The Specification of ESP8684H2 Module

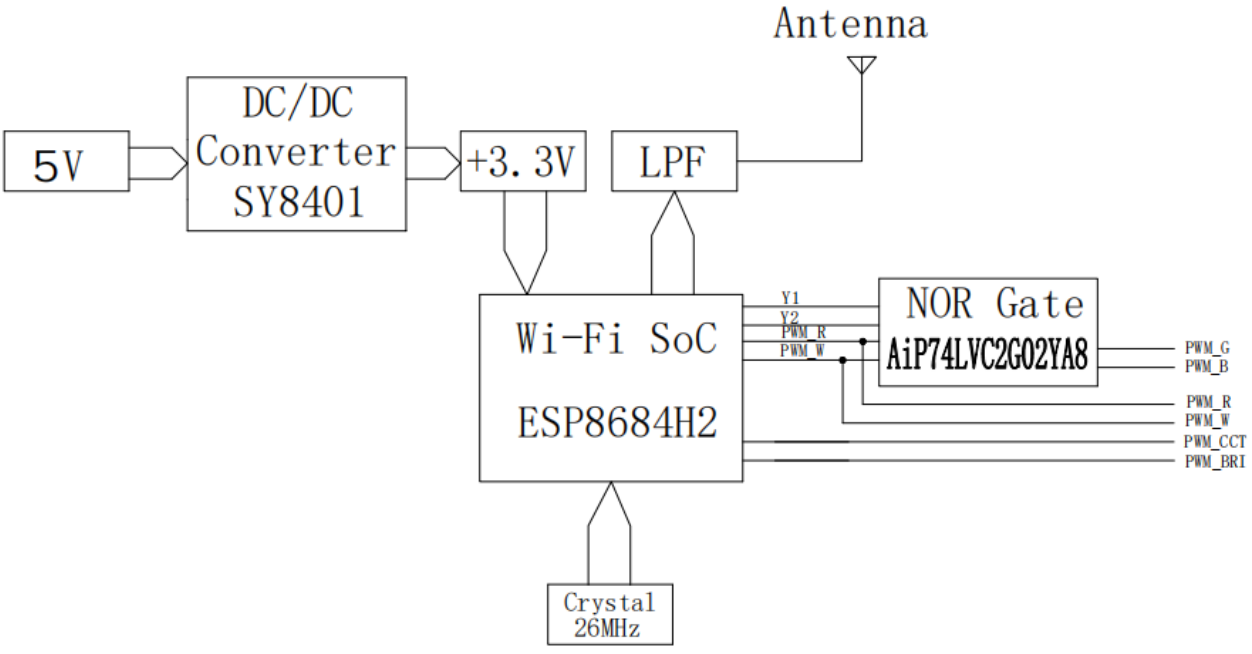
Circuit Principle Description

- ESP8684H2 module is compatible with IEEE 802.11 b/g/n (2.4GHz Wi-Fi)protocol, supports station mode , SoftAP mode and station + SoftAP mode. ESP8684H2 module is a 32-bit RISC-V single core processor, supports 20MHz bandwidths, and the data rate is up to 72.2Mbps. The power consumption of ESP8684H2 module is ultra low, it's specially designed for IoT products, the application field is intelligent home , industrial automation, consumer electronics, health care, intelligent agriculture and so on.

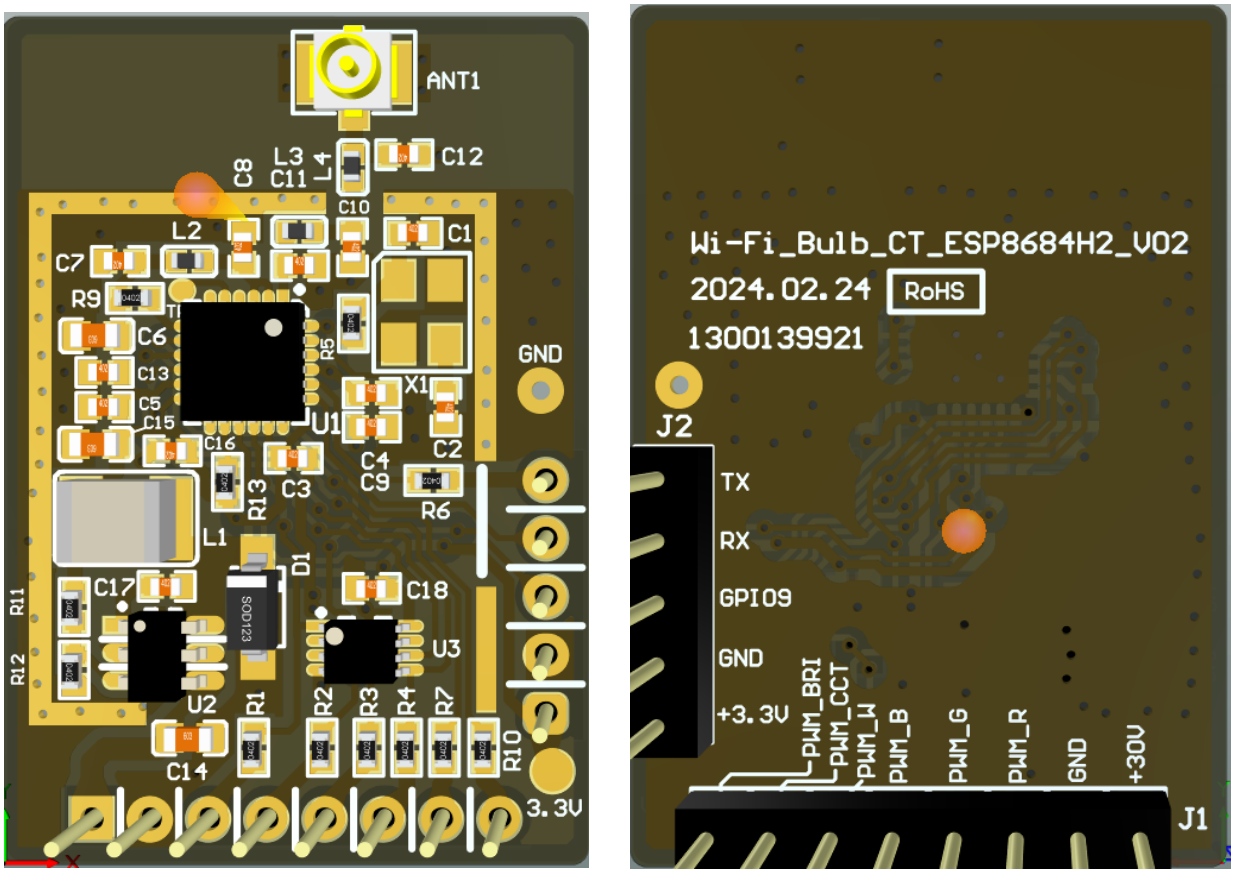
Feature

- Wi-Fi frequency range: 2412MHz ~2462MHz
- IEEE 802.11b/g/n, 0.4us data packet interval protection
- Transmission data rate
  11b: 1, 2, 5.5, 11Mbps@20MHz
  11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps@20MHz
  11n: MCS0-7, 72.2Mbps(Max)@20MHz
- RISC-V 32-bit single core processor, support 240MHz clock frequency
- 272KB PSRAM, 576KB ROM
- Operation voltage: 5V
- Dimensions: 24mm*20mm*1.0mm
- Operation temperature: - 40℃ to + 85℃
- Lead-free and RoHS compliant

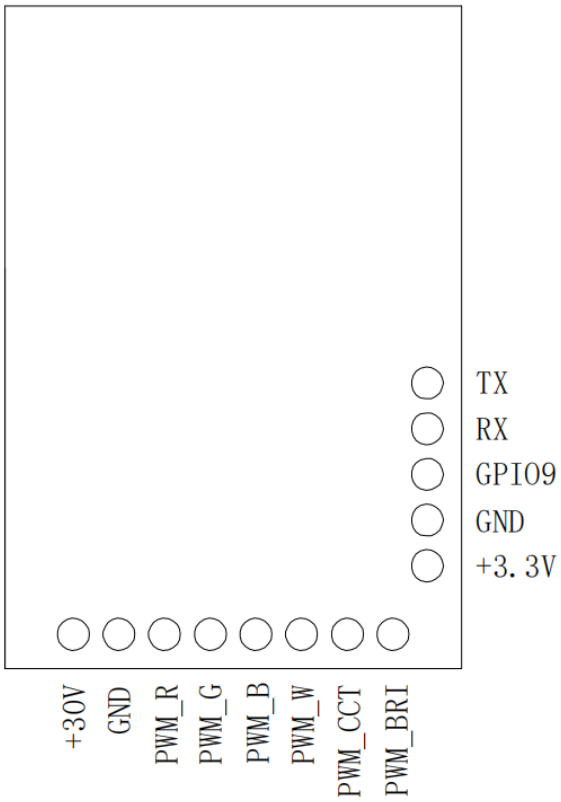
Block Diagram



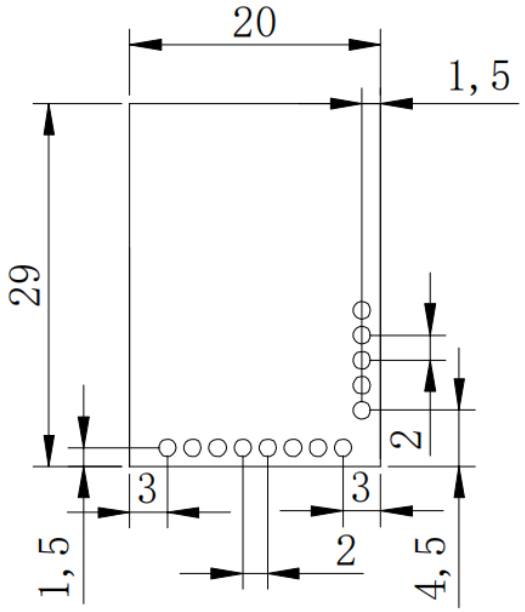
- **Module Illustration**



- **Pin Configurations**

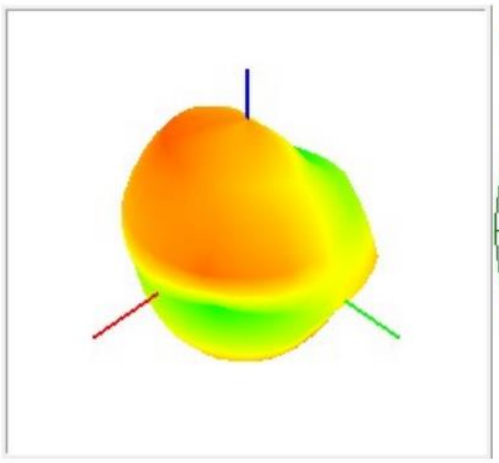


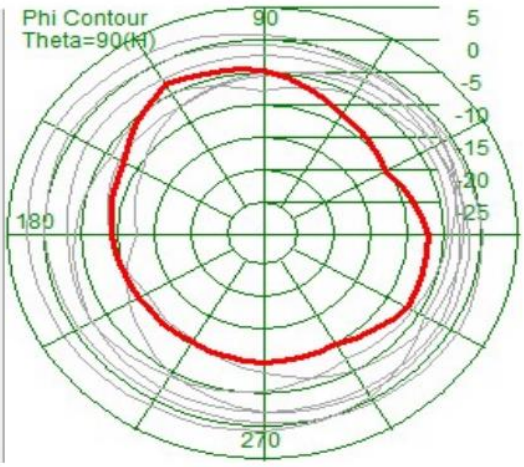
- **Outline Drawing**

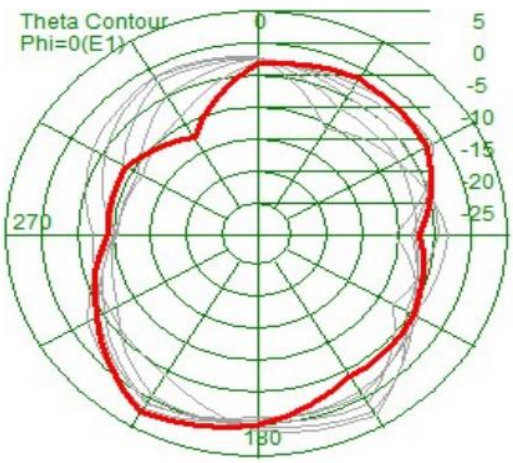


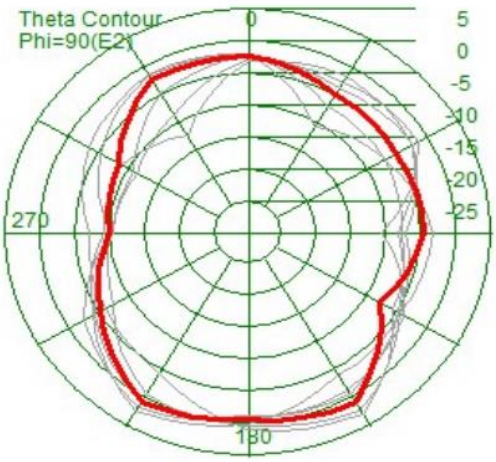
Unit:mm

- **Radiation pattern**









2.1

Operational use conditions

-20℃- 85℃

2.2

Antenna used

Antenna Type	Max. Antenna Gain
PCB Antenna	+2dBi

2.3

Trace antenna designs information

Trace boundary limit： 0.2mm

Thickness: 35um

Length:14mm

Width: 0.635mm

Shape: Meander PCB Antenna

Dielectric constant: 4.4

Relative permeability: 1.0

Dielectric loss tangent: 0.02

Impedance:50Ω

2.4

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.

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FCC regulatory compliance statement

§15.19

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 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: 2A4AE-ESP8684H". 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

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.

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.