**How to enable WiFi/Bluetooth with AP6275P**

**Prerequisite**

* Host PC and setup Windows10 on it
* If the user need to porting driver and rebuild kernel, please prepare another host PC that has SSD with a storage capacity of at least 512 GB and setup Ubuntu 20.04 on it
* Programming tool and driver
* RSB-3710
1. For setup terminal, need an USB to RS232 cable between the debug port and Host Windows PC.
2. For programming tool, need an USB cable between the Micro USB connector and Host Windows PC.



**Setup terminal**

* UART connection will appear in device manager on the PC



* Open the terminal window (e.g., Tera Term), choose the COM port number and apply the following configuration



* The user will see the snapshot as below after booting.



**Programming for Kernel Image**

* Install driver for programming tool

Please run the installer “DriverInstall.exe” after extract the file “DriverAssitant\_v5.0.zip” and follow the prompt to install driver.



* Programming for kernel
1. Power on RSB-3710 and get into u-boot

Press “Ctrl + C” while u-boot booting



Input the string “rbrom”, then press the enter



1. Extract the file “RSB3710A2AIM20DIV251013\_2021-04-15.zip” and run the programming tool

Select the folder “RKDevTool\_Release”, then double click on “RKDevTool.exe”.

1. Programming for kernel
	1. Check the device is detected or not
	2. Select loader and boot (kernel image)
	3. Start to run the tool
	4. Check the result



**Copy Driver and Firmware to System**

* Copy the tarball file “ap6275p\_rs3710\_eXX.tar.bz2” to USB storage on Windows host PC.
* Rename with the original driver

# cd /system/lib/modules

# mv bcmdhd.ko bcmdhd.ko.orig



* Create the specified directory for firmware

# mkdir /lib/firmware/bcmdhd

* Plug the USB storage into RSB-3710

After plug the USB storage in, you will see the snapshot



Use fdisk command to double confirm the information related to USB storage

# fdisk -l



 Use mount command to load USB storage into system

# mount /dev/sda1 /mnt



# ls /mnt



* Decompress the tarball “ap6275p\_rs3710\_eXX.tar.bz2” to system

# mkdir ~/ap6275p

# cd ~/ap6275p

# tar jxvf /mnt/ap6275p\_rs3710\_eXX.tar.bz2



* Copy the file “bcmdhd.ko” to “modules” directory

# cp ~/ap6275p/ap6275p\_module/bcmdhd.ko /system/lib/modules



* Copy the firmware files to “bcmdhd” directory

# cp ~/ap6275p/ap6275p\_firmware/BCMxxx.hcd /lib/firmware/bcmdhd

# cp ~/ap6275p/ap6275p\_firmware/fw\_bcmxxx\_pcie\_ag.bin /lib/firmware/bcmdhd

# cp ~/ap6275pap6275p\_firmware/clm\_bcmxxx\_pcie\_ag.blob /lib/firmware/bcmdhd

# cp ~/ap6275p/ap6275p\_firmware/nvram\_ap6275p\_mp.txt /lib/firmware/bcmdhd

# ls /lib/firmware/bcmdhd



**Test**

**WiFi**

* Stop wpa\_supplicant service

# systemctl stop wpa\_supplicant.service

* Create configuration

# echo "ctrl\_interface=/run/wpa\_supplicant"> /tmp/wpa.conf

# echo "update\_config=1" >> /tmp/wpa.conf

# wpa\_passphrase "XX" YY >> /tmp/wpa.conf

Note: XX: SSID, YY: Password

* Enable WiFi and check interface

# sudo rfkill unblock wifi

# sudo iwconfig

Note: you will see the interface like wlan0

* Running wpa\_supplicant

# wpa\_supplicant -d -B -i wlan0 -c /tmp/wpa.conf

* Get IP address by DHCP and check network connection

# dhclient wlan0

# ping -c 3 8.8.8.8

**Bluetooth**

* Enable Bluetooth

# ~/ap6275p/brcm\_patchram\_plus -d --enable\_hci --no2bytes --tosleep 200000 --baudrate 2000000 --patchram /lib/firmware/bcmdhd/BCM4362A2\_001.003.006.1012.1017.hcd /dev/ttyUSB0 &



* Check interface of bluetooth

 # hciconfig

 Note: you will see the interface like hciX

 

* Turn on/off scan

# bluetoothctl scan on

# bluetoothctl scan off



**How to Porting Driver to Kernel for RK3399 BSP**

* Create RK3399 BSP development environment

Please refer to the below link to create development environment

<http://ess-wiki.advantech.com.tw/view/Debian_BSP_User_Guide_for_rk3399_risc_series>

* Copy driver source to kernel source tree

Decompress the bcmdhd driver tarball and put it to kernel source tree

1. Change to directory as below

# cd /the\_path\_to\_kernel/drivers/net/wireless/rockchip\_wlan/rkwifi

1. Rename the original driver

# mv bcmdhd bcmdhd.orig

1. Decompress the driver tarball

# tar jxvf /the\_path\_to\_driver\_tarball/bcmdhd\_eXX.tar.bz2

* Modify Kconfig to add bcmdhd driver

Add string

[source "drivers/net/wireless/rockchip\_wlan/rkwifi/bcmdhd/Kconfig"] to Kconfig file “/the\_path\_to\_kernel/drivers/net/wireless/rockchip\_wlan/rkwifi/Kconfig”



* Make kernel configuration

Get into menuconfig menu

# make ARCH=arm64 menuconfig

1. Select [ Device Drivers ---> Network device support ---> Wireless LAN ---> Rockchip Wireless LAN support]
2. Enable [Broadcom FullMAC wireless cards support] as module
3. Input the path of firmware as below
	* + /lib/firmware/bcmdhd/fw\_bcm43752a2\_pcie\_ag.bin
		+ /lib/firmware/bcmdhd/nvram\_ap6275p\_mp.txt
4. Save configuration and exit the menu



* Rebuild kernel

# make ARCH=arm64 rk3399-rsb3710-a2.img

After that, the boot.img will be outputted in current directory.

