



CUBIEBOARD
<http://cubieboard.org>

Cubieboard1 Android RTL8188EUS Module Debugging

Cubieboard RTL8188EUS

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Version	Author	Modification	Check
V-0.1-20150121	Payne	Init version	



Table of Contents

1. Abstract.....	4
2. Hardware requirements	4
3. Software requirements.....	4
4. Cubieboard Android RTL8188EUS Development.....	4
4.1. Achieve Wireless access function.....	4
4.1.1. Configure the kernel.....	4
4.1.2. Modify the BoardConfig.mk.....	8
4.2. Compile the kernel.....	9
4.2.1. Compile the kernel.....	9
4.2.2. Compile.....	9
4.2.3. pack after completed.....	10
4.3. Install system	10
4.4. rtl8188eus Module file.....	10
4.4.1. rtl8188eus driver code.....	10
4.4.2. wifi.c	10

1. Abstract

The document is based on the development that Cubieboard1 rtl8188eu wireless USB WiFi module to realize the function of wireless. The main is to modify the BoardConfig.mk and configure the kernel to support rtl8188eu, the default is that kernel configured.

2. Hardware requirements

- Cubieboard1
- Cubieboard WiFi-mod-8188eus
- A HDMI cable, network cable
- A mouse, keyboard and display
- A Ubuntu 12.04 system PC

3. Software requirements

SDK : <http://dl.cubieboard.org/model/commom/android-source/a10/>

4. Cubieboard Android RTL8188EUS Development

4.1. Achieve function of Wireless

4.1.1. Configure the kernel

Copy the file of the kernel configuration to kernel root directory and changed the name as .config.

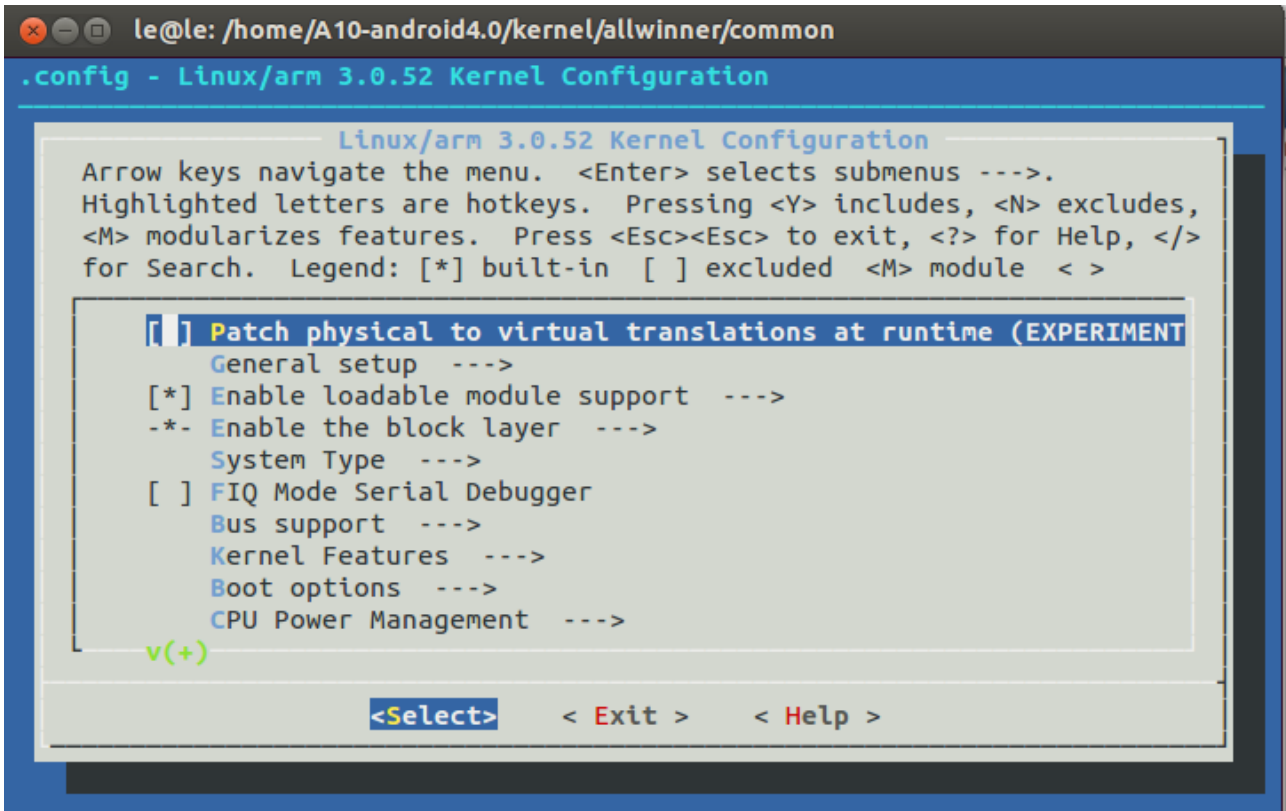
As below:

```
le@le:/home/A10-android4.0/kernel/allwinner/common$ cp arch/arm/configs/cubieboard_defconfig .config
```

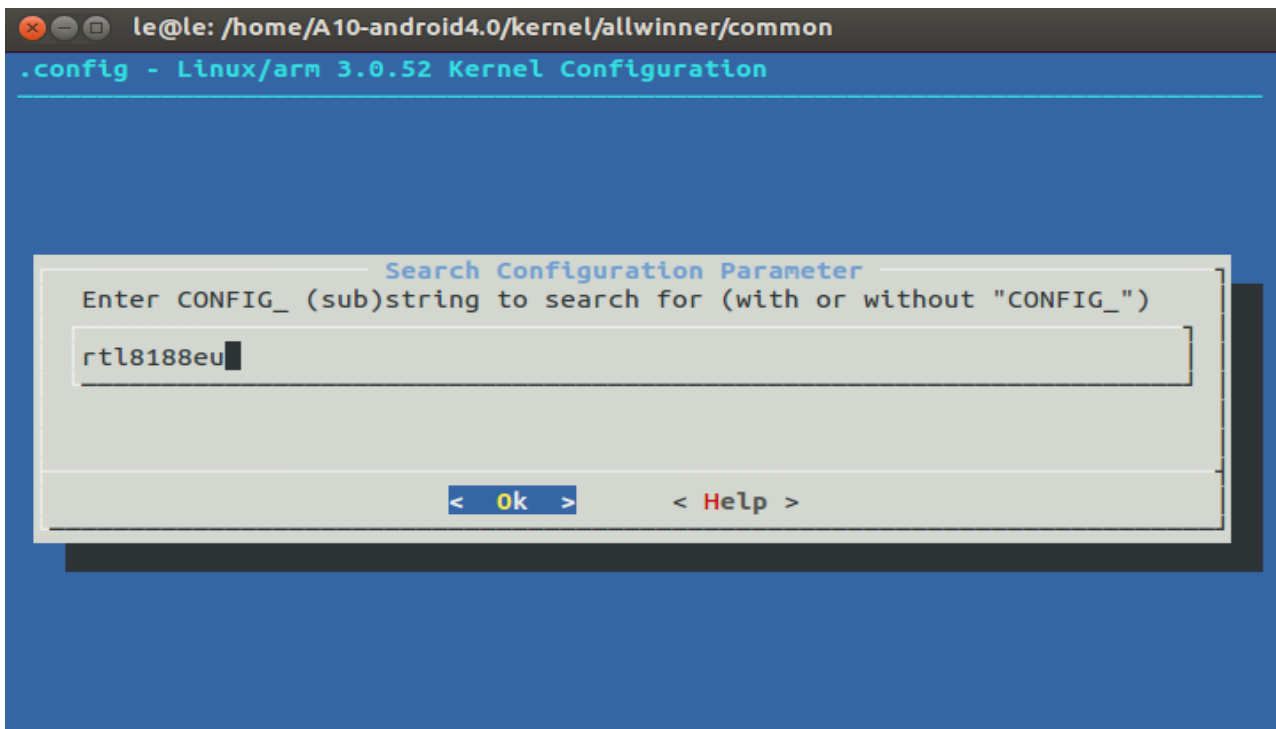
Open the interface of kernel configuration

```
le@le:/work/A10-android4.0/kernel/allwinner/common$  
le@le:/work/A10-android4.0/kernel/allwinner/common$ sudo make ARCH=arm menuconfig
```

AS follow:



Pressing the "/" to find the location of the rtl8188eu on the keyboard



Enter, look below:

```

le@le: /home/A10-android4.0/kernel/allwinner/common
.config - Linux/arm 3.0.52 Kernel Configuration

Search Results

Symbol: RTL8188EU [=m]
Type : tristate
Prompt: Realtek 8188E USB WiFi
Defined at drivers/net/wireless/rtl8188eu/Kconfig:1
Depends on: NETDEVICES [=y] && WLAN [=y] && USB [=y]
Location:
  -> Device Drivers
    -> Network device support (NETDEVICES [=y])
      -> Wireless LAN (WLAN [=y])
Selects: WIRELESS_EXT [=y] && WEXT_PRIV [=y]

(100%)
< Exit >

```

Find the option of "Realtek 8188E USB WiFi" according to the above Location, select "M" to make it be compiled into the module:

```

le@le: /home/A10-android4.0/kernel/allwinner/common
.config - Linux/arm 3.0.52 Kernel Configuration

Wireless LAN

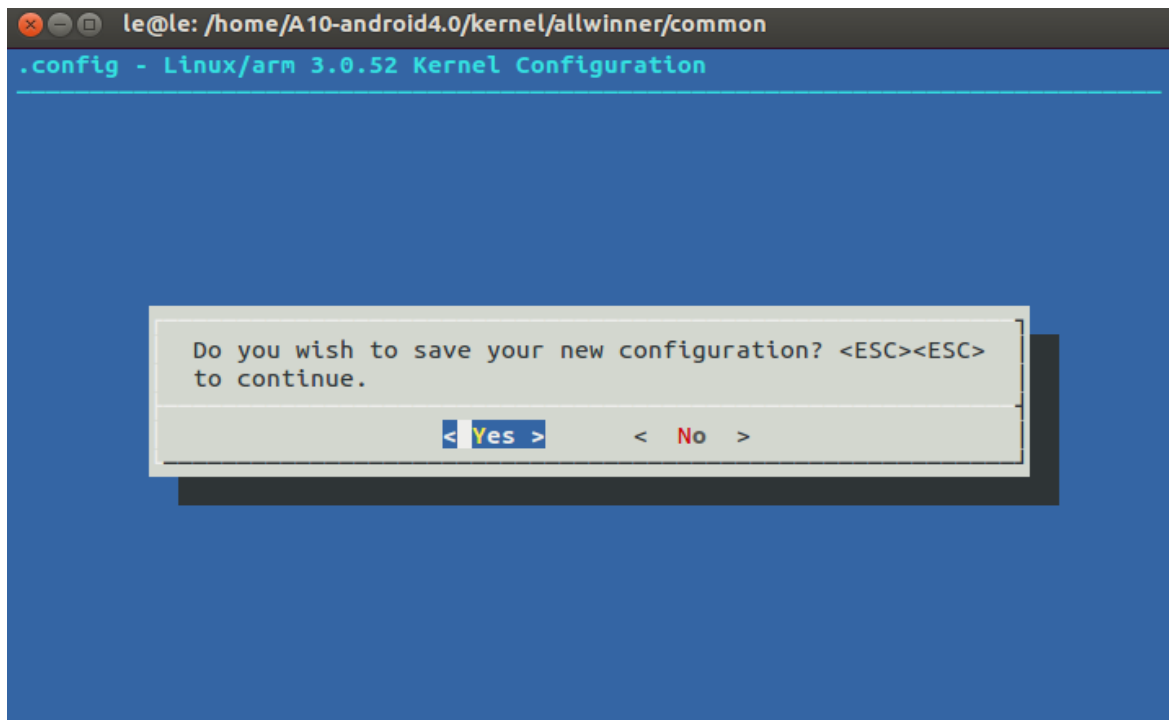
Arrow keys navigate the menu. <Enter> selects submenus --->.
Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes,
<M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </>
for Search. Legend: [*] built-in [ ] excluded <M> module <>

^(-)
<> Atheros Wireless Cards --->
<> Broadcom 4329 wireless cards support
<> Broadcom 4330 wireless cards support
<> Broadcom 4329/30 wireless cards support
<> IEEE 802.11 for Host AP (Prism2/2.5/3 and WEP/TKIP/CCMP)
<> Intel Wireless Multicom 3200 WiFi driver
<> Marvell 8xxx Libertas WLAN driver support
<> Marvell WiFi-Ex Driver
<M> Realtek 8192C USB WiFi for SW
<M> Realtek 8188E USB WiFi

<Select> < Exit > < Help >

```

Exit saving, select "Yes"



The related configuration will be saved in the file of .config, see the .config file

As below:

```
# CONFIG_MWIFIEX is not set
CONFIG_RTL8192CU_SW=m
CONFIG_RTL8188EU=m
```

You can see the CONFIG_RTL_8188EU=m, "m" is module

Copy .config to the default directory and changed the name to cubieboard_defconfig:

```
le@le:/home/A10-android4.0/kernel/allwinner/common$ sudo cp .config arch/arm/configs/cubieboard_defconfig
```

Clear your kernel:

```
le@le:/home/A10-android4.0$ cd kernel/allwinner/common/
le@le:/home/A10-android4.0/kernel/allwinner/common$ make mrproper
```

4.1.2. Modify the BoardConfig.mk

BoardConfig.mk to determine which Android to load module of WiFi to be configured to use the rtl8188eu module.

Enter the SDK top-level directory to search BoardConfig.mk position:

```
le@le:/home/A10-android4.0$ find -name BoardConfig.mk
./build/target/board/generic/BoardConfig.mk
./build/target/board/vbox_x86/BoardConfig.mk
./build/target/board/generic_x86/BoardConfig.mk
./build/target/board/generic_armv5/BoardConfig.mk
./build/target/board/emulator/BoardConfig.mk
./device/allwinner/cubieboard/BoardConfig.mk
le@le:/home/A10-android4.0$
```

Obviously this file above highlight

Modified as follows (part of the code):

```
BOARD_WIFI_VENDOR := realtek
ifeq ($(BOARD_WIFI_VENDOR), realtek)
    WPA_SUPPLICANT_VERSION := VER_0_8_X
    BOARD_WPA_SUPPLICANT_DRIVER := NL80211
    BOARD_WPA_SUPPLICANT_PRIVATE_LIB := lib_driver_cmd_rtl
    BOARD_HOSTAPD_DRIVER      := NL80211
    BOARD_HOSTAPD_PRIVATE_LIB := lib_driver_cmd_rtl
    WIFI_DRIVER_MODULE_PATH   := "/system/lib/modules/8188eu.ko"
    WIFI_DRIVER_MODULE_NAME   := 8188eu
    # SW_BOARD_USR_WIFI := rtl8192cu
    # BOARD_WLAN_DEVICE := rtl8192cu
    SW_BOARD_USR_WIFI := rtl8188eu
    BOARD_WLAN_DEVICE := rtl8188eu
#SW_BOARD_USR_WIFI := rtl8189es
#BOARD_WLAN_DEVICE := rtl8189es
```

Explain

- 1、 "#" comment function symbols;
- 2、 BOARD_WIFI_VENDOR := realtek WiFi module is specified using realtek;

3、SW_BOARD_USR_WIFI: = rtl8188eu and BOARD_WLAN_DEVICE = rtl8188eu, specified using the rtl8188eu;

4.2. Compile

4.2.1. Compile the kernel

Enter the source directory:

```
$cd A10-android4.0/
```

removing compiled product:

```
$make clean
```

Initialize the compiler environment, and introduce some auxiliary Shell functions:

```
$source build/envsetup.sh
```

Note: the "source build/envsetup.sh" into build/envsetup.sh scripts, including the next step using the lunch function

Use lunch Function and the specified parameter is "cubieboard-eng"

```
$lunch 4
```

4.2.2. Compile

```
$make -j8
```

Note: "8" for the number of CPU threads, according to his PC machine

Waiting.....

Completed:

```
Block groups: 4
Reserved block group size: 31
Created filesystem with 1197/31296 inodes and 74462/125000 blocks
Install system fs image: out/target/product/cubieboard/system.img
out/target/product/cubieboard/system.img+out/target/product/cubieboard/obj/PACKAGING/recovery_patch_intermediates/recovery_from_boot.p total size is 299071348
le@le:/home/A10-android4.0$
```



4.2.3.Pack after completed

\$/tools/pack-cm.sh

The firmware will be generated in the lichee/tools/pack

```
le@le:/home/A10-android4.0$ ls tools/pack
chips  out  pack  ptools  sun4i_crane_cubieboard.img
le@le:/home/A10-android4.0$
```

4.3. Install system

<http://pan.baidu.com/s/1c0phjOk#path=/Model/cubieboard1/Doc/android>

4.4. rtl8188eus Module file

The rtl8188eu module transplant is related the file of follow, no longer need to modify these files, you just need to can comprehend it.

4.4.1. rtl8188eus driver code

```
le@le:/home/A10-android4.0$ ls kernel/allwinner/common/drivers/net/wireless/rtl8188
eu/
clean  hal          include  Makefile  runwpa
core   ifcfg-wlan0  Kconfig  os_dep    wlan0dhcp
le@le:/home/A10-android4.0$
```

4.4.2. wifi.c

Path:A10-android4.0\hardware\libhardware_legacy\wifi\wifi.c

Defined loaded module, the module name and path module parameters

```
/* rtl8188eu usb wifi */
#ifdef WIFI_DRIVER_MODULE_PATH
#define WIFI_DRIVER_MODULE_PATH    "/system/vendor/modules/8188eu.ko"
#endif
#ifdef WIFI_DRIVER_MODULE_NAME
#define WIFI_DRIVER_MODULE_NAME    "8188eu"
#endif
```