Preliminary AIC8800 Low-Energy

Wi-Fi6/BT5.4 SoC

USB 移植手册

Revision: 1.2
2024/10/21

历史更新记录

时间	修改内容	修订人	版本
2021/06/07	初版	Aiden	1.0
2022/05/26	新增 Q&A 栏位	Aiden	1.1
2024/10/21	新增 AIC8820/AIC8822	Ruizheli	1.2

该文件移植平台为 RK3229 Android10.0 平台内核移植

可比对以下档案，确认是否有档案缺失。

AIC8800D

aic8800	Wifi 驱动包
aic_btusb	蓝牙 btusb 驱动包
aic8800_porting_package\USB\driver_fw\drivers 驱动包	

fmacfw.bin	Wifi 固件
fw_adid.bin	蓝牙固件
fw_patch.bin	蓝牙固件
fw_patch_table.bin	蓝牙固件
aic8800_porting_package\USB\driver_fw\fw\aic8800 固件档案	

aicbt	蓝牙 libbt-vendor
aic8800_porting_package\USB\driver_fw\libbt-vendor	

AIC8800DC

aic8800	Wifi 驱动包
aic_btusb	蓝牙 btusb 驱动包
aic8800_porting_package\USB\driver_fw\drivers 驱动包	

fmacfw_calib_8800dc_h_u02.bin	Wifi 固件
fmacfw_patch_8800dc_h_u02.bin	Wifi 固件
fmacfw_patch_tbl_8800dc_h_u02.bin	Wifi 固件
fw_adid_8800dc_u02h.bin	蓝牙固件
fw_patch_8800dc_u02h.bin	蓝牙固件
fw_patch_table_8800dc_u02h.bin	蓝牙固件
aic8800_porting_package\USB\driver_fw\fw\ aic8800DC(H)固件档案	
fmacfw_calib_8800dc _u02.bin	Wifi 固件
fmacfw_patch_8800dc_u02.bin	Wifi 固件
fmacfw_patch_tbl_8800dc_u02.bin	Wifi 固件
fw_adid_8800dc_u02.bin	蓝牙固件
fw_patch_8800dc_u02.bin	蓝牙固件
fw_patch_table_8800dc_u02.bin	蓝牙固件
aic8800_porting_package\USB\driver_fw\fw\ aic8800DC(T)固件档案	

aicbt	蓝牙 libbt-vendor
aic8800_porting_package\USB\driver_fw\libbt-vendor	

AIC8800D80

aic8800	Wifi 驱动包
aic_btusb	蓝牙 btusb 驱动包
aic8800_porting_package\USB\driver_fw\drivers 驱动包	

fmacfw_8800d80_h_u02.bin	Wifi 固件
fw_adid_8800d80_u02.bin	蓝牙固件
fw_patch_8800d80_u02.bin	蓝牙固件
fw_patch_table_8800d80_u02.bin	蓝牙固件
aic8800_porting_package\USB\driver_fw\fw\aic8800D80(H)固件档案	

fmacfw_8800d80_u02.bin	Wifi 固件
fw_adid_8800d80_u02.bin	蓝牙固件
fw_patch_8800d80_u02.bin	蓝牙固件
fw_patch_table_8800d80_u02.bin	蓝牙固件
aic8800_porting_package\USB\driver_fw\fw\aic8800D80(T)固件档案	

aicbt	蓝牙 libbt-vendor
aic8800_porting_package\USB\driver_fw\libbt-vendor	

AIC8800D80X2

aic8800	Wifi 驱动包
aic_btusb	蓝牙 btusb 驱动包
aic8800_porting_package\USB\driver_fw\drivers 驱动包	

fmacfw_8800d80x2.bin	Wifi 固件
fw_adid_8800d80x2_u03.bin	蓝牙固件
fw_patch_8800d80x2_u03.bin	蓝牙固件
fw_patch_table_8800d80x2_u03.bin	蓝牙固件
aic8800_porting_package\USB\driver_fw\fw\aic8800D80X2 固件档案	

aicbt	蓝牙 libbt-vendor
aic8800_porting_package\USB\driver_fw\libbt-vendor	

1. 将 aic 驱动包放置在 kernel/drivers/net/wireless/之下，并且修改
kernel/drivers/net/wireless/Kconfig 以及 kernel/drivers/net/wireless/Makefile

source "drivers/net/wireless/st/Kconfig"
source "drivers/net/wireless/ti/Kconfig"
source "drivers/net/wireless/zydas/Kconfig"
source "drivers/net/wireless/quantenna/Kconfig"
source "drivers/net/wireless/rockchip_wlan/Kconfig"
source "drivers/net/wireless/aic8800/Kconfig"
修改 kernel/drivers/net/wireless/Kconfig

obj-$(CONFIG_WLAN_VENDOR_MEDIATEK) += mediatek/
obj-$(CONFIG_WLAN_VENDOR_RALINK) += ralink/
obj-$(CONFIG_WLAN_VENDOR_REALTEK) += realtek/
obj-$(CONFIG_WLAN_VENDOR_RSI) += rsi/
obj-$(CONFIG_WLAN_VENDOR_ST) += st/
obj-$(CONFIG_WLAN_VENDOR_TI) += ti/
obj-$(CONFIG_WLAN_VENDOR_ZYDAS) += zydas/
obj-$(CONFIG_WLAN_VENDOR_QUANTENNA) += quantenna/
obj-$(CONFIG_AIC_WLAN_SUPPORT) += aic8800/
修改 kernel/drivers/net/wireless/Makefile

2. 将 aic_btusb.c 和 aic_btusb.h 放到 kernel/drivers/bluetooth/之下，并且修改
kernel/drivers/bluetooth/Kconfig 以及 kernel/drivers/bluetooth/Makefile

config BT_HCIBTUSB_RTL
bool "Realtek protocol support"
depends on BT_HCIBTUSB
select BT_RTL
default y
help
The Realtek protocol support enables firmware and configuration
download support for Realtek Bluetooth controllers.
Say Y here to compile support for Realtek protocol.
config BT_AICBTUSB
tristate "AIC HCI USB driver"
depends on USB
help
AIC Bluetooth HCI USB driver

```
config BT_RTKBTUSB
    tristate "RTK HCI USB driver"
    depends on USB
    help
        RTK Bluetooth HCI USB driver


config BT_HCIBTSDIO
        tristate "HCI SDIO driver"
        depends on MMC
        help
            Bluetooth HCI SDIO driver.
            This driver is required if you want to use Bluetooth device with
            SDIO interface.

            Say Y here to compile support for Bluetooth SDIO devices into the
            kernel or say M to compile it as module (btsdio).


config BT_HCIUART
```

kernel/drivers/bluetooth/Kconfig

```
obj-$(CONFIG_BT_HCIBTUSB)         += btusb.o
obj-$(CONFIG_BT_HCIBTSDIO)        += btsdio.o
obj-$(CONFIG_BT_AICBTUSB)      += aic_btusb.o
obj-$(CONFIG_BT_RTKBTUSB) += rtk_usb.o
```

kernel/drivers/bluetooth/Makefile

修改内核的 config(或用 make menuconfig)，为以下参数

```
#
# Bluetooth device drivers
#
# CONFIG_BT_HCIBTUSB is not set
CONFIG_BT_AICBTUSB=m
# CONFIG_BT_RTKBTUSB is not set
# CONFIG_BT_HCIBTSDIO is not set
CONFIG_BT_HCIUART=y
CONFIG_BT_HCIUART_H4
.
.
.
# CONFIG_RTL8822BS is not set
# CONFIG_MVL88W8977 is not set
CONFIG_AIC_WLAN_SUPPORT=y
```

CONFIG_AIC8800_WLAN_SUPPORT=m
CONFIG_AIC_LOADFW_SUPPORT=m
# CONFIG_MAC80211_HWSIM is not set
# CONFIG_USB_NET_RNDIS_WLAN is

需添加在内核 config 之参数

3. 编译完后即可得到
aic_btusb.ko、aic8800_fdrv.ko、aic_load_fw.ko

4. 各驱动模块的功用
aic_load_fw.ko：模块固件初始化
aic8800_fdrv.ko：Wifi 驱动
aic_btusb.ko：USB 蓝牙接口

当 AIC8800D 上电时(EVB 板请按下按键上电)，USB 会侦测到
　　Bus 003 Device 007: ID a69c:**8800**
当 aic_load_fw 将固件加载到 AIC8800 时，设备 ID 会改为
　　Bus 003 Device 007: ID a69c:**8801**
此时模块固件便加载完成，之后即可加载 aic8800_fdrv.ko 以及 aic_btusb.ko

当 AIC8800DC 上电时(EVB 板请按下按键上电)，USB 会侦测到
　　Bus 003 Device 007: ID a69c:**88dc**
当 aic_load_fw 将固件加载到 AIC8800 时，设备 ID 不会更改，依旧为
　　Bus 003 Device 007: ID a69c:**88dc**
此时模块固件便加载完成，之后即可加载 aic8800_fdrv.ko 以及 aic_btusb.ko

当 AIC8800D80 上电时(EVB 板请按下按键上电)，USB 会侦测到
　　Bus 003 Device 007: ID a69c:**8d80**
当 aic_load_fw 将固件加载到 AIC8800 时，设备 ID 会改为
　　Bus 003 Device 007: ID a69c:**8d81**
此时模块固件便加载完成，之后即可加载 aic8800_fdrv.ko 以及 aic_btusb.ko

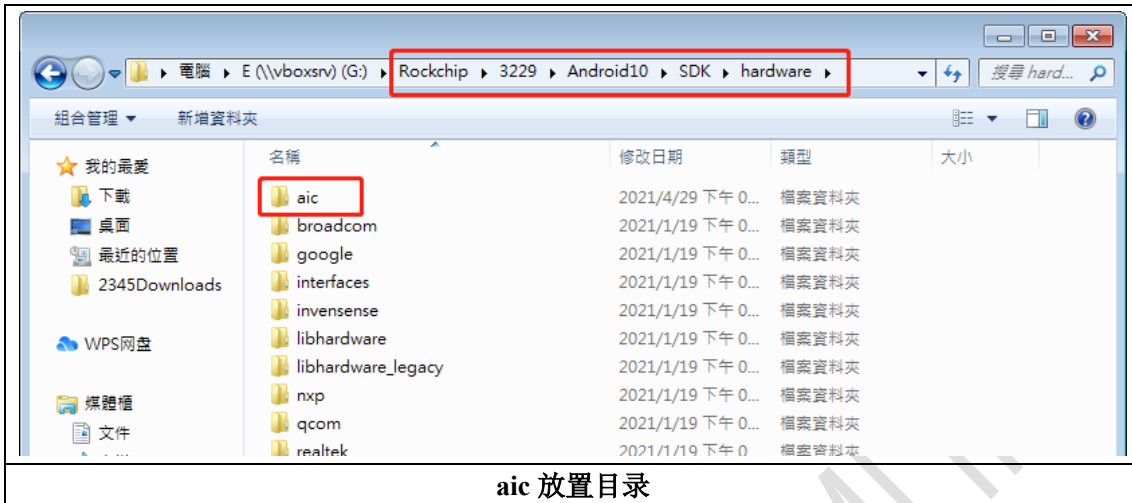当 AIC8800D80X2 上电时(EVB 板请按下按键上电)，USB 会侦测到
　　Bus 003 Device 007: ID 368b:8d90
当 aic_load_fw 将固件加载到 AIC8800 时，设备 ID 会改为
　　Bus 003 Device 007: ID 368b:8d91
此时模块固件便加载完成，之后即可加载 aic8800_fdrv.ko 以及 aic_btusb.ko

蓝牙移植

将 aic 包放在 andoird\hardware\之下。

aic 放置目录

针对蓝牙部分进行以下修改。

```
# Bluetooth HAL
PRODUCT_PACKAGES += \
    libbt-vendor \
    android.hardware.bluetooth@1.0-impl \
    android.hardware.bluetooth@1.0-service \
    android.hardware.bluetooth@1.0-service.rc

ifeq ($(strip $(BOARD_HAVE_BLUETOOTH_RTK)), true)
include hardware/realtek/rtkbt/rtkbt.mk
endif

ifeq ($(strip $(BOARD_HAVE_BLUETOOTH_AIC)), true)
include hardware/aic/aicbt/aicbt.mk
endif


ifeq ($(strip $(TARGET_BOARD_PLATFORM_PRODUCT)), box)
    include device/rockchip/common/samba/rk31_samba.mk
    PRODUCT_COPY_FILES += \

$(LOCAL_PATH)/init.box.samba.rc:$(TARGET_COPY_OUT_VENDOR)/etc/init/hw/init.box.samba.rc \
    device/rockchip/common/cifsmanager.sh:system/bin/cifsmanager.sh
```

修改 android/device/rockchip/common/device.mk

```
    chmod 0660 /dev/rtk_btusb
```

chown bluetooth net_bt /dev/rtk_btusb
chmod 0660 /dev/rtkbt_dev
chown bluetooth net_bt /dev/rtkbt_dev
for aic bt usb
    chmod 0660 /dev/aicbt_dev
    chown bluetooth net_bt /dev/aicbt_dev

    # bluetooth MAC address programming
    chown bluetooth net_bt ro.bt.bdaddr_path
    chown bluetooth net_bt /data/misc/bluetooth
    setprop ro.bt.bdaddr_path "/data/misc/bluetooth/bdaddr"

修改 android/device/rockchip/common/init.connectivity.rc

---

for BT
/dev/vflash   0660   bluetooth   net_bt_stack
/dev/ttyS0   0660   bluetooth   net_bt_stack
/dev/ttyS1   0660   bluetooth   net_bt_stack
#/dev/ttyS2   0660   bluetooth   net_bt_stack
/dev/rtk_btusb   0660   bluetooth   net_bt_stack
/dev/aic_btusb   0660   bluetooth   net_bt_stack

#for hid audio
/dev/hidraw0   0660   audio   audio

for serial
/dev/ttyS4   0660   system   system

for radio
/dev/ttyUSB0   0660   system   radio

修改 android/device/rockchip/common/ueventd.rockchip.rc

---

ifeq ($(strip $(BOARD_CONNECTIVITY_MODULE)), ap6xxx_gps)
BLUETOOTH_USE_BPLUS := true
BLUETOOTH_ENABLE_FM := false
endif
endif

BOARD_HAVE_BLUETOOTH_RTK := false
BOARD_HAVE_BLUETOOTH_AIC := true

修改 android/device/rockchip/common/wifi_bt_common.mk

Android 移植

可选择当下开发的平台、主控、系统进行比对，例如:移植 RK3229 Android10 可到补丁包中的 for_Rockchip/3229/Android10 目录下选择比对 orig 以及 mod 之间的差异，将不同之处打上您 SDK 当中。

内核移植、蓝牙移植以及 Android 移植完成后，将 SDK 编译即可使用 AIC8800 Wifi 以及蓝牙功能。 Enjoy!

Q&A

Q:GMS 测试发生问题。
A:需要确认 wifi-hal 是否有移植上，可比对移植包中的 orig 以及 mod 进行确认。