QuecOpen

AZUREWAV Adaptation Manual

LTE Module Series

Rev. QuecOpen_AZUREWAV_Driver_Adaptation_Manual

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Status: Preliminary

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About the Document

History

Revision	Date	Author	Description
1.0	2018-03-08	Edison YANG	Initial
1.1	2018-03-19	Edison YANG	Fix cannot send beacon issue
1.2	2018-06-13	Edison	Use kernel driver

Contents

NOTE

This documents only replies to Linux3.18.20 kernel.

1 CM256 Hardware Connection Figure and GPIO Configuration

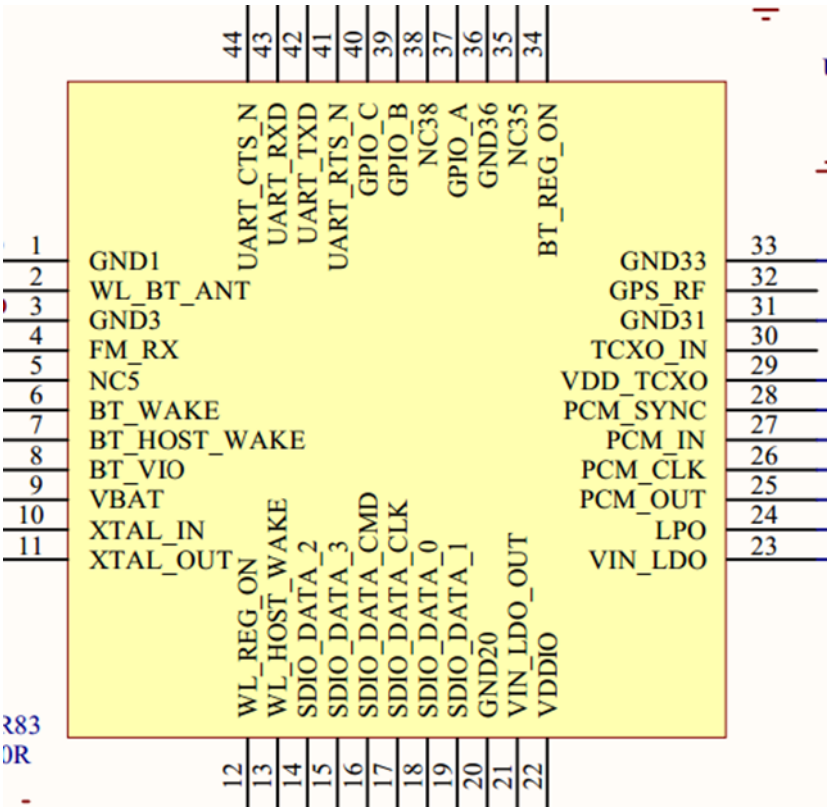


Figure 1: CM256 Hardware Connection Figure

Table 1: GPIO Configuration

CM256		MDM9x07		
PIN NAME	**PIN NO.**	**SDIO Interface**	**PIN NO.**	**GPIO**
SDIO_DATA_3	15	SDC1_DATA3	129	GPIO_12
SDIO_DATA_2	14	SDC1_DATA2	130	GPIO_13
SDIO_DATA_1	19	SDC1_DATA1	131	GPIO_14

SDIO_DATA_0	18	SDC1_DATA0	132	GPIO_15
SDIO_DATA_CLK	17	SDC1_CLK	133	GPIO_16
SDIO_DATA_CMD	16	SDC1_CMD	134	GPIO_17
WL_REG_ON	12	WLAN_EN	136	GPIO_38
WL_HOST_WAKE	13	WAKE_ON_WIRELESS	135	GPIO_59
VBAT	9	PM_ENABLE	127	GPIO_1020
VDDIO	22			

NOTE

INTEST PM_ENABLE connected to WL_REG_ON

2 The Method to Add CM256 Driver

2.1. Add Kernel Driver Code

(1) Copy the source code of CM256 driver to directory of ql-ol-sdk/ql-ol-kernel/drivers/net/wireless/bcmdhd.

(2) Modify ql-ol-sdk/ql-ol-kernel/drivers/net/wireless/Kconfig, please refer to below figure.

Add soure “drivers/net/wireless/bcmdhd/Kconfig”

```
source "drivers/net/wireless/ath/Kconfig"
source "drivers/net/wireless/b43/Kconfig"
source "drivers/net/wireless/b43legacy/Kconfig"
source "drivers/net/wireless/brcm80211/Kconfig"
source "drivers/net/wireless/hostap/Kconfig"
source "drivers/net/wireless/ipw2x00/Kconfig"
source "drivers/net/wireless/iwlwifi/Kconfig"
source "drivers/net/wireless/iwlegacy/Kconfig"
source "drivers/net/wireless/libertas/Kconfig"
source "drivers/net/wireless/orinoco/Kconfig"
source "drivers/net/wireless/p54/Kconfig"
source "drivers/net/wireless/rt2x00/Kconfig"
source "drivers/net/wireless/rtlwifi/Kconfig"
source "drivers/net/wireless/ti/Kconfig"
source "drivers/net/wireless/zd1211rw/Kconfig"
source "drivers/net/wireless/mwifiex/Kconfig"
source "drivers/net/wireless/cw1200/Kconfig"
source "drivers/net/wireless/rsi/Kconfig"
source "drivers/net/wireless/cnss/Kconfig"
source "drivers/net/wireless/bcmdhd/Kconfig"
```

(3) Modify ql-ol-sdk/ql-ol-kernel/drivers/net/wireless/Makefile, please refer to below figure.

Add configuration obj-$(CONFIG_BCMDHD) += bcmdhd

```
obj-$(CONFIG_CW1200)    += cw1200/
obj-$(CONFIG_RSI_91X)   += rsi/

obj-$(CONFIG_WCNSS_CORE)        += wcnss/

obj-$(CONFIG_CNSS)      += cnss/
obj-$(CONFIG_WCNSS_MEM_PRE_ALLOC) += cnss_prealloc/
obj-$(CONFIG_CNSS_CRYPTO)       += cnss_crypto/
obj-$(CONFIG_BCMDHD) += bcmdhd/
```

(4) Modify ql-ol-sdk/ql-ol-kernel/arch/arm/configs/mdm9607-perf_defconfig, please refer to below figure.

Add configuration CONFIG_BCMDHD=m

```
400 CONFIG_CRYPTO_CRC32C=y
401 CONFIG_CRYPTO_DEV_QCRYPTO=y
402 CONFIG_CRYPTO_DEV_QCOM_MSM_QCE=y
403 CONFIG_CRYPTO_DEV_QCEDEV=y
404 CONFIG_QMI_ENCDEC=y
405 #will.shao, add wakelocks for sleep
406 CONFIG_PM_WAKELOCKS=y
407 #carl.yin, add for ap6212a
408 CONFIG_BCMDHD=m
409
410 #
411 # Quectel optional drivers
412 #
413 CONFIG_QUECTEL_DRIVER=y
414 # CONFIG_LOW_POWER_CONSUME is not set
415 # CONFIG_QTZONE is not set
416 CONFIG_QSTART=y
417 # CONFIG_QSMD is not set
418 # CONFIG_QSMEM is not set
```

Rebuild kernel, the steps are as follows.

1) #cd ~/ql-ol-sdk
2) #make clean
3) #make kernel_menuconfig
4) #make

2.2. Firmware Generation

(1) Copy WiFi Firmware

Please copy bcm_170607_nvram, bcm43455-7.45.100.9.bin, BCM434545.hcd to directory ~/temp/ql-ol-sdk/ql-ol-rootfs/etc/firmware/cm256/

Firmware List:

bcm_170607_nvram	2017/8/2 11:11	文本文档	3 KB
bcm43455-7.45.100.9.bin	2017/11/16 8:36	BIN 文件	521 KB
BCM434545.hcd	2016/12/30 13:59	HCD 文件	53 KB
wlan	2018/2/6 14:32	文件	5 KB

(2) Replace WLAN Script

Please replace ~/temp/ql-ol-sdk/ql-ol-rootfs/etc/init.d/wlan with the wlan script in above list.

(3) Delete file ql-ol-rootfs/etc/rc5.d/s91start_shortcut_fe_le in EC2X module

(4) Rebuild rootfs

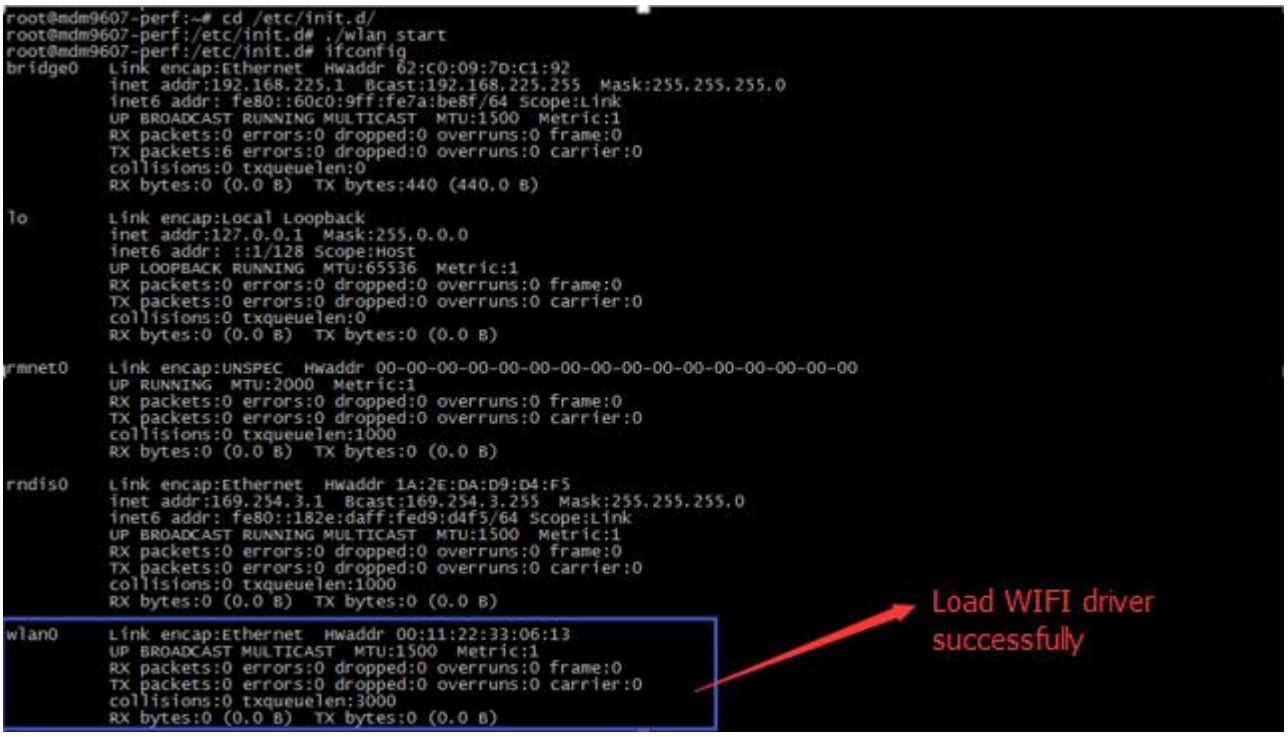
```
# cd ~/temp/ql-ol-sdk
# make rootfs
```

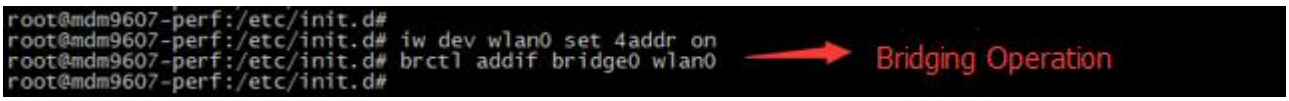
3 WIFI Feature Testing

There are AT command, API and cmdline 3 methods to test CM256. Here only introduces cmdline.

3.1. Load WIFI Driver

```
# cd /etc/init.d
# ./wlan start
# iw dev wlan0 set 4addr on
# brctl addif bridge0 wlan0
```





3.2. Enable WIFI AP Mode

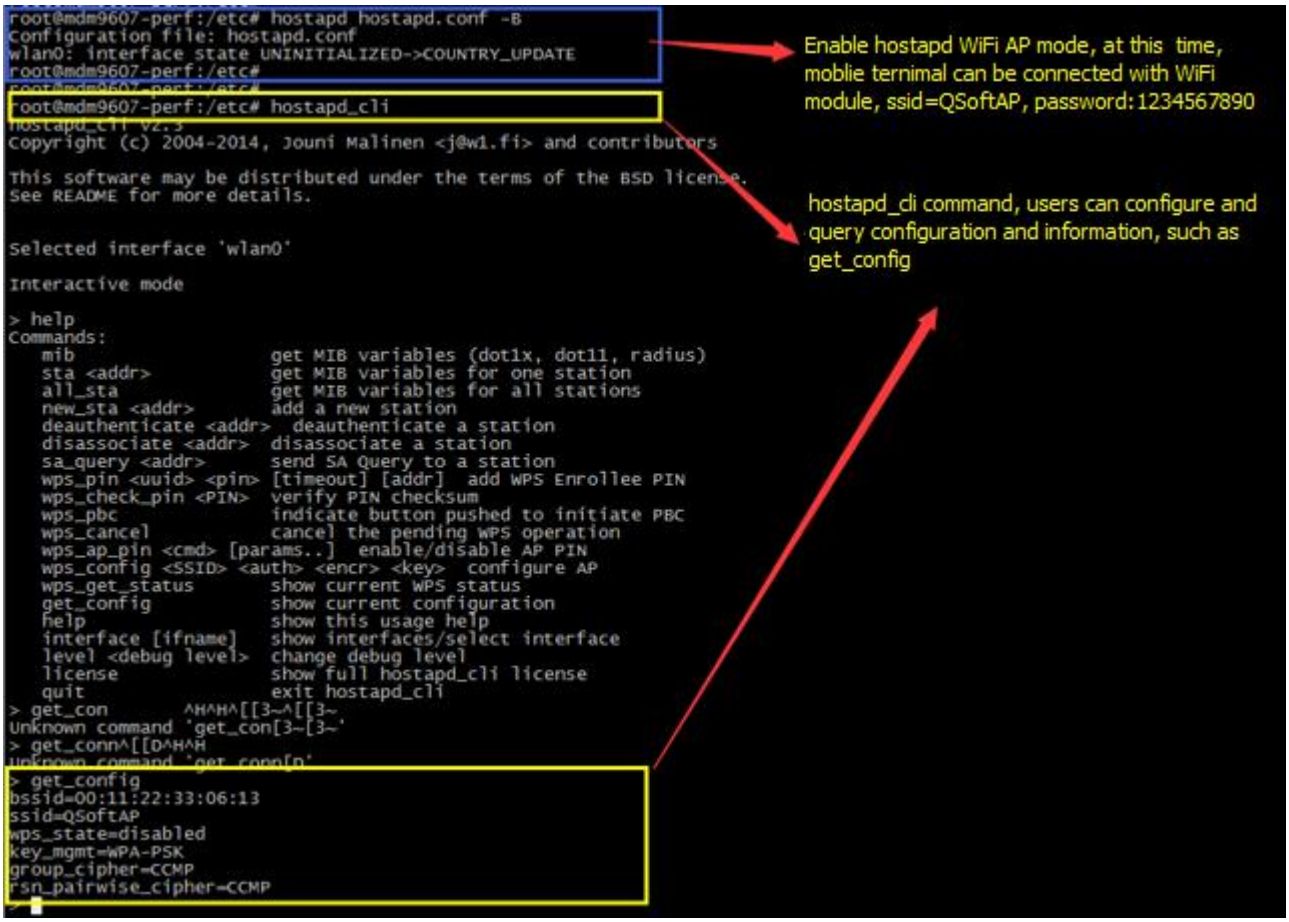
For EC2X Module:

hostapd /etc/hostapd.conf –B (At this time, mobile terminal can be connected with WIFI module,

ssid=QSoftAP, password: 1234567890)
# hostapd_cli (hostapd cmdline mode, could configure and query operation)

For AG35 Module:
hostapd /data/misc/wifi/hostapd.conf –B
hostapd_cli

If mobile terminal still cannot search hotspot after operating above steps normally, please query whether channel in file /etc/hostapd.conf set to 0, if yes, please modify it to 1, 6 or 13.



3.3. Enable WiFi STA Mode

3.3.1. Modify File wpa_supplicant

For EC2X module, please modify configuration file /etc/wpa_supplicant.conf, for AG35 module, please modify configuration file /data/misc/wifi/wpa_supplicant.conf, the example is shown as follows.

```
ctrl_interface=/var/run/wpa_supplicant

network={
    ssid="Fill in WiFi name, such as iphone 7"
    key_mgmt=WPA-PSK
    psk="Fill in WiFi password"
}
```

Fill in WiFi name in double quotes of ssid="", it is recommended to use the English character ssid.
Fill in WiFi password in double quotes of psk="".

After the modification as shown below.

```
root@mdm9607-perf:/etc# cat wpa_supplicant.conf
ctrl_interface=/var/run/wpa_supplicant

network={
    ssid="Quectel_TEST"
    key_mgmt=WPA-PSK
    psk="1234567890"
}
```

3.3.2. Enable Users' WiFi Hotspot, and Perform Network Construction Testing.

The first step:
/etc/init.d/wlan start

The second step:
For EC2X module:
wpa_supplicant -Dnl80211 -iwlan0 -c/etc/wpa_supplicant.conf
For AG35 module:
wpa_supplicant -Dnl80211 -iwlan0 -c/data/misc/wifi/wpa_supplicant.conf

STA network construction successful, If ping each other between AP and STA is required, need get IP operation via ahcp. Specific command is as follows.
udhcpc -i wlan0 -s /etc/udhcpc.d/50default