

# ESP8266EX WiFiModule

## USER MANUAL

FOR OEM OR INTEGRATORS ONLY: This module is limited to OEM installation only and must not be sold to end-users.

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Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

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.

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## 1. Foreword

This manual mainly introduces how to use ESP8266-based SDK for Internet of Things, including virtual machine installation, development tool usage, SDK software development kit etc.

OEM integrators must be instructed to ensure that the end-user has no manual instructions to remove or install the device.

The end-user can not remove or install this module to any other devices.

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## 2. FCC RF exposure requirements

### 2.1. Standards and Regulatory Compliance

#### 2.1.1. Standards and certification

The EUT conforms to the following standards and certification requirements:

802.11 b/g/n

FCC

- 47 CFR Part 1 - RF radiation exposure limits
- 47 CFR Part 2 - Equipment authorization
- 47 CFR Part C - WIFI

#### 2.1.2. FCC certification requirements

According to the definition of mobile and fixed device is described in Part 2.1091(b), this device is a mobile device.

And the following conditions must be met:

1. The EUT is a mobile device; maintain at least a 20 cm separation between the EUT and the user's body and must not transmit simultaneously with any other antenna or transmitter.

2. The device is only for fixed operation mode. (A Class II Change would be required for near-body Host applications.)

3. A label with the following statements must be attached to the host end product: This device contains Tx FCC ID: 2AC7Z-ESP8266EX.

4. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed:

- 802.11b band < 2.0 dBi
- 802.11g band <2.0 dBi

- 802.11n band <2.0 dBi

5. This module must not transmit simultaneously with any other antenna or transmitter

6. 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 the conditions 3 through 6 described 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.

For this device, OEM integrators must be provided with labeling instructions of finished products. Please refer to KDB784748 D01 v07, section 8. Page 6/7 last two paragraphs:

A certified modular has the option to use a permanently affixed label, or an electronic label. For a permanently affixed label, the module must be labelled with an FCC ID - Section 2.926 (see 2.2 Certification (labelling requirements) above). The OEM manual must provide clear instructions explaining to the OEM the labelling requirements, options and OEM user manual instructions that are required (see next paragraph).

For a host using a certified modular with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module: “Contains Transmitter Module FCC ID: 2AC7Z-ESP8266EX” or “Contains FCC ID: 2AC7Z-ESP8266EX” must be used. 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.

The user manual or instruction manual for an intentional or unintentional

radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

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 not expressly approved by the manufacturer could void the user's authority to operate the equipment.

### 2. 1. 3. FCC RF exposure requirements

1. Radiated transmit power must be equal to or lower than that specified in the FCC Grant of Equipment Authorization for FCC ID: 2AC7Z-ESP8266EX.

2. To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, maximum antenna gain (including cable loss) must not exceed:

- 802.11b band < 2.0 dBi
- 802.11g band < 2.0 dBi
- 802.11n band < 2.0 dBi

3. This module must not transmit simultaneously with any other antenna or transmitter.

4. To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is


responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. The **Espressif Systems** will provide guidance if needed.

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## 3. Download Tools

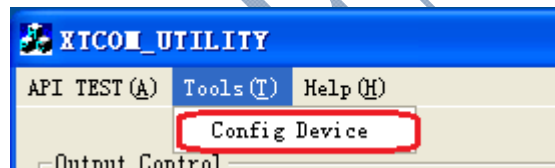
### 3.1. XTCOM\_UTIL



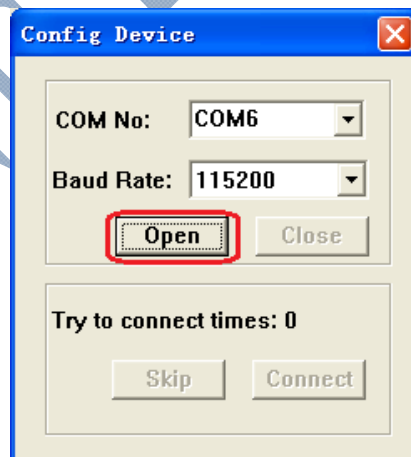
Double-click the icon  to run the download tool to download the compiled \*.bin files onto the SPI Flash on the ESP8266 motherboard.

Set the jumper on the motherboard as MTDO: 0, GPIO0: 0, GPIO2: 1, then it will enter download mode. Steps are as follows:

Step 1: set serial port

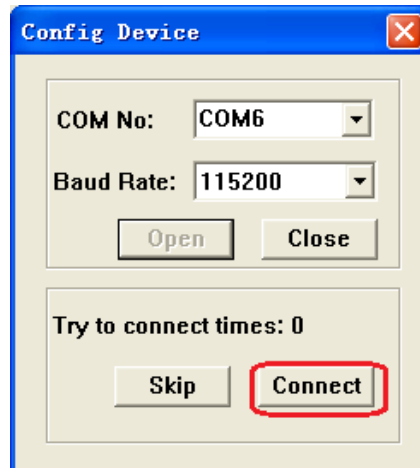


Step 2: select the right serial port number and open

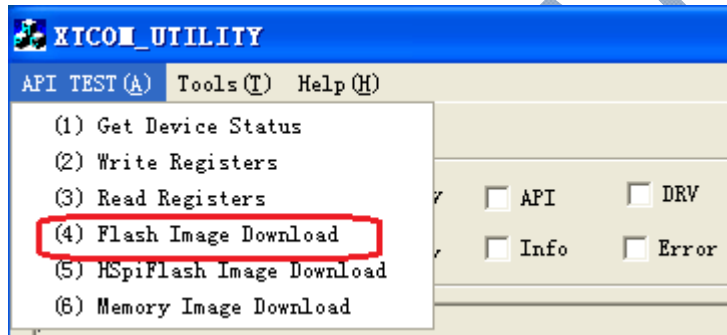


Step 3: connect

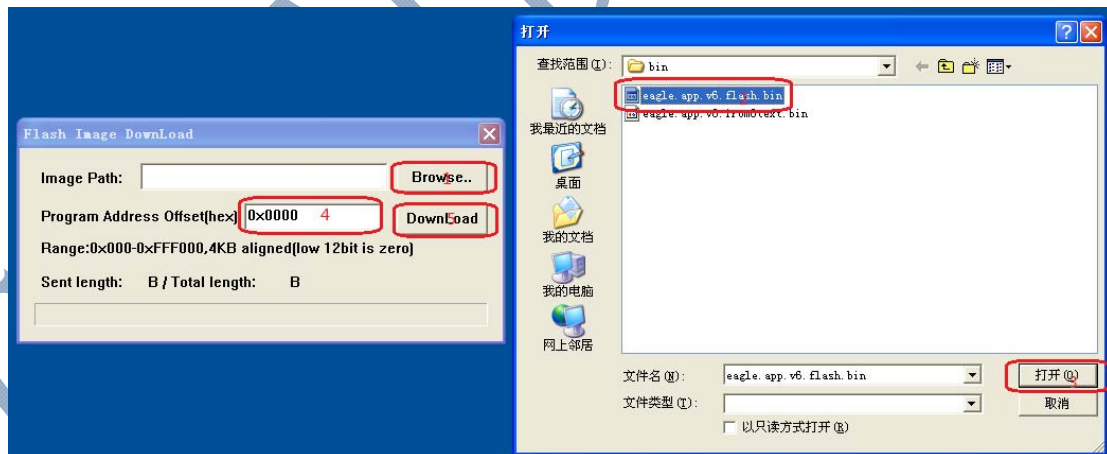




Step 4: download the image file



Step 5: select and download the bin file which you are going to burn into the flash



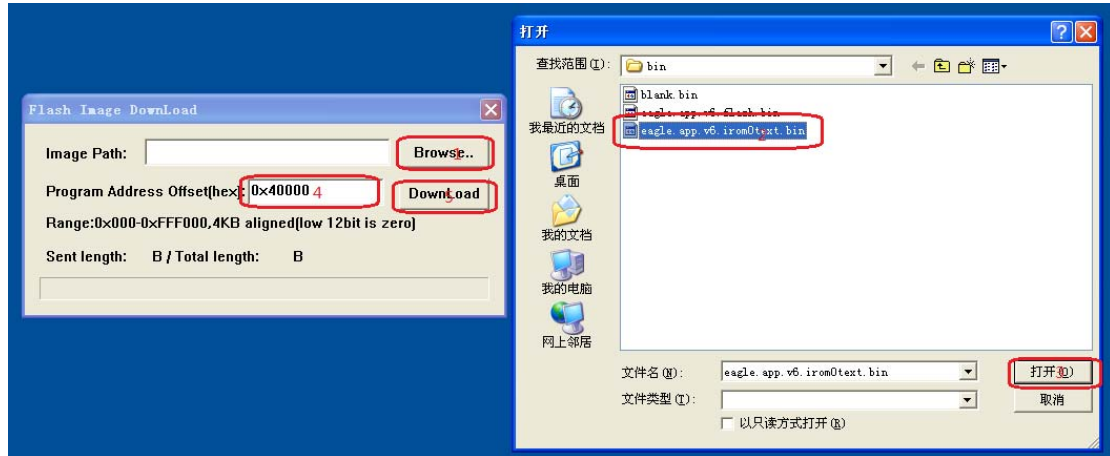
Note: Program Address Offset varies in accordance with bin file. For example, the corresponding Program Address Offset for eagle.app.v6.flash.bin is 0x0000. Please refer to bin directory descriptions in "4.2 Directory Structure".

Step 6: re-connect

After completion of Step 5, re-connect ESP8266 motherboard to power. Close

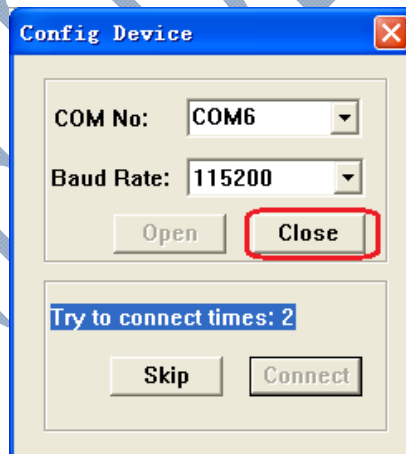
serial port and repeat Step 2 and Step 3.

Step 7: select and download next bin file which you are going to burn into the flash, for example, eagle.app.v6.irom0text.bin.



Note: the corresponding Program Address Offset for eagle.app.v6.irom0text.bin is 0x40000. Please refer to bin directory descriptions in "4.2 Directory Structure".

Step 8: close serial port



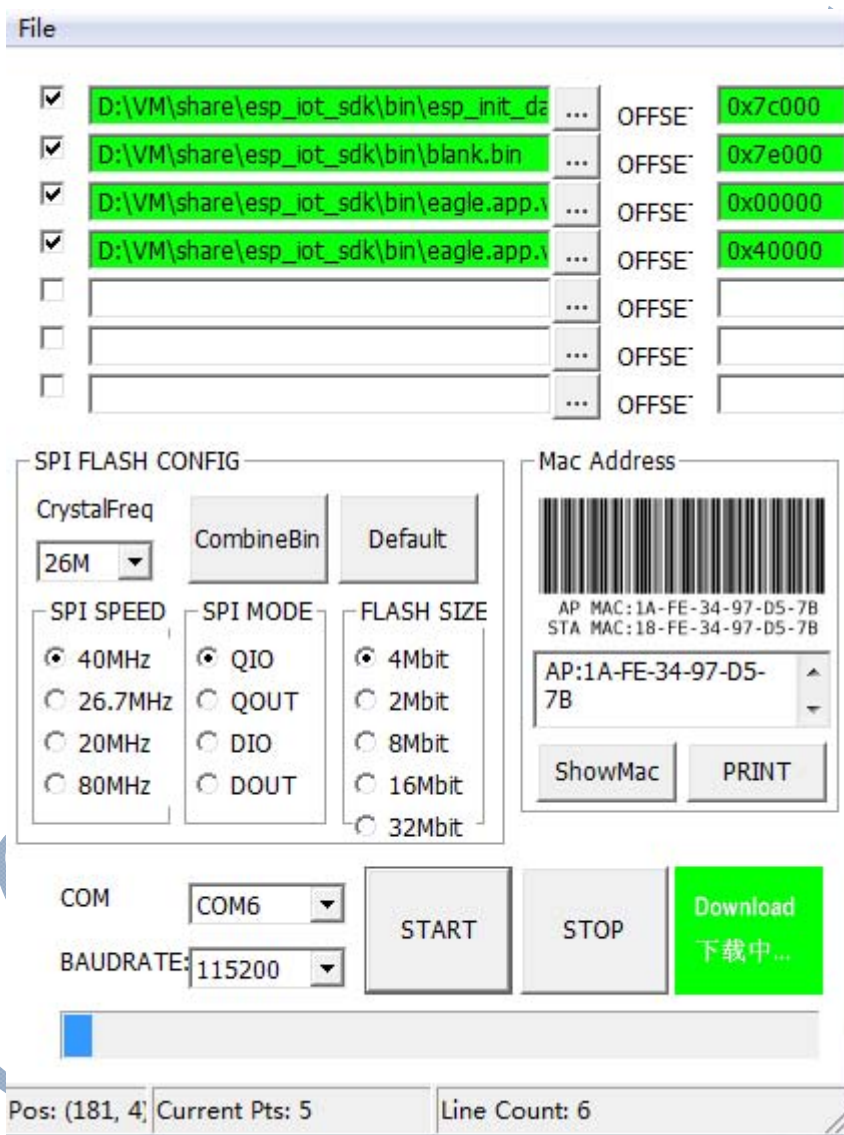
After the downloading, users can check and print relevant information with SecureCRT.

Set the jumper on the motherboard as MTDO: 0, GPIO0: 1, GPIO2: 1, then it will enter operations mode.

Note: please disconnect the power when setting the jumpers.

## 3.2. ESP\_FLASH\_DOWNLOAD

Espressif also provides the tool "ESP\_FLASH\_DOWNLOAD" for users to burn several bin files altogether at once, and download several complied \*.bin files at a time into the SPI Flash on the ESP8266 motherboard.



“ESP\_FLASH\_DOWNLOAD” introduction:

- (1) Bin-Select Area: Choose bins to burn, and burn them in corresponding address.
- (2) SPI FLASH CONFIG: Set config of spi flash. “CombineBin” merges all bins

selected above to one (target.bin). "Default" reset to the default config.

- (3) Mac Address: Mac address of ESP8266.

Also set the jumper on the motherboard as MTDO: 0, GPIO0: 0, GPIO2: 1, then it will enter download mode. Steps are as follows:

- (1) See the red boxes in the picture above, select the bin file to be burned ->fill in the path ->check burning options.
- (2) Set COM port and baud rate.
- (3) Click "START" to start downloading.
- (4) After the downloading, disconnect the power for the motherboard, and change the jumper into operation mode. Re-connect the power for operation. Set the jumper on the motherboard as MTDO: 0, GPIO0: 1, GPIO2: 1 for operating mode.

Note: please disconnect the power when setting the jumper.

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