CUBIEBOARD
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MF210_3G Module debugging

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Version	Author	Modification	Check
V-0.1-20150415	Payne	Init version	

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1.1. Directory structure

```
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│       ├──── chat.c
│       ├──── init.gprs-pppd
│       ├──── ip-down-ppp0.c
│       ├──── ip-up-ppp0.c
│       └──── The results of the source file compiled
│               ├──── chat
│               ├──── ip-down-ppp0
│               ├──── ip-up-ppp0
│               └──── readme.txt
├──── so
│       └──── Android4.x
│               └──── libreference-ril.so
└──── userguide
        ├──── Android system RIL adaptation user reference -V0.8.pdf
        └──── Additional instructions .pdf
```

1.2. Document describing

Driver version document describing

/script	Phone script
/so	To transplant the ril library
/userguide	Use the reference documents

The document instructions ：The Green part is the code of increase, the red part is reducing code.

2. Add the kernel module

2.1. Add the driver

The add of Module driven need to configure android kernel, configuration method is as follows:

```
cd linux-3.4/
make ARCH=arm menuconfig
device drivers--->usb support--->usb serial converter support
```

Selected the following components：

```
USB driver for GSM and CDMA modems
```

2.2. Add equipment VID and PID

Modify the kernel source file option.c (Path:lichee/linux-3.4/drivers/usb/serial/option.c)

```
diff --git a/drivers/usb/serial/option.c
b/drivers/usb/serial/option.c
index ca5dffd..b6336e9 100755
--- a/drivers/usb/serial/option.c
```

```
+++ b/drivers/usb/serial/option.c
@@ -626,6 +626,7 @@ static const struct option_blacklist_info
telit_le920_blacklist = {
 };
 static const struct usb_device_id option_ids[] = {
+    { USB_DEVICE(0x19d2, 0x0117) }, //by Cesc. iba11 3.5G, India .
0x05c60016_0x19d20117,

{ USB_DEVICE(0x05c6, 0x0016) }, //by Cesc. iba11 3.5G, India .
0x05c60016_0x05c60016,
    { USB_DEVICE(0x19d2, 0x0088) }, //by Cesc. iba11 3.5G, India .
0x05c60018_0x19d20088,
       { USB_DEVICE(0x12d1, 0x151d) }, //by Cesc. E3131, orange.
12d114fe_12d1151d
```

note:

0 x19d2 for ZTE vendor ID

0 x0117 for MF210V2 device ID

The above ID to be decided according to the specific module, different module ID.

2.3. Add the PPP components

Ril drive networking layer using the PPP protocol to create a data link,so you need to support for the PPP protocol in the kernel configuration. Configuration as follows:

```
cd linux-3.4/
make ARCH=arm menuconfig
device drivers--->network device support--->ppp surport
```

```
Selected the following components :
    ppp filtering
    ppp support for async serial ports
    ppp support for sync tty ports
    ppp deflate compression
    ppp BSD-compress compression
```

3. Integrated driver file

3.1. Integrated dial scripts

3.1.1. Copying files

Copy chat,ip-down-ppp0,ip-up-ppp0,libreference-ril.so into ../device/third_part/zte （need to create zte).

3.1.2. Packaging file into the system

Modify device/softwinner/sugar-cubietruck/sugar_cubietruck.mk

```
diff --git a/device/softwinner/sugar-cubietruck/sugar_cubietruck.mk b/device/softwinner/sugar-cubietruck/sugar_cubietruck.mk
index 860e2d3..26493c8 100755
--- a/device/softwinner/sugar-cubietruck/sugar_cubietruck.mk
+++ b/device/softwinner/sugar-cubietruck/sugar_cubietruck.mk
@@ -46,10 +46,26 @@ PRODUCT_COPY_FILES += \
        device/softwinner/sugar-cubietruck/vold.fstab:system/etc/vold.fstab


 PRODUCT_PACKAGES += \
```

```
+    Phone  \
     TvdLauncher \
     Bluetooth
 #   TSCalibration2

+PRODUCT_PACKAGES += \
+    ip-up-ppp0 \
+    chat \
+    Stk \
+    rild \
+    pppd \
+    ip-down-ppp0
+PRODUCT_COPY_FILES += \
+   device/third_part/zte/init.gprs-pppd:system/etc/init.gprs-pppd   \
+   device/third_part/zte/ip-up-ppp0:system/etc/ppp/ip-up-ppp0   \
+   device/third_part/zte/chat:system/bin/chat   \
+   device/third_part/zte/ip-down-ppp0:system/etc/ppp/ip-down-ppp0   \
+   device/third_part/zte/libreference-
ril.so:system/lib/libreference-ril.so
 # wifi & bt config file
 PRODUCT_COPY_FILES += \

frameworks/native/data/etc/android.hardware.wifi.xml:system/etc/perm
issions/android.hardware.wifi.xml \
```

note:When the system is compiled, you can find init.gprs-pppd in the out directory corresponding to the platform of the system/etc/ ;

you can find ip-up-ppp0 and ip-down-ppp0 in the out directory corresponding to the platform of the system/etc/ppp ;

you can find libreference-ril.so in the out directory corresponding to the platform of the system/lib ;

If the file is not found that source not packaged into the system,please check whether the related configuration is correct.

3.2. Modify the system configuration

3.2.1. Open the system voice telephone access and text messaging

```
vim device/softwinner/sugar-cubietruck/overlay/frameworks/base/core/res/res/values/config.xml
diff --git a/device/softwinner/sugar-cubietruck/overlay/frameworks/base/core/res/res/values/config.xml b/device/softwinner/sugar-cubietruck
index edf0cfd..73acb6c 100755
--- a/device/softwinner/sugar-cubietruck/overlay/frameworks/base/core/res/res/values/config.xml
+++ b/device/softwinner/sugar-cubietruck/overlay/frameworks/base/core/res/res/values/config.xml
@@ -45,7 +45,7 @@
          PackageManager.FEATURE_TELEPHONY system feature, which is
          available on *any* device with a telephony radio, even if the
          device is data-only. -->
```

```
-    <bool name="config_voice_capable">false</bool>
+    <bool name="config_voice_capable">true</bool>
     <!-- List of regexpressions describing the interface (if any)
that represent tetherable
          bluetooth interfaces.  If the device doesn't want to
support tethering over bluetooth this
             should be empty. -->
```

```
vim build/target/product/generic_no_telephony.mk （Need to send SMS
add Mms）
diff --git a/build/target/product/generic_no_telephony.mk
b/build/target/product/generic_no_telephony.mk
index 8671deb..7eecldc 100755
--- a/build/target/product/generic_no_telephony.mk
+++ b/build/target/product/generic_no_telephony.mk
@@ -33,6 +33,7 @@ PRODUCT_PACKAGES := \
     MusicFX \
     Provision \
     Phone \
+       Mms \
     Settings \
     SystemUI \
     bluetooth-health \
```

3.2.2.To specify system rild library path

```
vim device/softwinner/wing-common/ProductCommon.mk
diff --git a/device/softwinner/wing-common/ProductCommon.mk
b/device/softwinner/wing-common/ProductCommon.mk
index 0f13874..7af799c 100755
--- a/device/softwinner/wing-common/ProductCommon.mk
+++ b/device/softwinner/wing-common/ProductCommon.mk
@@ -123,15 +123,15 @@ PRODUCT_COPY_FILES += \
 PRODUCT_PROPERTY_OVERRIDES += \

ro.kernel.android.checkjni=0 \
        persist.sys.timezone=Asia/Shanghai \
        wifi.interface=wlan0 \
        wifi.supplicant_scan_interval=15 \
        debug.egl.hw=1 \
        ro.display.switch=1 \
        ro.opengles.version=131072 \
        rild.libargs=-d/dev/ttyUSB2 \
-       rild.libpath=/system/lib/libsoftwinner-ril.so \
+       rild.libpath=/system/lib/libreference-ril.so \
        keyguard.no_require_sim=true \
        persist.sys.strictmode.visual=0 \
        persist.sys.strictmode.disable=1 \
```

3.2.3.Modify the drive device file permissions, add rild service

(-d said module receives the AT port parameters of service ,- u said DATA port)

```
diff --git a/device/softwinner/wing-common/init.rc b/device/softwinner/wing-comm
index 7f1105f..548b43c 100755
--- a/device/softwinner/wing-common/init.rc
+++ b/device/softwinner/wing-common/init.rc
@@ -437,12 +455,21 @@ service netd /system/bin/netd
 service debuggerd /system/bin/debuggerd
     class main

-service ril-daemon /system/bin/rild
+service ril-daemon /system/bin/rild -l /system/lib/libreference-ril.so
+    --  -d   /dev/ttyUSB2   -u /dev/ttyUSB1
     class main
     socket rild stream 660 root radio
     socket rild-debug stream 660 radio system
     user root
     group radio cache inet misc audio sdcard_rw log

+    on property:ril.reset.rild=1
+    stop ril-daemon
+    start ril-daemon
+    setprop ril.reset.rild    0
```

```
+    on property:ril.reset.modem=1
+    /system/bin/ResetModem:
  service surfaceflinger /system/bin/surfaceflinger
class main
@@ -476,6 +503,13 @@ service bootanim /system/bin/bootanimation
    disabled
    oneshot
+    ###-----------add pppd_gprs-------------###
+service pppd_gprs /system/etc/init.gprs-pppd
+    user root
+    group radio cache inet misc
+    disabled
+    oneshot
 service installd /system/bin/installd
    class main
    socket installd stream 600 system system
```

3.2.4.Modify android_filesystem_config.h

```
diff --git a/system/core/include/private/android_filesystem_config.h
b/system/co
index 7e34da8..3d38c1f 100644
--- a/system/core/include/private/android_filesystem_config.h
+++ b/system/core/include/private/android_filesystem_config.h
@@ -194,7 +194,8 @@ static struct fs_path_config android_files[] = {
```

```
    { 00550, AID_DHCP,      AID_SHELL,
"system/etc/dhcpcd/dhcpcd-run-hooks"
    { 00440, AID_BLUETOOTH, AID_BLUETOOTH,

"system/etc/dbus.conf" },
    { 00444, AID_RADIO,     AID_AUDIO,
"system/etc/AudioPara4.csv" },
-   { 00555, AID_ROOT,      AID_ROOT,   "system/etc/ppp/*" },
+   { 00777, AID_ROOT,      AID_SHELL,  "system/etc/init.gprs-pppd" },
+   { 00777, AID_ROOT,      AID_ROOT,   "system/etc/ppp/*" },
    { 00555, AID_ROOT,      AID_ROOT,      "system/etc/rc.*" },
    { 00644, AID_SYSTEM,    AID_SYSTEM,    "data/app/*" },
    { 00644, AID_MEDIA_RW,  AID_MEDIA_RW,  "data/media/*" },
```

3.2.5.Modify property_service.c

```
diff --git a/system/core/init/property_service.c
b/system/core/init/property_ser

index dfe62ed..a6cc76a 100755
--- a/system/core/init/property_service.c
+++ b/system/core/init/property_service.c
@@ -65,6 +65,7 @@ struct {
 } property_perms[] = {
    { "net.rmnet0.",      AID_RADIO,    0 },
    { "net.gprs.",        AID_RADIO,    0 },
+   { "net.ppp0.",        AID_RADIO,    0 },
    { "net.ppp",          AID_RADIO,    0 },
```

```
    { "net.qmi",            AID_RADIO,    0 },
    { "ril.pcui",             AID_RADIO,    0 },
@@ -112,8 +113,9 @@ struct {
    unsigned int uid;
    unsigned int gid;
 } control_perms[] = {
-    { "dumpstate",AID_SHELL, AID_LOG },
-    { "ril-daemon",AID_RADIO, AID_RADIO },
+      {"pppd_gprs", AID_RADIO, AID_LOG },
     {NULL, 0, 0 }
 };
```

3.2.6.Modify ueventd.rc

```
diff --git a/system/core/rootdir/ueventd.rc
b/system/core/rootdir/ueventd.rc

index b1664f4..c12da8d 100644
--- a/system/core/rootdir/ueventd.rc
+++ b/system/core/rootdir/ueventd.rc
@@ -7,6 +7,11 @@
 /dev/urandom               0666   root       root
 /dev/ashmem                0666   root       root
 /dev/binder                0666   root       root
+/dev/ttyUSB0               0660   radio      radio
+/dev/ttyUSB1               0660   radio      radio
+/dev/ttyUSB2               0660   radio      radio
```

```
+/dev/ttyUSB3                0660   radio      radio
+/dev/ttyUSB4                0660   radio      radio
 # Anyone can read the logs, but if they're not in the "logs"
 # group, then they'll only see log entries for their UID.
```

The AT command

at+cgmi To find the manufacturer name

```
ZTE WELINK CORPORATION
OK
```

at+cgmm To find the module type

```
MF210V2
OK
```

at+csq Returns 0 is no signal, return 28 express signals is strong(typically around 6 to normal access to the Internet)

```
+CSQ: 28,99
OK
atd13631286255;    Phone
OK                 Success Phone return OK
RINGBACK
```

View the RIL logs

Use logcat program to view the system log.

Logcat log output classification:

Logcat: look at all the LOG

logcat -b radio: view the system log radio module

logcat -b radio -s RILD: Check ZTEMT RIL driver log