



## WIS633-AP - WISAP Openwrt WiFi Router Modul

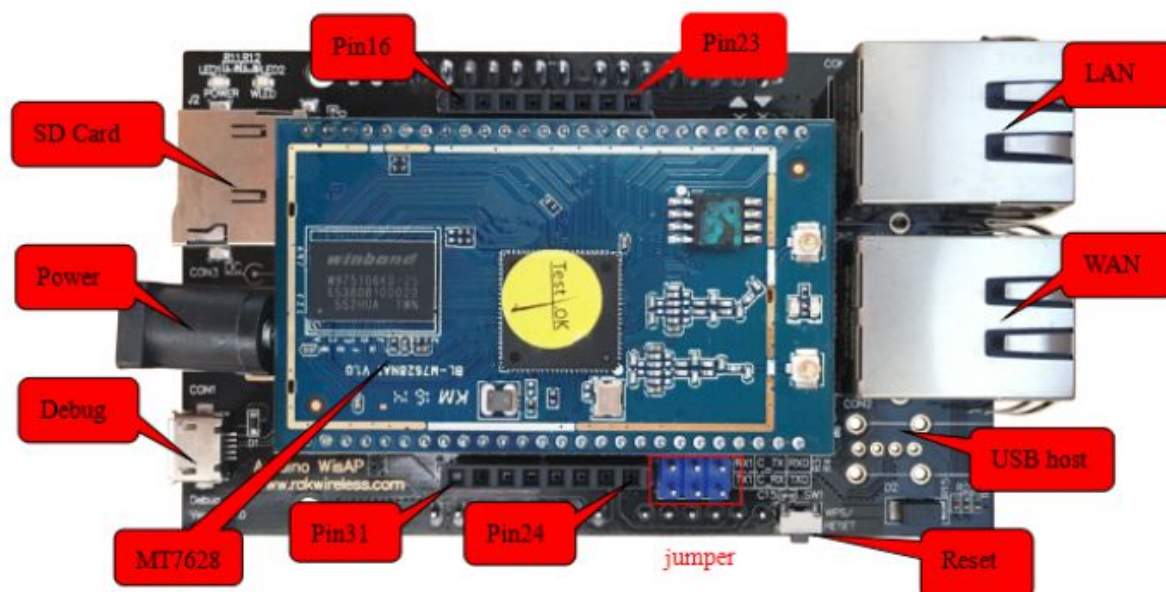
### Table of Contents

- [WisAP](#)
  - [1.Product introduction](#)
  - [2.Quick Start Demonstrate](#)
    - [2.1 Enter Debug Mode](#)
    - [2.2 Change wifi configure](#)
    - [2.3 Write firmware](#)
  - [3.Data download](#)
  - [4.Where to Buy](#)

## WisAP

### 1.Product introduction

WisAP-MT7628 includes a high performance cpu and high speed USB2.0 interface,it support IEEE 802.11n protocol .And you can use it as a simple router after burn openwrt.The module can compatible Arduino development board, so it's very suitable for developers.Join the IOT family and enjoy it !



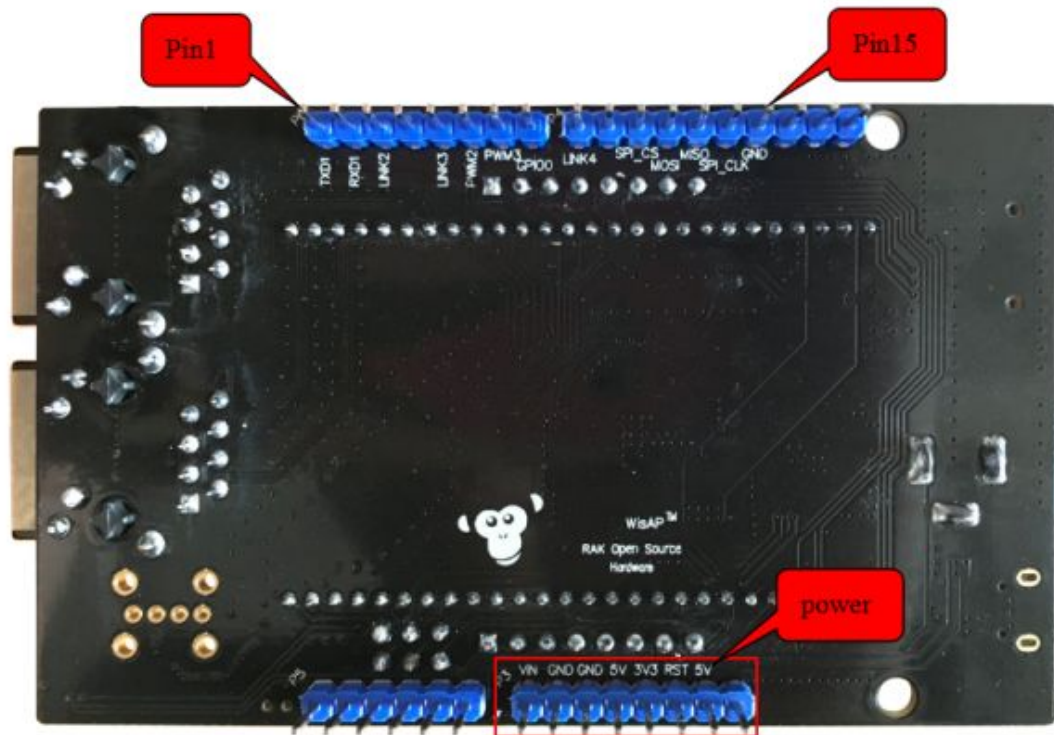
Jumper C\_TX — RXD and C\_RX — TXD, the CON1 as Debug port.

Jumper RX1 — C\_TX and TX1 — C\_RX, the CON1 as pass-through port.

Name	Silk printing	Description
MT7628 Development Board	\	Integrated hardware and software
Micro-USB	CON1	Debug(URT0)
Button	SW1	GPIO38
WAN	CON5	Wide Area Network Interface (RJ45)
LAN	CON4	Local Area Network Interface (RJ45)
Power	CON3	9V、12V
SD Card	J2	External Storage card
USB Host	CON2	USB Disk
WIFI	\	WIFI Antenna

I2S	P2	I2S
I2C	P2	I2C
SPI	P4	SPI
UART	P6	UART
Pin16	GND	GND
Pin17	GND	GND
Pin18	GND	GND
Pin19	2_RST	Cle device reset
Pin20	7_GPIO7	Reference clock output
Pin21	7_RST	10/100 PHY Port#3 TXOP3
Pin22	7_NINT	10/100 PHY Port#2 RXIP2
Pin23	2_NINT	10/100 PHY Port#1 RXIN1
Pin24	I2C_SDA	I2C data
Pin25	I2C_CLK	I2C clock
Pin26	I2S_CLK	I2S clock
Pin27	I2S_WS	I2S word select
Pin28	I2S_SDO	I2S data output
Pin29	I2S_SDI	I2S data input
Pin30	3V3	VDD33

Pin31	3V3	VDD33
-------	-----	-------



Pin No	NAME	Description
1	TXD1	UART1
2	RXD1	
3	LINK2	10/100M PHY Port#2 activity LED,JTAG_TMS
4	\	\
5	LINK3	10/100M PHY Port#2 activity LED,JTAG_CLK
6	PWM2	PWM
7	PWM3	PWM
8	GPIO0	GPIO

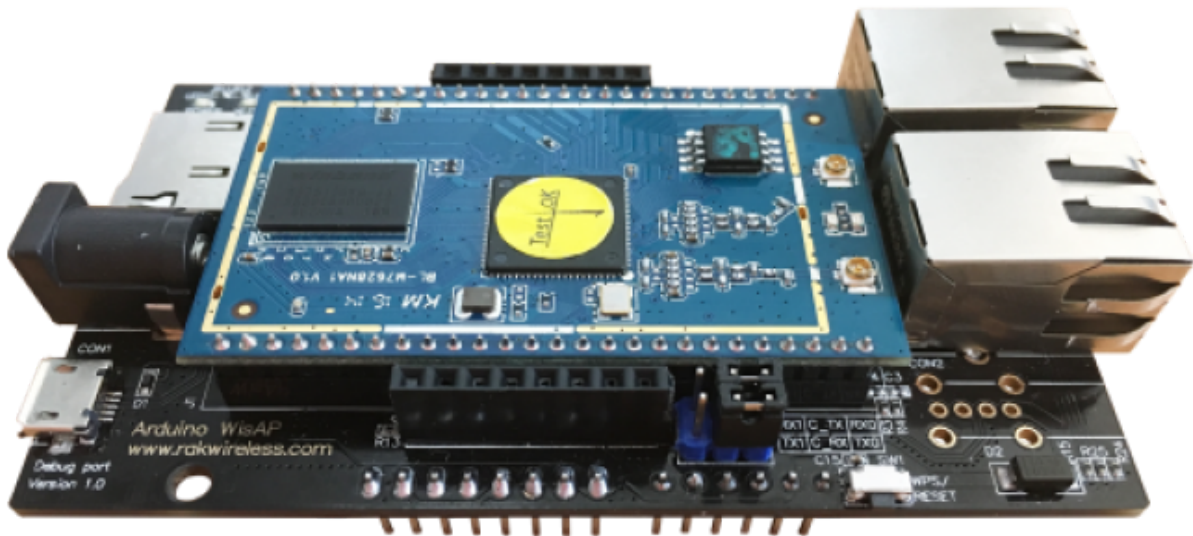
9	LINK4	10/100M PHY Port#2 activity LED,JTAG_TRST_N
10	\	\
11	SPI_CS	SPI chip select 1
12	MOSI	SPI master input/slave output
13	MISO	SPI master output/slave input
14	SPI_CLK	SPI clock
15	GND	GND

## 2.Quick Start Demonstrate

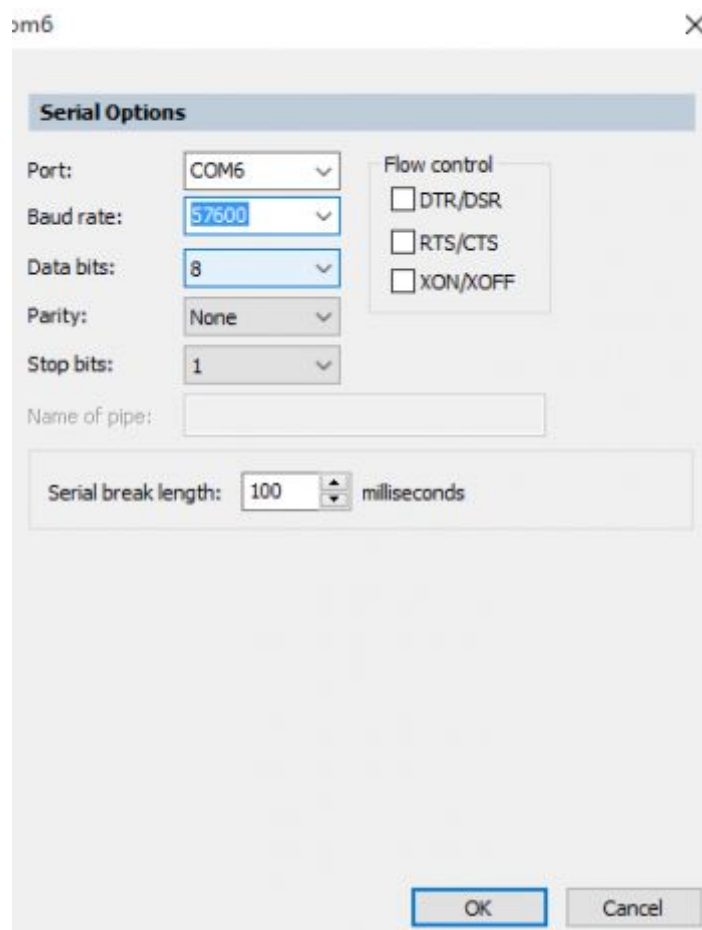
This module can be used on the power,The default SSID is WisAP, No password.You can use the module as a regular router.

### 2.1 Enter Debug Mode

1.Setting jumpers short C\_RX — TX0 and C\_TX — RX0.



2. Through the CON1 port and the computer module to connect up, open the terminal on the computer tools (such as SecureCRT), set the baud rate of 57600, the specific settings as shown



below :

3. Then the module power, in the terminal tool will print module initialization information, shortly after the module will start to complete, resulting in a wireless network called WisAP, the initial information as shown below :

```
12.985530] usbcore: registered new interface driver ums-freecom
12.999860] usbcore: registered new interface driver ums-isd200
13.013578] usbcore: registered new interface driver ums-jumpshot
13.027517] usbcore: registered new interface driver ums-karma
13.041532] usbcore: registered new interface driver ums-sddr09
13.055276] usbcore: registered new interface driver ums-sddr55
13.069234] usbcore: registered new interface driver ums-usbata
13.102641] xt_time: kernel timezone is -0000
13.124951] PPP generic driver version 2.4.2
13.136517] NET: Registered protocol family 24
16.233241] rt3050-esw 10110000.esw: link changed 0x00
19.608575] rt3050-esw 10110000.esw: link changed 0x01
20.165757] rt3050-esw 10110000.esw: link changed 0x03
20.263872] device eth0 entered promiscuous mode
20.282971] device eth0.1 entered promiscuous mode
20.316177] br-lan: port 1(eth0.1) entered forwarding state
20.327321] br-lan: port 1(eth0.1) entered forwarding state
22.320782] br-lan: port 1(eth0.1) entered forwarding state
23.748839] IPv6: ADDRCONF(NETDEV_UP): wlan0: link is not ready
23.859876] device wlan0 entered promiscuous mode
23.881135] IPv6: ADDRCONF(NETDEV_CHANGE): wlan0: link becomes ready
23.894040] br-lan: port 2(wlan0) entered forwarding state
23.905015] br-lan: port 2(wlan0) entered forwarding state
25.900731] br-lan: port 2(wlan0) entered forwarding state
40.603387] random: nonblocking pool is initialized
```

Serial: COM6, 57600 47. 1 47 Rows, 86 Cols Xterm CAP: NUM





```
option key ____ set wifi password (8 bytes or more)
.....
```

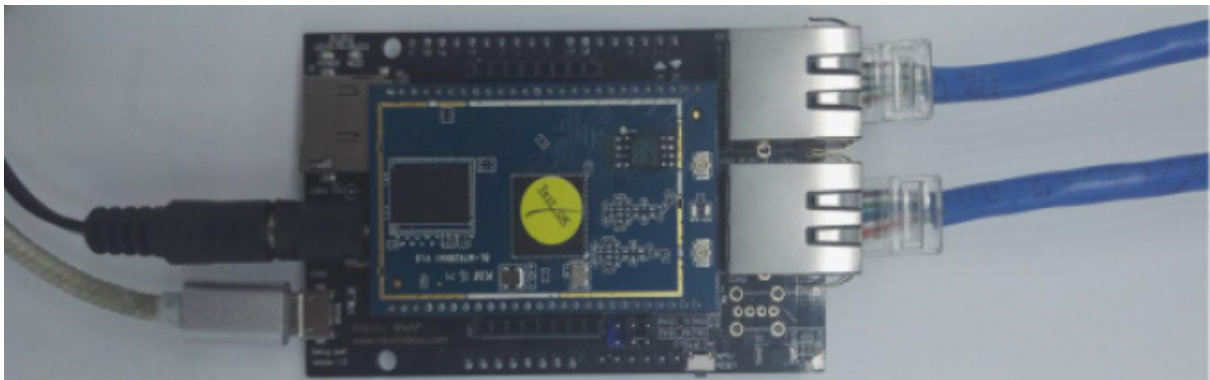
3.If you modify the complete, you can click ESC to exit the edit mode on the keyboard, and then type “:wq” can save the configuration and then exit the configuration page.

4.Finally, restart the module, the module will run the modified parameters.

## 2.3 Write firmware

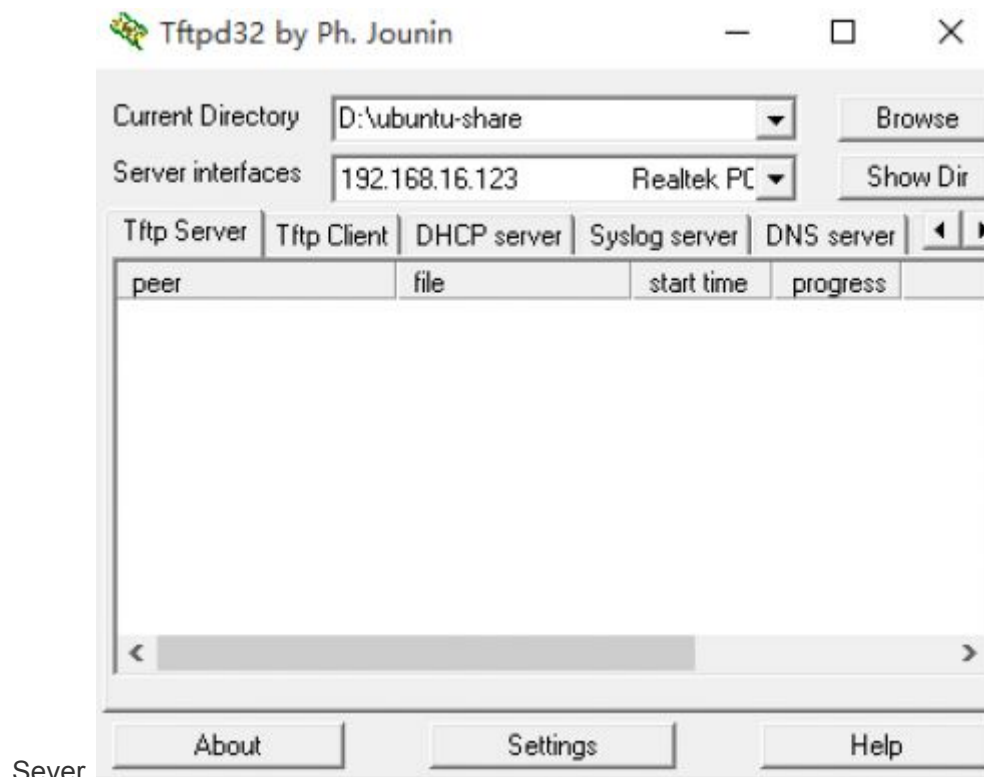
1.The steps to write the firmware and enter the Debug mode is the same, need to be the module's Debug serial port and the computer's serial port to connect.

2.Through the twisted pair to the module's LAN port and the computer together, the module's WAN port and network port together.





3. Open the computer Tftpd tool, select the firmware address, and then find the firmware, click Copy. And then in the Server interfaces box, select the suffix has Realtek words to establish Tftp



Sever.

4. At this point the module power, The terminal tool prints the following information :

```

U-Boot 1.1.3 (Dec 28 2015 - 18:52:38)

Board: Ralink APSoC DRAM: 32 MB
relocate_code Pointer at: 81fb0000
*****
Software System Reset Occurred
*****
flash manufacture id: ef, device id 40 17
find flash: W25Q64BV
*** Warning - bad CRC, using default environment

-----
Ralink UBoot Version: 4.3.0.0
-----
ASTC 7628 MP (PortS<-None)
DRAM component: 256 Mbits DDR, width 16
DRAM bus: 16 bit
Total memory: 32 Mbytes
Flash component: SPI Flash
Date:Dec 28 2015 Time:18:52:38

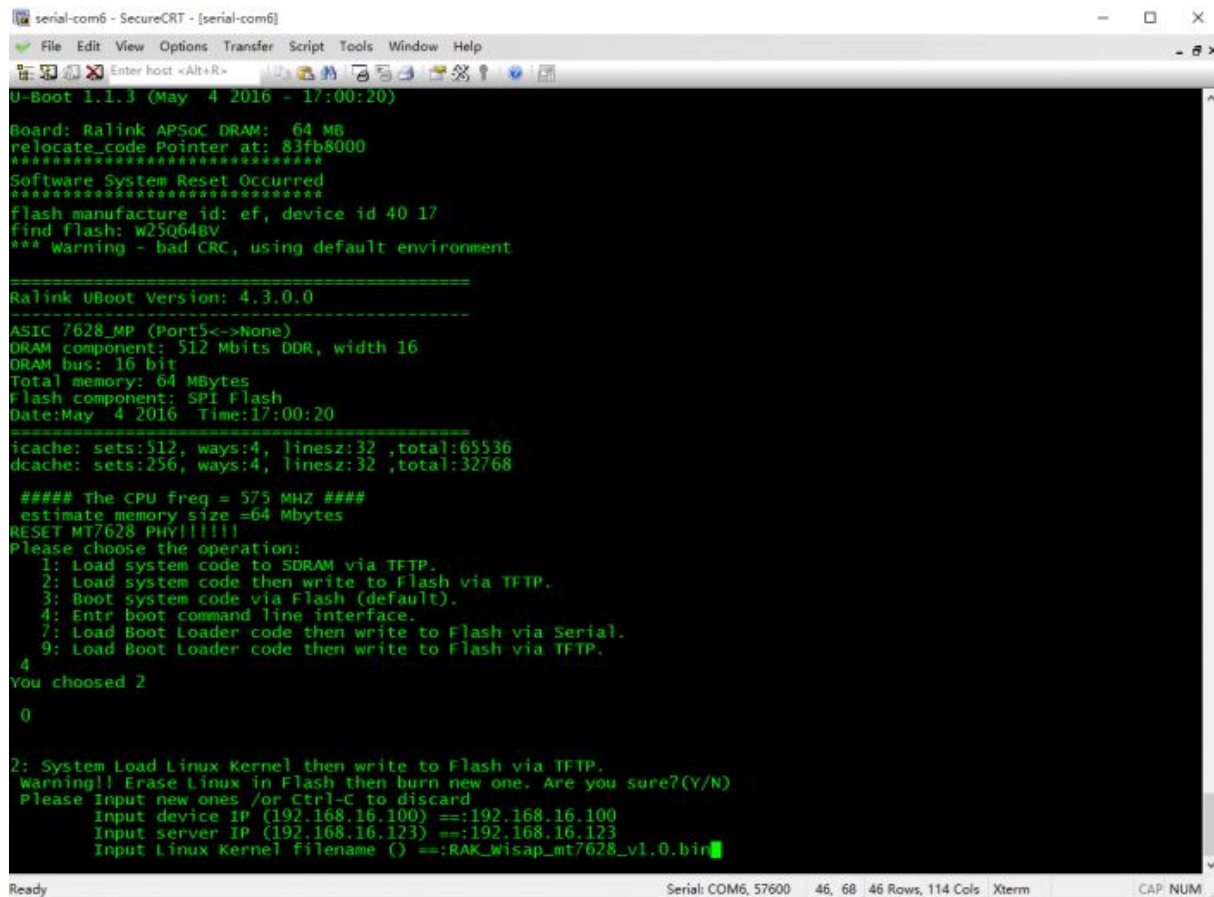
icache: sets:512, ways:4, linesz:32 ,total:65536
dcache: sets:256, ways:4, linesz:32 ,total:32768

#### The CPU freq = 575 MHz ####
estimate memory size =32 Mbytes
RESET MT7628 PHY!!!!!!
Please choose the operation:
  1: Load system code to SDRAM via TFTP.
  2: Load system code then write to Flash via TFTP.
  3: Boot system code via Flash (default).
  4: Entr boot command line interface.
  7: Load Boot Loader code then write to Flash via Serial.
  9: Load Boot Loader code then write to Flash via TFTP.

```

5. Then You need to enter “2” quickly and the module will return “2: System Load Linux Kernel then write to Flash via TFTP. Warning !! Erase Linux in Flash then burn new one. Are you sure? (Y / N)”. Enter “y” at this time. Then you will be prompted to enter the IP address of the device, you can view the computer network information, gateway entry is the module IP, enter the

complete and click Enter. Will be prompted to enter the server's IP, the IP address is the computer's IP address. Enter the keyboard and click Enter.



```
serial-com6 - SecureCRT - [serial-com6]
File Edit View Options Transfer Script Tools Window Help
Enter host <Alt+R>
U-Boot 1.1.3 (May  4 2016 - 17:00:20)

Board: Ralink APSoC DRAM:  64 MB
relocate_code Pointer at: 83fb8000
*****
Software System Reset Occurred
*****
flash manufacture id: ef, device id 40 17
find flash: w25q64bv
*** Warning - bad CRC, using default environment

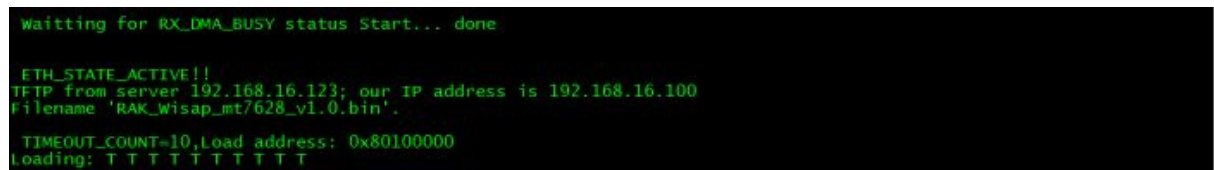
=====
Ralink UBoot Version: 4.3.0.0
=====
ASIC 7628_MP (Port5<->None)
DRAM component: 512 Mbits DDR, width 16
DRAM bus: 16 bit
Total memory: 64 MBytes
Flash component: SPI Flash
Date:May  4 2016 Time:17:00:20

=====
icache: sets:512, ways:4, linesz:32 ,total:65536
dcache: sets:256, ways:4, linesz:32 ,total:32768

#### The CPU freq = 575 MHZ ####
estimate memory size =64 Mbytes
RESET MT7628 PHY!!!!!!
Please choose the operation:
  1: Load system code to SDRAM via TFTP.
  2: Load system code then write to Flash via TFTP.
  3: Boot system code via Flash (default).
  4: Entr boot command line interface.
  7: Load Boot Loader code then write to Flash via Serial.
  9: Load Boot Loader code then write to Flash via TFTP.
  4
You choosed 2
  0

2: System Load Linux Kernel then write to Flash via TFTP.
Warning!! Erase Linux in Flash then burn new one. Are you sure?(Y/N)
Please Input new ones /or Ctrl-C to discard
  Input device IP (192.168.16.100) ==:192.168.16.100
  Input server IP (192.168.16.123) ==:192.168.16.123
  Input Linux Kernel filename () ==:RAK_wisap_mt7628_v1.0.bin
```

6.The module will then automatically download the firmware from the server. If this process occurs “TTTTTT”. It indicates that writing to the firmware failed. Then you need to repeat the above steps to re-write the firmware.



```
Waiting for RX_DMA_BUSY status Start... done

ETH_STATE_ACTIVE!!
TFTP from server 192.168.16.123; our IP address is 192.168.16.100
Filename 'RAK_wisap_mt7628_v1.0.bin'.

TIMEOUT_COUNT=10,Load address: 0x80100000
Loading: T T T T T T T T T T
```

7.If this process occurs “#####”. It means that the firmware is being written, just wait for the firmware to write successfully. After the firmware is successfully written, the module will restart

automatically.

```

#####
#####
#####
#####
#####
#####
#####Got ARP REQUEST, return our IP
#####
#####
##
done
Bytes transferred = 3670020 (380004 hex)
NetBootFileXfersize= 00380004
.....
Ready                                     Serial: COM6, 57600    46, 54   46 Rows, 114 Cols   Xterm      CAP NUI

```

### 3.Data download

## Use manual

- [Arduino WisAP EVB Quick Start Guide](#)
- [WisAP Schematic diagram](#)

## PCB File

- WisAP PCB File
-