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Rockchip_RM310_4G 模块配置说明

Rockchip_RM310_4G_Module_Configuration_Introduction

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1 目的 Purpose

明确 ROCKCHIP 平台上 RM310 4G 模块使用说明和注意事项。

Introduce RM310 4G module usage and notices on Rockchip platforms.

1.1 Kernel 注意事项 Kernel notice

请确保以下配置在内核中打开：

Please make sure the following configuration is enabled in kernel:

CONFIG_LTE=y

CONFIG_LTE_RM310=y

Device Drivers --->

 [*] Network device support --->

 [*] Rockchip LTE support --->

 --- Rockchip LTE support

 [*] LTE rm310 support

DTS 配置参考如下：

DTS configuration refers to below:

```
rk_modem: rk-modem {
    compatible="4g-modem-platdata";
    pinctrl-names = "default";
    pinctrl-0 = <&lte_vbat &lte_power_en &lte_reset>;
    4G,vbat-gpio = <&gpio4 RK_PD0 GPIO_ACTIVE_HIGH>;
    4G,power-gpio = <&gpio4 RK_PC6 GPIO_ACTIVE_LOW>;
    4G,reset-gpio = <&gpio4 RK_PD4 GPIO_ACTIVE_LOW>;
    status = "okay";
};
```

4G,vbat-gpio（对应图一 4G_PWR 脚）为控制 4G 模块的供电脚 VCC_4G 输出，VCC_4G 供电电压为 3.3V~4.3V，典型值为 3.8V。请根据硬件设计正确配置 gpio 有效值，默认是高有效。

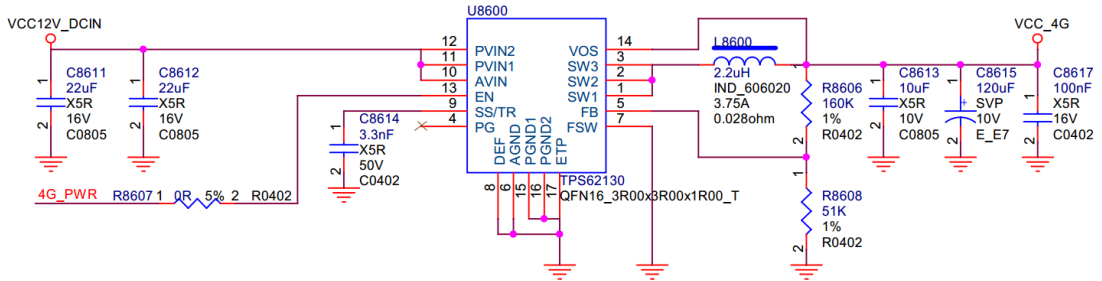
4G,vbat-gpio (corresponding to 4G_PWR pin in picture 1) is the power pin to control the VCC_4G output of 4G module. VCC_4G power supply voltage is 3.3V~4.3V, with typical value 3.8V. Please configure gpio active value correctly according to the hardware design, which is high active by default.

4G,power-gpio（对应图二 4G_DISABLE 脚）为控制 4G 模块开关机脚，默认软件为拉低 50ms 开机，拉低 1000ms 关机。请根据硬件设计正确配置 gpio 有效值，默认是低有效。

4G,power-gpio（corresponding to 4G_DISABLE pin in picture 2） is the pin to control 4G module power on/off. The default software configuration is pull down 50ms to power on, and pull down 1000ms to power off. Please configure gpio active value correctly according to the hardware design, which is low active by default.

4G,reset-gpio（对应图二 4G_RST 脚）为控制 4G 复位管脚。请根据硬件设计正确配置 gpio 有效值，默认是低有效。

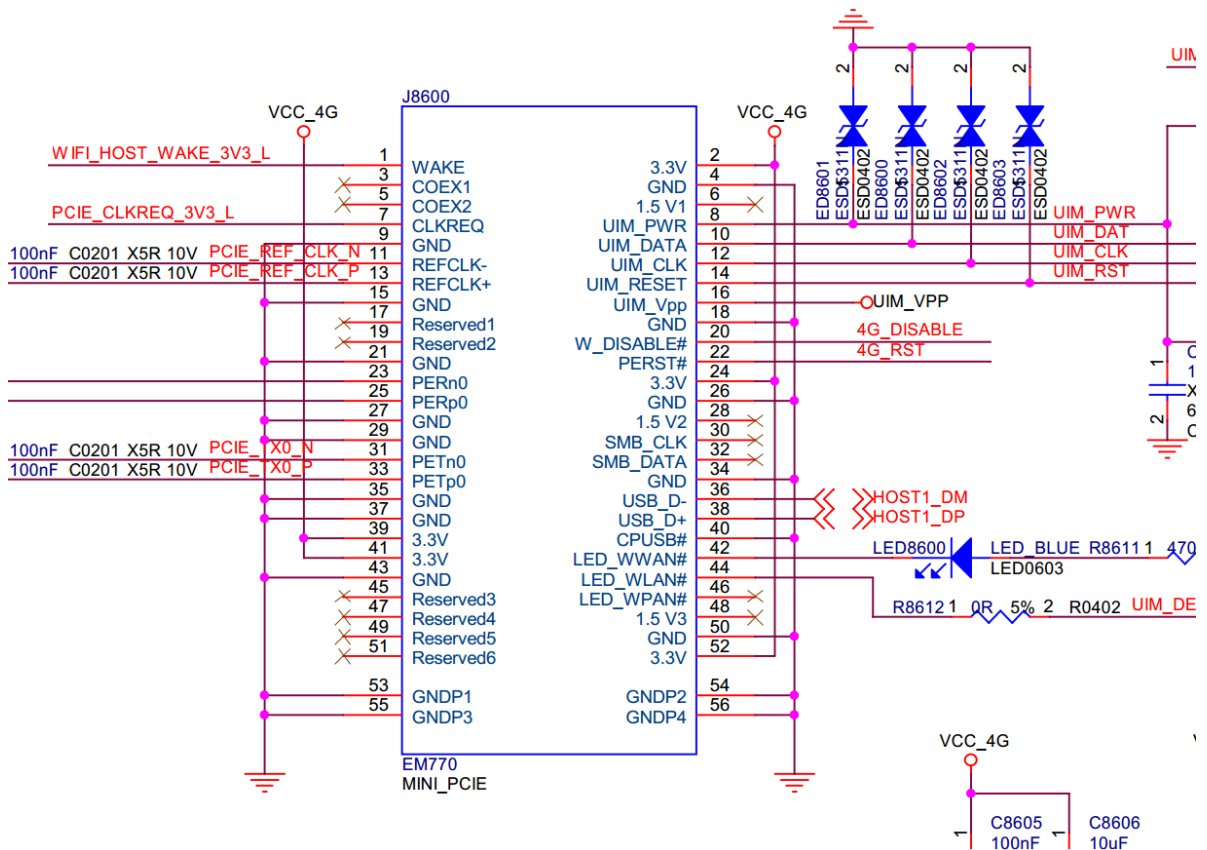
4G,reset-gpio（corresponding to 4G_RST pin in picture 2） is the pin to control 4G reset. Please configure gpio active value correctly according to the hardware design, which is low active by default.



$$V_{out} = 0.8 * (1 + R_{up} / R_{down})$$

图一

Picture 1



图二

Picture 2

2.驱动目录为:

The driver directory is:

kernel/drivers/net/lte/

└─ Kconfig

```
├── lte_rm310.c
└── Makefile
```

3. RM310 4G 模块 PID 为: 0x1286, VID:0x4E3C。上电后会枚举出 ttyUSB0~ttyUSB2 设备和 lte0 网口。

RM310 4G module PID is: 0x1286, VID:0x4E3C. After powered up, it will enumerate ttyUSB0~ttyUSB2 device and lte0 network port.

```
usb 1-1: New USB device found, idVendor=1286, idProduct=4e3c, bcdDevice= 1.00
usb 1-1: New USB device strings: Mfr=1, Product=2, SerialNumber=3
usb 1-1: Product: Mobile Composite Device Bus
usb 1-1: Manufacturer: ASRMicro
usb 1-1: SerialNumber: 200806006809030000
cdc_ether 1-1:1.0 lte0: register 'cdc_ether' at usb-fe3c0000.usb-1, CDC Ethernet Device(lte), ac:00:00:13:66:d5
option 1-1:1.2: GSM modem (1-port) converter detected
usb 1-1: GSM modem (1-port) converter now attached to ttyUSB0
option 1-1:1.3: GSM modem (1-port) converter detected
usb 1-1: GSM modem (1-port) converter now attached to ttyUSB1
option 1-1:1.4: GSM modem (1-port) converter detected
usb 1-1: GSM modem (1-port) converter now attached to ttyUSB2
```

1.2 Android 注意事项 Android notice

在 SDK 中 RM310 4G 功能默认是关闭的,如硬件支持且需要 4G 功能请将以下配置修改为 true。

RM310 4G **function is disabled** in default SDK. If the hardware is supported and 4G function is required, please modify the following configuration to true.

文件路径 device/rockchip/common/BoardConfig.mk

File path: 文件路径 device/rockchip/common/BoardConfig.mk

#for rk 4g modem

BOARD_HAS_RK_4G_MODEM ?= **true**

注意: Android8.0 以及之后的 Android 版本需要修改 manifest.xml 增加 radio 项目。

Note: For Android8.0 and later versions, need to modify manifest.xml to add radio item.

SDK 打开配置后默认使用的是 device/rockchip/common/4g_modem/manifest.xml。

After the configuration is enabled, SDK will use device/rockchip/common/4g_modem/manifest.xml by default.

如需使用原有的 manifest.xml,请将 device/rockchip/common/4g_modem/manifest.xml 中的有关 radio 的项复制添加到 manifest.xml 中。

If need to use previous manifest.xml, please copy the radio related items in device/rockchip/common/4g_modem/manifest.xml to manifest.xml.

```
#for rk 4g modem
BOARD_HAS_RK_4G_MODEM ?= false

ifeq ($(strip $(BOARD_HAS_RK_4G_MODEM)),true)
DEVICE_MANIFEST_FILE := device/rockchip/common/4g_modem/manifest.xml
endif
```

```
<hal format="hidl">
  <name>android.hardware.radio</name>
  <transport>hwbinder</transport>
  <fqname>@1.1::ISap/slot1</fqname>
  <fqname>@1.1::IRadio/slot1</fqname>
</hal>
<hal format="hidl">
  <name>android.hardware.radio.deprecated</name>
  <transport>hwbinder</transport>
  <version>1.0</version>
  <interface>
    <name>IOemHook</name>
    <instance>slot1</instance>
  </interface>
</hal>
```

2 问题排查 Issue debug

1. ttyUSB 端口没有枚举出来，请检查硬件各管脚连接是否正常，使用示波器抓波形检查下 VBAT 是否有 3.8V，power 脚在开机时是否有拉低 50ms，reset 脚是否为高。

If ttyUSB port is not enumerated, please check each hardware pin connection is normal or not. Use oscilloscope to capture the waveform to check if VBAT if 3.8V or not, whether the power pin is pulled down 50ms or not during power on, whether reset pin is high or not.

2. ttyUSB 端口枚举到但识别不到 sim 卡，请检查 sim 电路各电压是否正常。

If ttyUSB port is enumerated but sim card cannot be recognized, please check if each voltage of sim circuit is normal or not.

3. 有信号图标无法上网，请检查 sim 卡是否欠费，检查设置→移动网络→移动数据→接入点名称（APN）中是否存在 APN，如没有请自行添加。

If there is signal icon but unable to access the internet, please check if sim card is in arrear or not, check setting->mobile network->mobile data->access point name to see if there is APN or not. If no, please add by yourself.