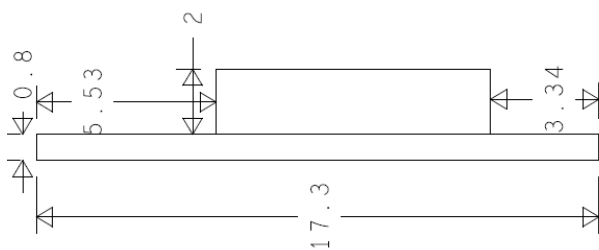
To ensure the Wi-Fi product has best RF performance, we suggest the min distance between the antenna and other metal is 15mm.

6. Package Info

6.1 Model Size

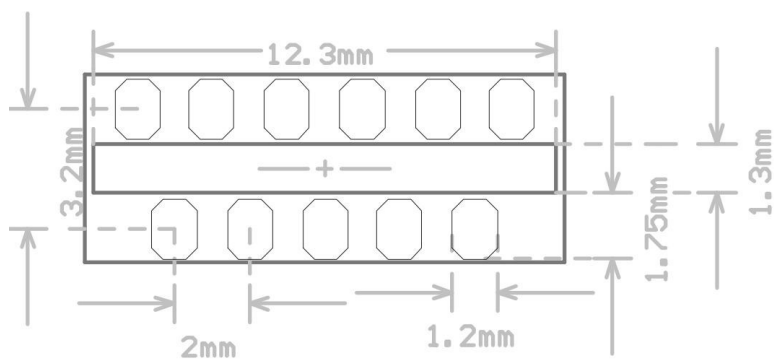


Pic 4 T102_V1.1 size



Pic 5 T102_V1.1 side view

6.2 PCB Package



Pic 5 T102_V1.1 PCB Package

FCC Regulatory notices

Modification statement

Shenzhen Phaten Technology Co., Ltd. has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment. **Interference statement**

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

RF exposure

This equipment complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. The antenna should be installed and operated with minimum distance of 20 cm between the radiator and your body. Antenna gain must be below 3 dBi.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The host end product must include a user manual that clearly defines operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.

For portable devices, in addition to above, a separate approval is required to satisfy the SAR requirements of FCC Part 2.1093.

If the device is used for other equipment that separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

FCC Class B digital device notice

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.

Labelling Requirements for the Host device

The host device shall be properly labelled to identify the modules within the host device. The certification label of the module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the FCC ID and ISED of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning, as follows:

Model: WIFI module

Contains FCC ID: 2AU7O-T102V11

The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID and ISED.

Model: WIFI module

Contains FCC ID: 2AU7O-T102V11

OEM Statement

- a. The module manufacturer must show how compliance can be demonstrated only for specific host or hosts
- b. The module manufacturer must limit the applicable operating conditions in which the transmitter will be used, and
- c. The module manufacturer must disclose that only the module grantee can make the evaluation that the module is compliant in the host. When the module grantee either refuses to make this evaluation, or does not think it is necessary, the module certification is rendered invalid for use in the host, and the host manufacturer has no choice other than to use a different module, or take responsibility (§ 2.929) and obtain a new FCC ID for the product.
- d. The module manufacturer must provide the host manufacturer with the following requirements:
 - i. The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions).