3.1.11　4G 模块实现 IE 上网

（此模块是选配模块，具体根据客户要求定）

准备一张移动 4G SIM 卡，ME909s-821 PCIE 封装 4G 模块一个，将 SIM 卡插入外扩 USB 4G 扩展板，模块安装到模块坐固定好，将天线接到主 ipex 天线座。开机上电。

1、输入 `root@freescale /$ ifconfig -a` 命令：显示如下信息:

```
root@freescale /$ ifconfig -a
can0      Link encap:UNSPEC  HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
          NOARP  MTU:16  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:10
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:142

can1      Link encap:UNSPEC  HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
          NOARP  MTU:16  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:10
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
          Interrupt:143

eth0      Link encap:Ethernet  HWaddr A2:16:DD:BB:39:BF
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

eth1      Link encap:Ethernet  HWaddr 6E:A4:10:BB:84:3C
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          LOOPBACK  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

sit0      Link encap:IPv6-in-IPv4
          NOARP  MTU:1480  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

usb0      Link encap:Ethernet  HWaddr 02:1E:10:1F:00:00
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)
```

输入 `ls  -l  /dev/ttyUSB*` 命令显示如下信息:

```
root@freescale /$ ls -l /dev/ttyUSB*
crw-rw----    1 root     uucp      188,   0 Jan  1 00:00 /dev/ttyUSB0
crw-rw----    1 root     uucp      188,   1 Jan  1 00:00 /dev/ttyUSB1
crw-rw----    1 root     uucp      188,   2 Jan  1 00:00 /dev/ttyUSB2
crw-rw----    1 root     uucp      188,   3 Jan  1 00:00 /dev/ttyUSB3
crw-rw----    1 root     uucp      188,   4 Jan  1 00:00 /dev/ttyUSB4
```

或者使用命令 `dmesg | grep GSM`

```
root@freescale /$ dmesg |grep GSM
[    1.461127] usbserial: USB Serial support registered for GSM modem (1-port)
[    2.643039] option 1-1.2:2.2: GSM modem (1-port) converter detected
[    2.661891] usb 1-1.2: GSM modem (1-port) converter now attached to ttyUSB0
[    2.687967] option 1-1.2:2.3: GSM modem (1-port) converter detected
[    2.700721] usb 1-1.2: GSM modem (1-port) converter now attached to ttyUSB1
[    2.726575] option 1-1.2:2.4: GSM modem (1-port) converter detected
[    2.739670] usb 1-1.2: GSM modem (1-port) converter now attached to ttyUSB2
[    2.765545] option 1-1.2:2.5: GSM modem (1-port) converter detected
[    2.778657] usb 1-1.2: GSM modem (1-port) converter now attached to ttyUSB3
[    2.798747] option 1-1.2:2.6: GSM modem (1-port) converter detected
[    2.811819] usb 1-1.2: GSM modem (1-port) converter now attached to ttyUSB4
```

则 4g 模块正确识别并加载。

2、输入如下指令：

```
root@freescale /$ echo "ATE0" > /dev/ttyUSB2
root@freescale /$ cat /dev/ttyUSB2&
```

```
root@freescale /$ cat /dev/ttyUSB2&
root@freescale /$

^RSSI: 7


^HCSQ: "LTE",22,46,86,22
```

```
root@freescale /$ echo "AT^LEDCTRL=1"> /dev/ttyUSB2
```

打开状态灯

```
root@freescale /$ echo "AT^LEDCTRL=1"> /dev/ttyUSB2
root@freescale /$

OK
```

```
root@freescale /$ echo "AT^NDISDUP=1,1,\"cmnet\""> /dev/ttyUSB2
```

串口打印如下信息：

```
root@freescale /$

OK


^NDISSTAT: 1,,,"IPV4"


^NDISSTAT: 0,50,,"IPV6"
```

输入如下指令：

```
root@freescale /$ ifconfig eth0 down
root@freescale /$ ifconfig eth1 down
root@freescale /$ ifconfig usb0 up
root@freescale /$ udhcpc -iusb0
```

调试串口输出如下信息：

```
root@freescale /$ udhcpc -iusb0
udhcpc (v1.20.2) started
Sending discover...
Sending select for 10.109.195.65...
Lease of 10.109.195.65 obtained, lease time 518400
Deleting routers
adding dns 111.11.1.1
adding dns 111.11.11.1
root@freescale /$
```

这时就可以访问网络了。

输入指令：root@freescale /$ ping www.baidu.com

调试串口输出如下信息：

```
root@freescale /$  ping www.baidu.com
PING www.baidu.com (111.13.100.91): 56 data bytes
64 bytes from 111.13.100.91: seq=0 ttl=52 time=29.643 ms
64 bytes from 111.13.100.91: seq=1 ttl=52 time=36.875 ms
64 bytes from 111.13.100.91: seq=2 ttl=52 time=36.283 ms
64 bytes from 111.13.100.91: seq=3 ttl=52 time=37.762 ms

--- www.baidu.com ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 29.643/35.140/37.762 ms
root@freescale /$
```

root@freescale /$ echo "AT^NDISDUP=1,0"> /dev/ttyUSB2 断开网络连接

或者在超级终端输入拨号脚本

```
root@freescale /$ vi  /root/me909s.sh
#!/bin/sh
echo "ATE0" > /dev/ttyUSB2
echo "AT^NDISDUP=1,1,\"cmnet\""> /dev/ttyUSB2

ifconfig eth0 down
ifconfig usb0 up
udhcpc -iusb0
ifconfig eth0 up
root@freescale /$ cd /root/
root@freescale /$ ./me909s.sh &
```

测试网路是否能ping通。

如果测试过程中出现拨号断网的问题，可做4G模块的守护进程。

注：echo "AT^NDISDUP=1,1,\"cmnet\""> /dev/ttyUSB2 为移动 APN

echo "AT^NDISDUP=1,1,\"3gnet\""> /dev/ttyUSB2 为联通

echo "AT^NDISDUP=1,1,\"ctnet\""> /dev/ttyUSB2 为电信