CUBIEBOARD
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Cubieboard2 Debian User Manual

RTL8188EUS-Wireless Network Card

Website:http://cubieboard.org/
Support: support@cubietech.com

| Version	Author	Modification	Check
V-0.1	A.K	Init version	

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1. Introduction

In order to use the Wireless Internet with Cubieboard1、Cubieboard2 or Cubieboard-dualcard which didn't load any Wifi module, Cubietech recommend one of usb wifi module, RTL8188EUS. This is a stable module used on A10 and A20. The document could be used as the module guidance document, which includes how to use the module connected with WIFI and how to open the wifi hotspot.

2. Hardware requirements

- Cubieboard2 x1

- RTL8188EUS Type B.

- TF Card>=4G,class 10 Suggeted

- Mouse and keyboard、HDMI display or TTL serial line

- The board of DC power supply and WIFI connection verification environment
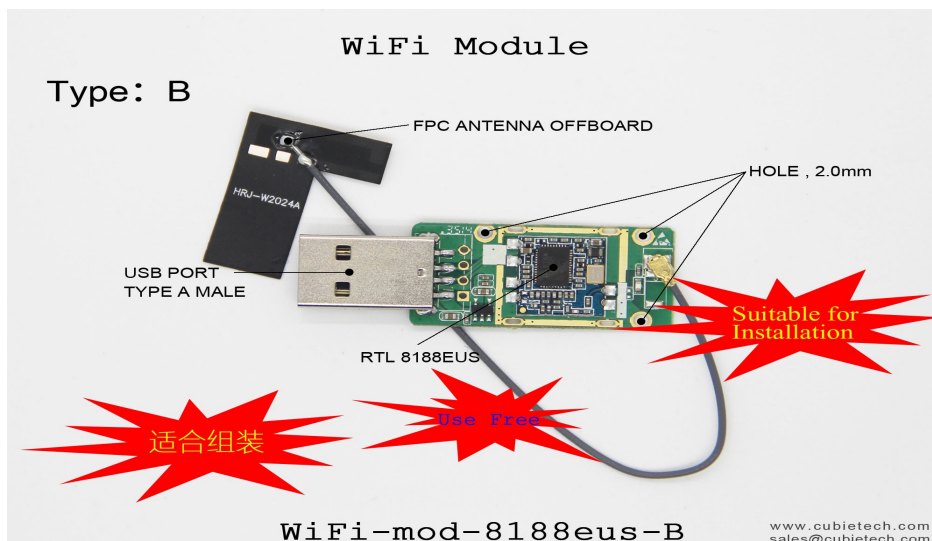
3. Sortware requirements

- The debian-server release firmware, such as debian-server-cb2-datacard-v1.2.img. Only use to connect the WIFI, more CB1、CB2 linux firmware can support this function. If using to open wifi hotspot, please install the mentioned firmware on this document, or use other firmware to install the AP service according to the document.

- Software packages support, wifi hotspot features need to transplant the hostapd service.
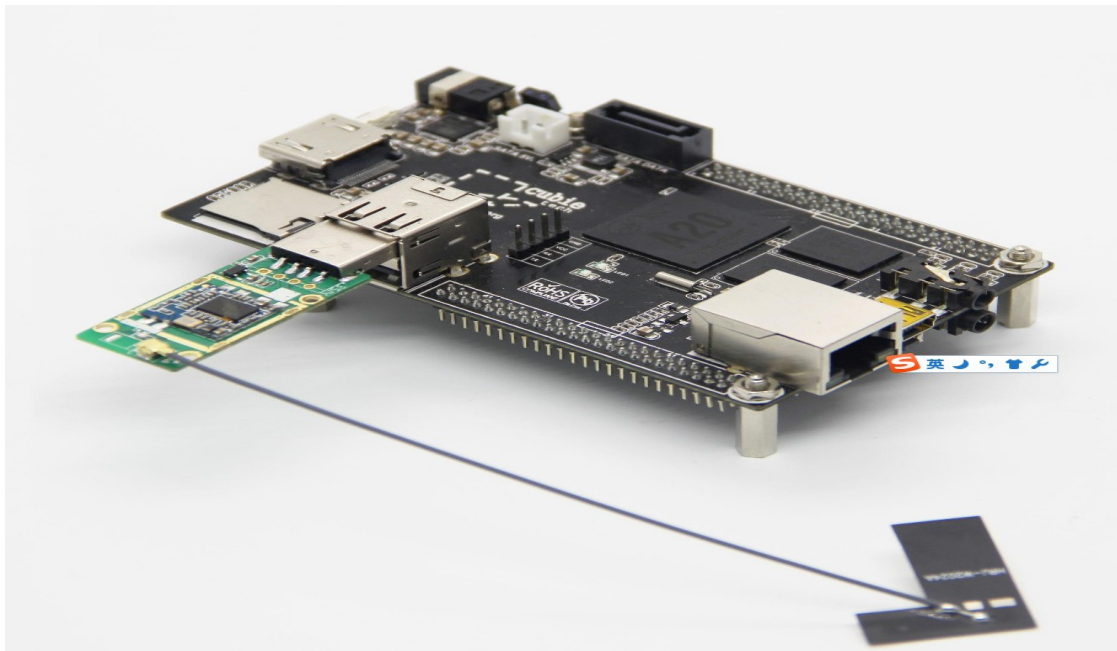
4. Install firmware

This firmware is a fastener, can use the 'dd' linux command or windows win32write tool to install the firmware to TF card.

Firmware download： http://dl.cubieboard.org/modules/RTL8188EUS/image/cb2-debian/

5. Wireless Internet

5.1 Load module

Accessing module, then checking whether the driver is loaded successfully

$ sudo lsmod

find 8188eu driver module

```
root@cubieboard:~# lsmod
Module                   Size  Used by
cpufreq_stats            2700  0
mali                   108533  0
ump                     51692  1 mali
lcd                      3717  0
pwm_sunxi                9110  0
gpio_sunxi               8823  0
8188eu                 495596  0
```

If the driver has been loaded, to be sure whether the wireless network has been establishing：

$ sudo ifconfig -a

```
wlan3     Link encap:Ethernet  HWaddr 00:e0:4c:a0:44:5e
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

5.2 Scanning around the wireless network

$ sudo ifconfig wlan3 up

$ sudo iwlist wlan3 scan

```
Cell 09 - Address: C8:3A:35:10:7F:60
          ESSID:"jordan"
          Protocol:IEEE 802.11bgn
          Mode:Master
          Frequency:2.427 GHz (Channel 4)
          Encryption key:on
          Bit Rates:300 Mb/s
          Extra:rsn_ie=30140100000fac040100000fac040100000fac020c00
          IE: IEEE 802.11i/WPA2 Version 1
              Group Cipher : CCMP
              Pairwise Ciphers (1) : CCMP
              Authentication Suites (1) : PSK
          Quality=80/100  Signal level=-73 dBm
```

5.3 Configure wireless network

Configuring wireless network,the first backuping your eth0 configuration

$ cd /etc/network/

$ sudo cp interfaces interfaces-eth0

Using "vim" to configure wifi

$ vim interfaces

interfaces(5) file used by ifup(8) and ifdown(8)

#auto lo eth0

#allow-hotplug eth0

#iface lo inet loopback

#iface eth0 inet dhcp

auto wlan3

iface wlan3 inet dhcp

pre-up ip link set wlan3 up

pre-up iwconfig wlan3 essid ******

wpa-ssid ******

wpa-psk ********

Save and exit

Service network restart

$ /etc/init.d/networking restart

Check whether the IP will be assigned

$ sudo ifconfig

```
root@cubieboard:/etc/network#
root@cubieboard:/etc/network# ifconfig
wlan3     Link encap:Ethernet  HWaddr 00:e0:4c:a0:44:5e
          inet addr:192.168.3.123  Bcast:192.168.3.255  Mask:255.255.255.0
          inet6 addr: fe80::2e0:4cff:fea0:445e/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:15 errors:0 dropped:22 overruns:0 frame:0
          TX packets:22 errors:0 dropped:2 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:3342 (3.2 KiB)  TX bytes:3596 (3.5 KiB)

root@cubieboard:/etc/network#
```

5.4 Test wireless network

$ ping google.com

```
root@cubieboard:/etc/network#
root@cubieboard:/etc/network# ping google.com
PING google.com (173.194.127.37) 56(84) bytes of data.
64 bytes from hkg03s10-in-f5.1e100.net (173.194.127.37): icmp_req=1 ttl=52 time=77.6 ms
64 bytes from hkg03s10-in-f5.1e100.net (173.194.127.37): icmp_req=2 ttl=52 time=20.6 ms
64 bytes from hkg03s10-in-f5.1e100.net (173.194.127.37): icmp_req=3 ttl=52 time=30.9 ms
64 bytes from hkg03s10-in-f5.1e100.net (173.194.127.37): icmp_req=4 ttl=52 time=15.1 ms
64 bytes from hkg03s10-in-f5.1e100.net (173.194.127.37): icmp_req=5 ttl=52 time=361 ms
64 bytes from hkg03s10-in-f5.1e100.net (173.194.127.37): icmp_req=6 ttl=52 time=140 ms
^C
--- google.com ping statistics ---
```

6.WiFi hotspot

WiFi Hotspot is a super easy solution to turn your cubieboard2 into a portable Wi-Fi hotspot, wirelessly sharing your internet to your laptop,notebook, mobile phone, etc. In order to guarantee the Ethernet normal connection, opening the hostapd service and building a hot.

The following are the specific steps.

6.1 Open Ethernet network

Reduction of Ethernet network configuration

$ cd /etc/network/

$ sudo cp interfaces-eth0 interfaces

```
# interfaces(5) file used by ifup(8) and ifdown(8)
auto lo eth0
allow-hotplug eth0
iface lo inet loopback
iface eth0 inet dhcp
#auto wlan0
#iface wlan0 inet dhcp
#pre-up ip link set wlan0 up
#pre-up iwconfig wlan0 essid your-ssid-here
#wpa-ssid your-ssid-here
#wpa-psk your-passwd-here
```

reboot Cubieboard ,and check whether the work of Ethernet

$ sudo ifconfig

the default network is eth0

6.2 View wireless network

When the access of different module, wireless network name will be different, generally is wlan2, my hand is wlan3

$ sudo ifconfig wlan3 up

If the open failed, please input other wlanx again, until you find the wlanx wireless network

$ sudo config

```
wlan3     Link encap:Ethernet  HWaddr 00:e0:4c:a0:44:5e
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

6.3 Configure the WiFi hotspot

6.3.1 Modify hostapd.conf

This code relates to the wireless network name, wifi hotspot name and wifi hotspot password

$ vim /etc/hostapd/hostapd.conf

```
interface=wlan3
driver=rtl871xdrv
ssid=cubieboard2-ap
channel=1
wmm_enabled=0
```

wpa=2

wpa_passphrase=cubieboard

wpa_key_mgmt=WPA-PSK

wpa_pairwise=TKIP

rsn_pairwise=CCMP

auth_algs=1

macaddr_acl=0

Save and exit

6.3.2 Modify dnsmasq.conf

$vim /etc/dnsmasq.conf

Add the following configuration at the end, Ctrl+G can jump to the end of the file

The wireless network is modified as the current wireless network

#Name:Default

#Type:DNSMASQ

interface=wlan3

dhcp-range=192.168.0.2,192.168.0.255,12h;

server=/www.google.com/8.8.8.8

Save and exit
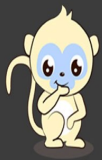
6.3.3 Modify the startup script

The wireless network is modified as the current wireless network

$ cd /home/cubie/work/rtl8188eus

$ vim start-ap.sh

#!/bin/bash

sysctl net.ipv4.ip_forward=1

iptables -t nat -A POSTROUTING -o eth0 -j MASQUERADE

ifconfig wlan3 192.168.0.1 netmask 255.255.255.0

Save and exit

6.3.4 Start WiFi hotspot

$ sudo chmod +x start-ap.sh

$ sudo ./start-ap.sh

6.4 Test WiFi hotspot

The default wifi hotspot name is cubieboard2-ap,password is cubieboard