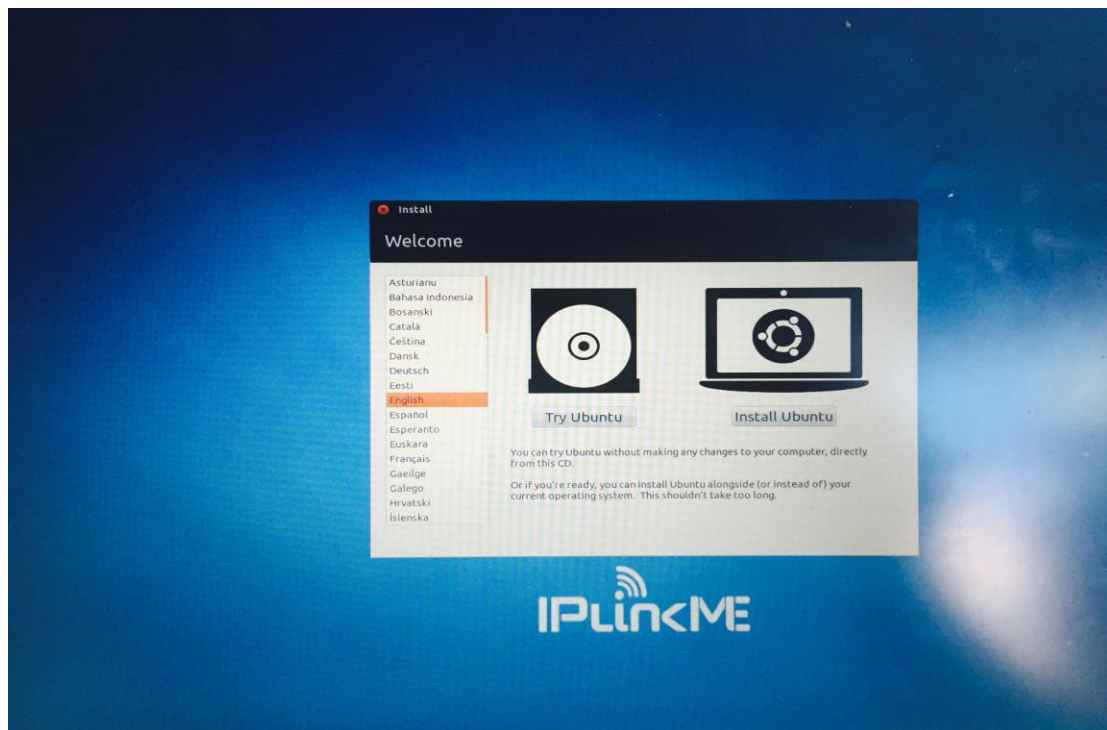


一、 Set the drive to start(Pictures for reference only)

- 1、 Turn on the computer, press **F12** (may vary between different vendors) before entering the system.
- 2、 Then enter the BIOS to the arrow keys to select [**BIOS Features Setup**] or [**Advanced BIOS Features**], regardless of how they see the words [BIOS Features] that one on the right.
- 3、 The arrow keys to move to the [**Boot Sequence**] or [**First Boot Device**] this one, press the keyboard, The [**Page Up**] or [Page Down] button to select [**CD-ROM**] as the first overall pick to boot.
- 4、 Press the [**ESC**] key to exit.
- 5、 The arrow keys to move to [**Save and Exit**] this one, and then press [**Enter**] and [**Y**] to reboot after confirmation.

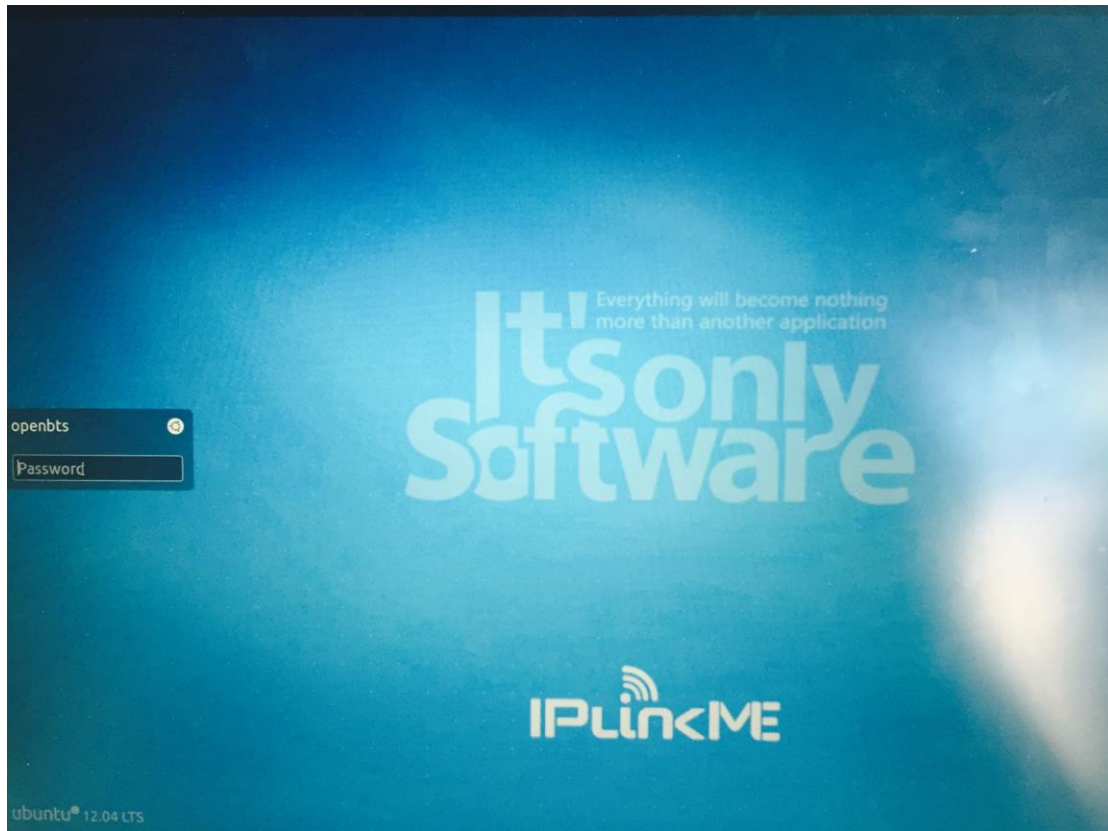
二、 Ubuntu system installation CD

- 1、 Insert the CD-ROM, start the computer, it will be followed by the following screen:
The system defaults to [**English**], on the right there are two options [**Try Ubuntu**] and [**Install Ubuntu**]



Pic-1

- 2、 (1) Click [**Try Ubuntu**] Ubuntu CD can boot the system, as shown below:



Pic-2

Here you can run a variety of testing procedures, the completion of testing experimental platform, for this stage to begin testing experimental platform, skip the following [≡] Continue reading; For the system to load your computer, read;

(2) **Click [Install Ubuntu] Ubuntu system can be installed in the computer,**

As shown below:



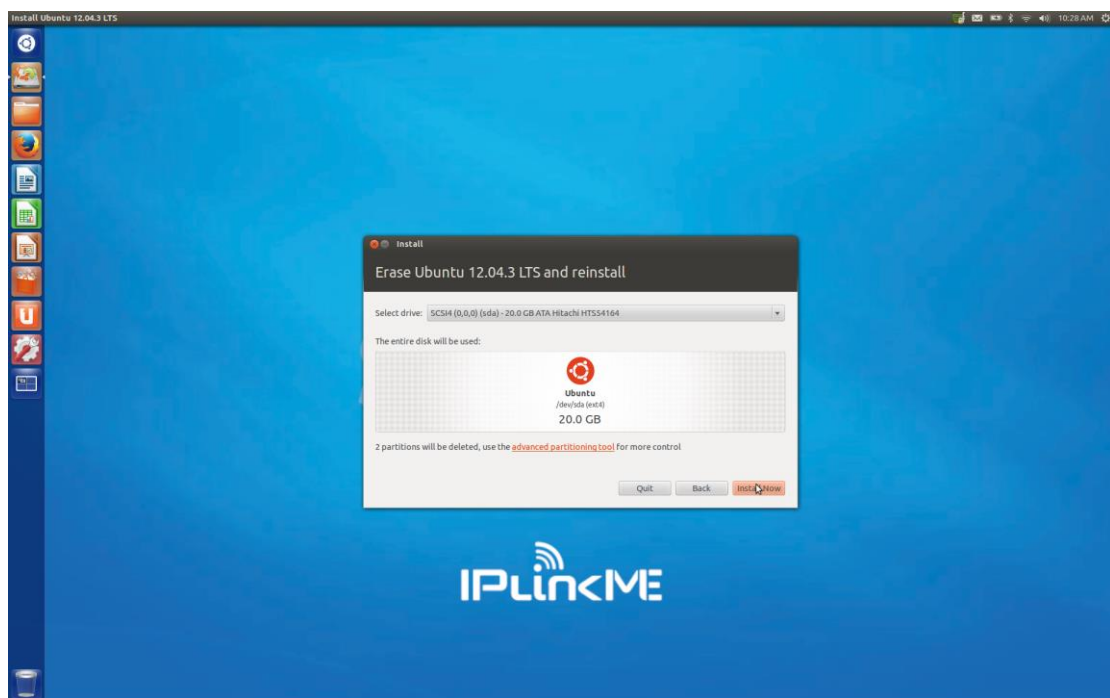
Pic-3

Click [**Continue**] to continue the installation:



Pic-4

Click [**Continue**] to continue the installation:



Pic-5

Click [**Install Now**] to continue the installation:

3、 During the installation process will be completed at the following screen appears on your personal system configuration:

Choose your time zone, such as: New York

Then click on [**Continue**]:



Pic-6

Select the keyboard layout, the default is USA, click [**Continue**]:



Pic-7

Wait for the system installation is complete, take some time, you can click the left and right during the drop-down arrow to read some of the system introduced:



Pic-8

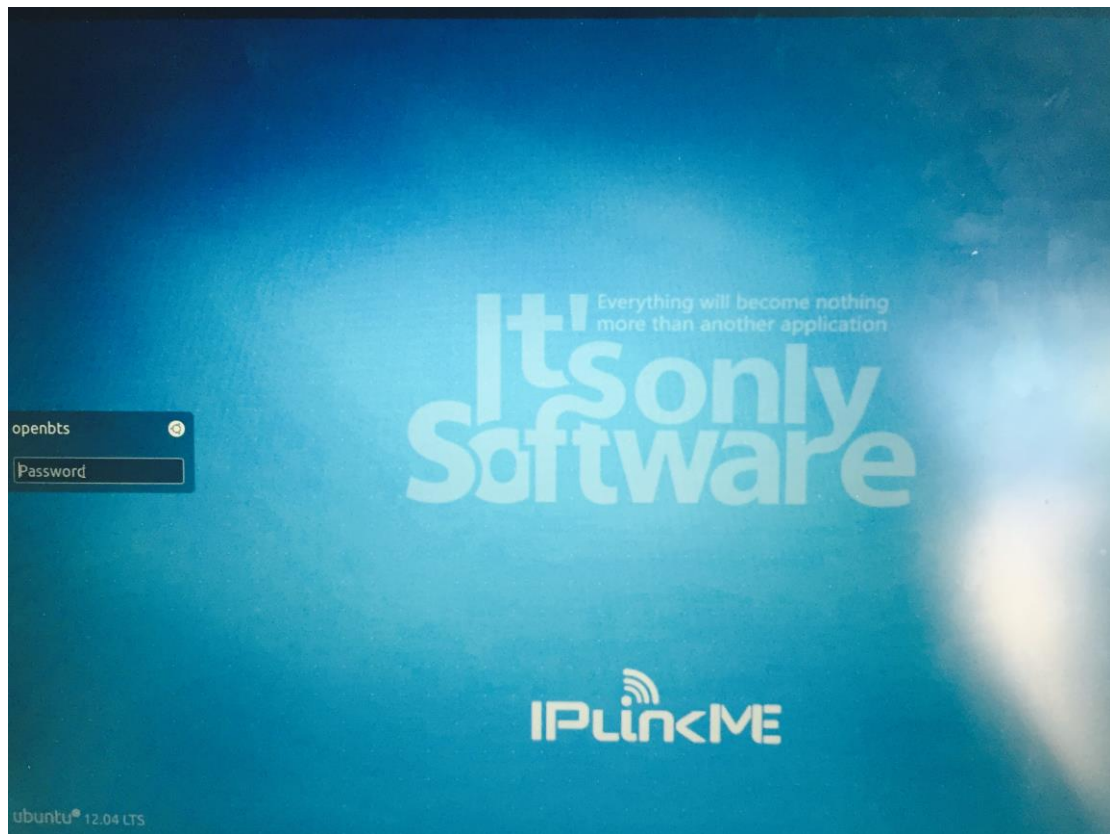
Upon completion the following screen will appear, asking whether to restart the system, click [**Restart Now**]; Before restarting, plug the computer hard disk recall (see the first step);

So far, Ubuntu system has been installed.



Pic-9

4、 After rebooting, the screen will appear as follows:



Pic-10

Enter the login user (openbts) Password (openbts)



Pic-11

三、 Test experimental platform is complete

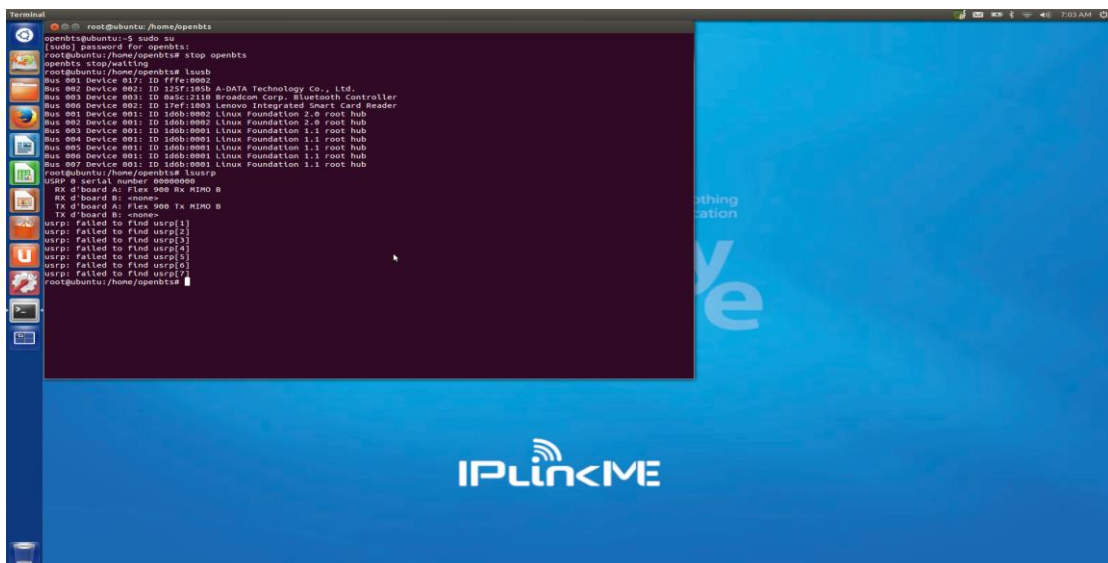
- 1、 The experimental platform assembly is connected to the computer and the power user login (openbts) and password (openbts) **All tests must use root privileges**
- 2、 Input Terminal search inside in the upper left, then click on the icon or open a terminal enduse shortcut [Ctrl + Alt + T]



Pic-12

- 3、 In a terminal command: **#sudo su** to gain administrator privileges; under usb detection is turned on, use the following command:

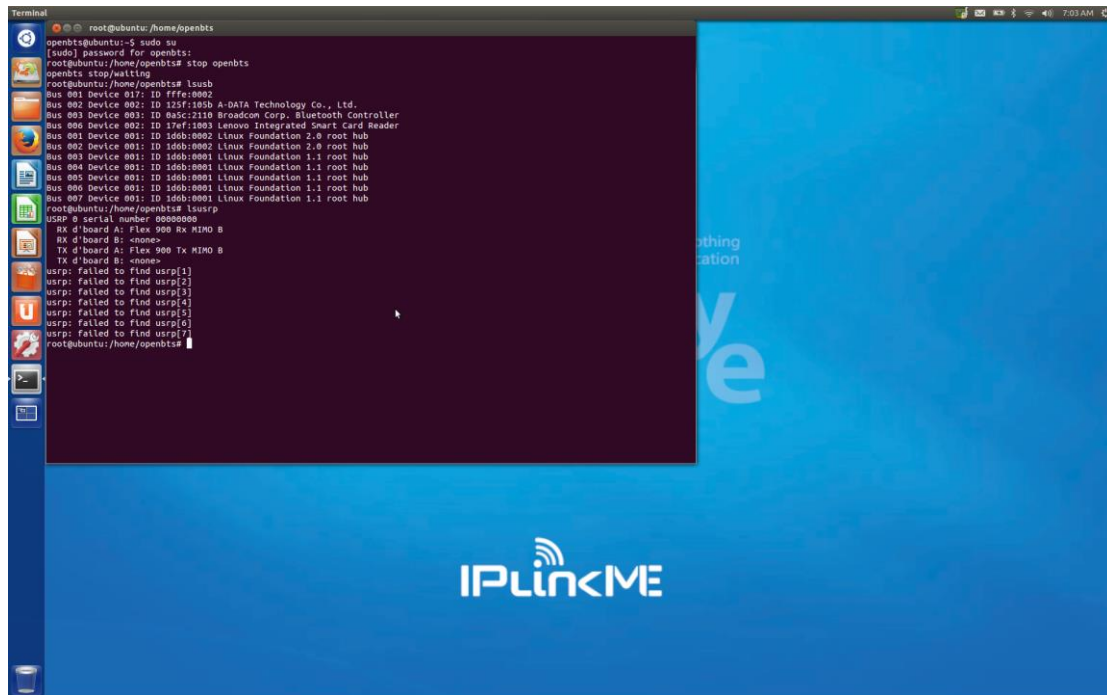
#lsusb



Pic-13

4、 Detection in the board driver information, use the following command:

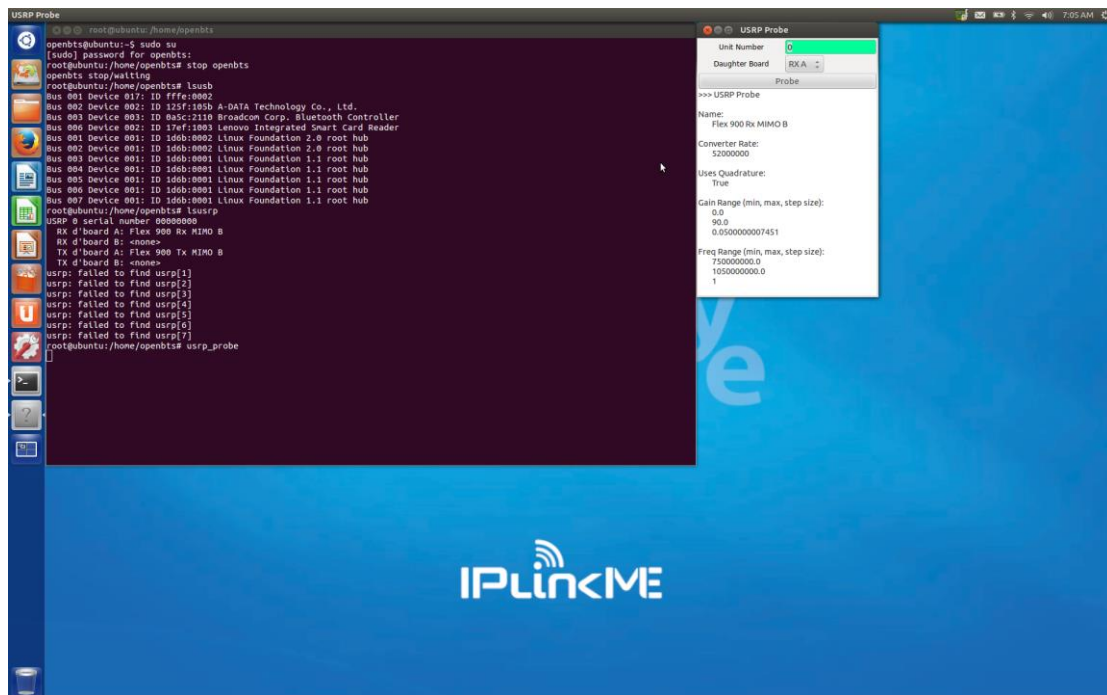
#lsusrp



Pic-14

5、 Detection in the board configuration information, use the following command:

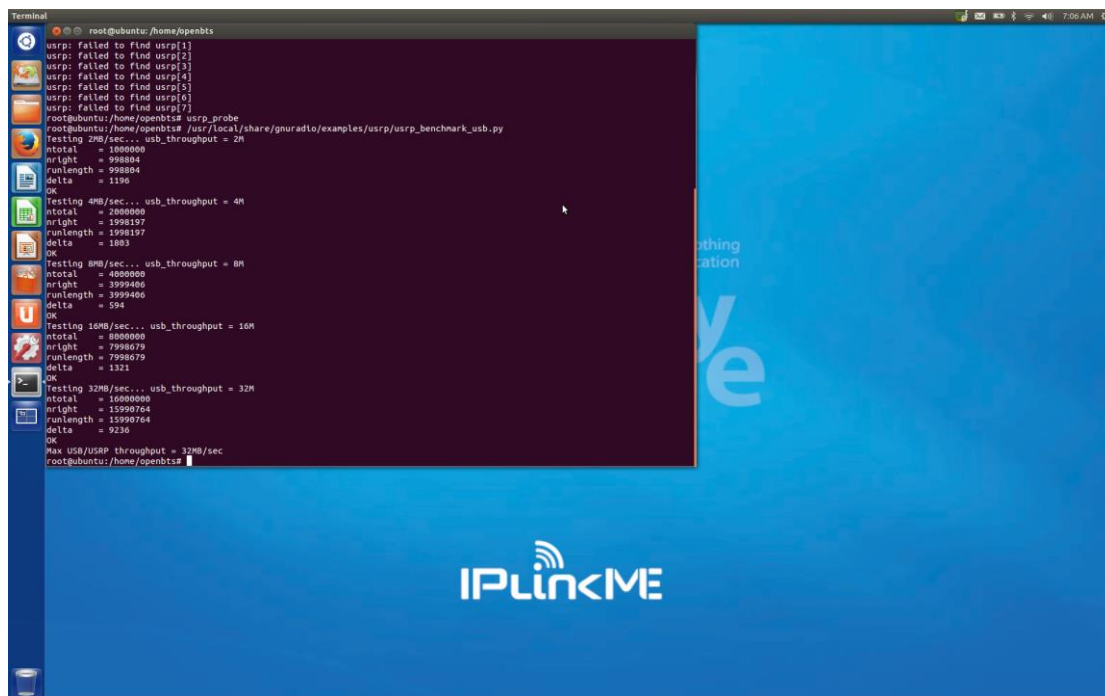
#usrp_probe



Pic-15

6、Test USB communication rate:

```
# /usr/local/share/gnuradio/examples/usrp/usrp_benchmark_usb.py
```



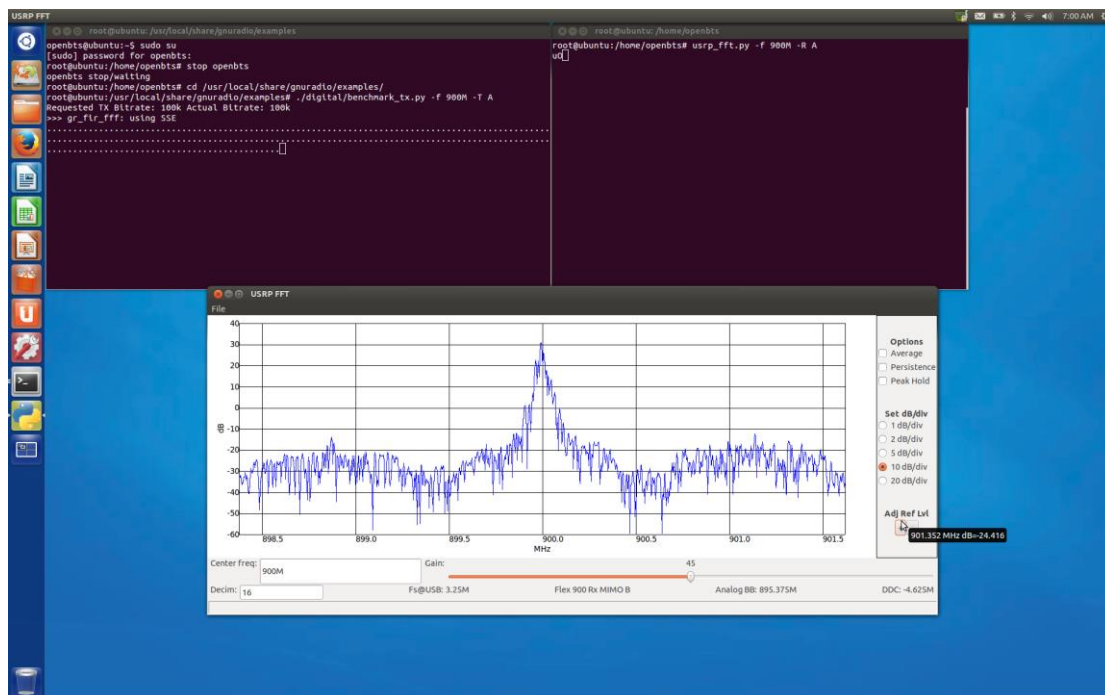
Pic-17

7、 USRP transceiver function tests between devices is normal

(1) Open a terminal execute the following command(the default device usrp1+rfx900)

```
# /usr/local/share/gnuradio/examples/digital
```

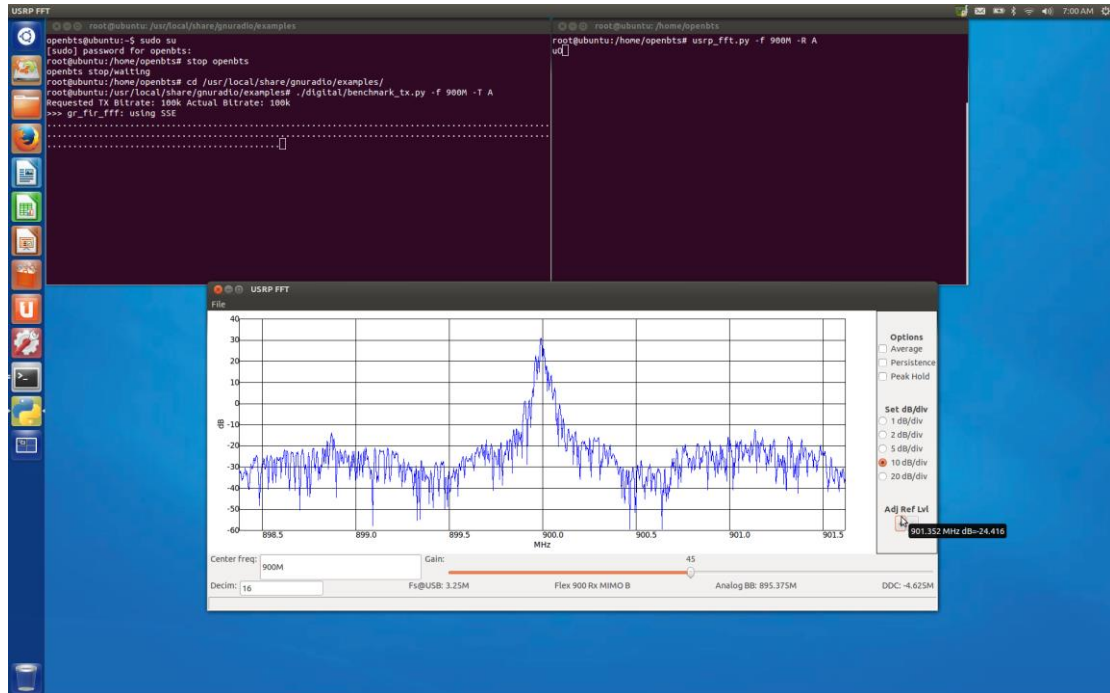
```
# ./benchmark_tx.py -f 900M -T A
```



Pic-18

(2) Open another terminal execute the following command:

```
#usrp_fft.py -f 900M -R A
```



四、USRP station built examples

1、Experimental Tool Description:

- (1) A USRP1 Motherboard
- (2) a daughter board RFX900
- (3) Two antennas
- (4) Two feeders
- (5) Two SIM cards
- (6) A power supply (6V)
- (7) Two phones

2、Into the Ubuntu system, open a terminal on the desktop Terminal

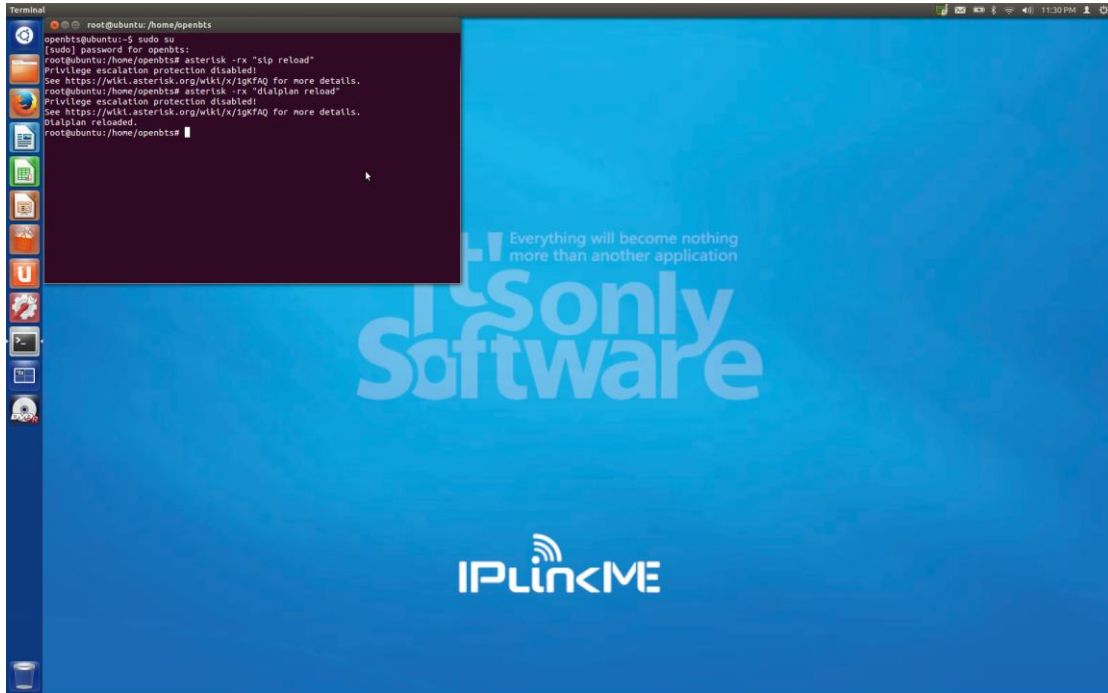
Note: extensions.conf, sip.conf two documents SIM card configuration information configured first. May refer (5, asterisk configuration file to define the phone card number)

Reload asterisk on openbts configuration file, and then click Run:

```
#sudo su
```

```
#asterisk -rx " sip reload "
```

```
#asterisk -rx " dialplan reload "
```



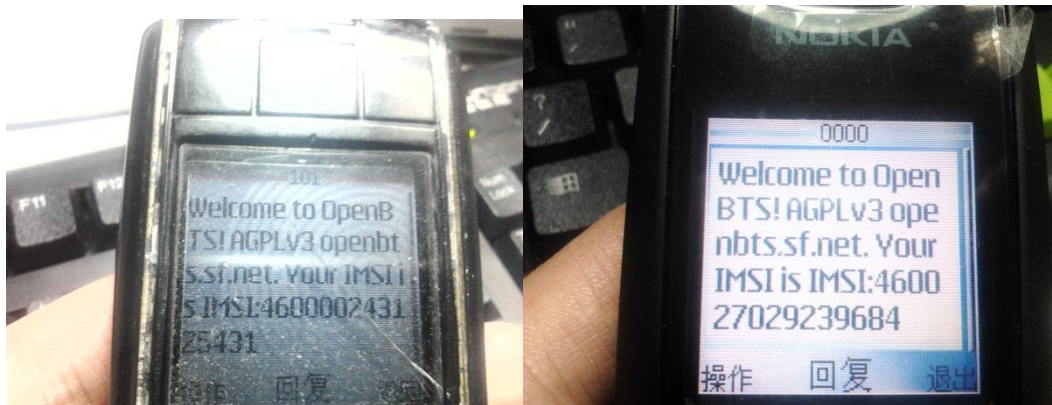
Pic-18

3、 The phone card into the phone, open the phone manually search, search CHN07 (CHN 07 oriented disc set base station) and connected. (the image is only a reference)



Pic-19

4、CHN 07 will connect the phone to receive text messages sent by the base station, as shown in FIG.: SMS shows the phone card IMSI number.



Pic-20

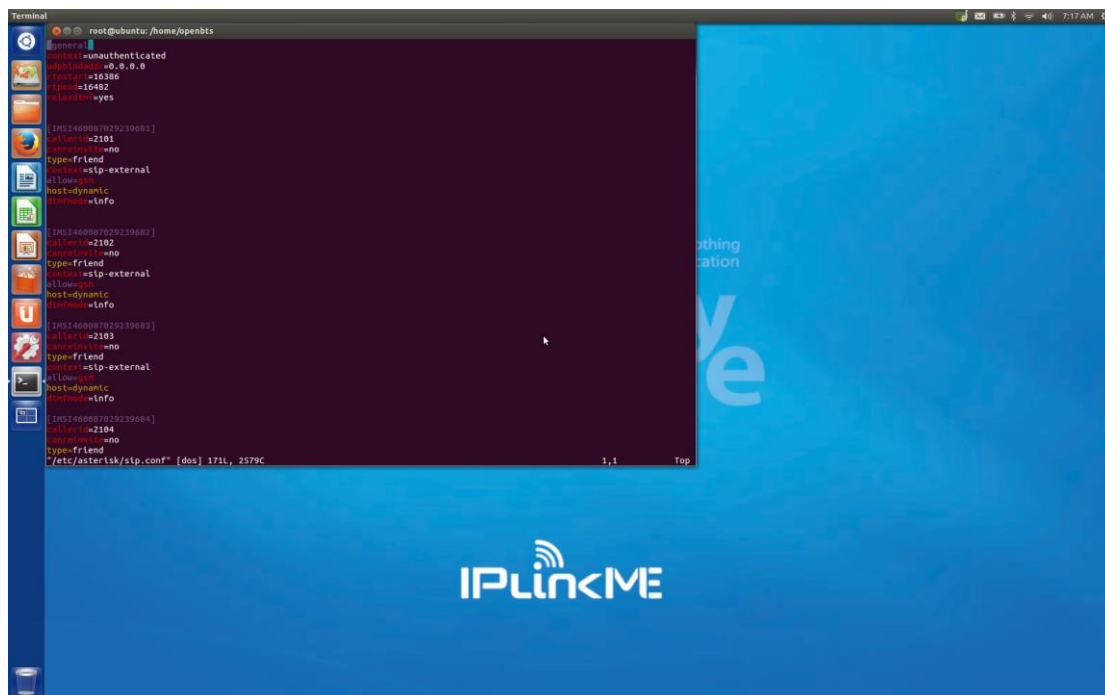
5、Asterisk configuration file to define the phone card number:

For example:

The ISMI: 460087029239681 defined as 2101;

The ISMI: 460087029239685 defined as 2105;

(1) In the terminal enter: vim /etc/asterisk/sip.conf following screen appears:



Pic-21

```
[IMSI460087029239681]
```

```
callerid=2101
```

```
canreinvite=no
```

```
type=friend
```

```
context=sip-local
```

```
allow=gsm
```

```
host=dynamic
```

dtmfmode=auto

[IMSI460087029239685]

callerid=2105

canreinvite=no

type=friend

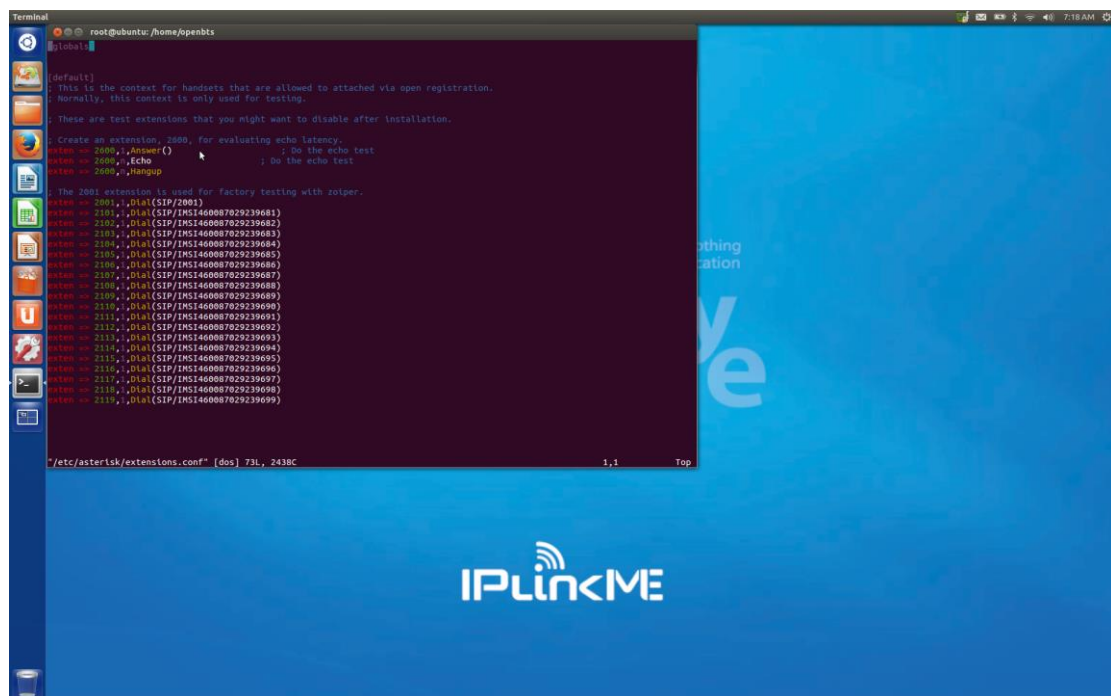
context=sip-local

allow=gsm

host=dynamic

dtmfmode=auto

(2) In the terminal enter: vim /etc/asterisk/extensions.conf following screen appears:



```
Terminal
root@ubuntu: /home/jppesbts
j@localhost:
[Default]
; This is the context for handsets that are allowed to attach via open registration.
; Normally, this context is only used for testing.
; These are test extensions that you might want to disable after installation.
; Create an extension, 2000, for evaluating echo latency.
exten => 2000,1,Answer() ; Do the echo test
exten => 2000,2,Echo ; Do the echo test
exten => 2000,3,Hangup
; The 2001 extension is used for factory testing with zoiper.
exten => 2001,1,Dial(SIP/2001)
exten => 2101,1,Dial(SIP/IMSI460087029239681)
exten => 2102,1,Dial(SIP/IMSI460087029239682)
exten => 2103,1,Dial(SIP/IMSI460087029239683)
exten => 2104,1,Dial(SIP/IMSI460087029239684)
exten => 2105,1,Dial(SIP/IMSI460087029239685)
exten => 2106,1,Dial(SIP/IMSI460087029239686)
exten => 2107,1,Dial(SIP/IMSI460087029239687)
exten => 2108,1,Dial(SIP/IMSI460087029239688)
exten => 2109,1,Dial(SIP/IMSI460087029239689)
exten => 2110,1,Dial(SIP/IMSI460087029239690)
exten => 2111,1,Dial(SIP/IMSI460087029239691)
exten => 2112,1,Dial(SIP/IMSI460087029239692)
exten => 2113,1,Dial(SIP/IMSI460087029239693)
exten => 2114,1,Dial(SIP/IMSI460087029239694)
exten => 2115,1,Dial(SIP/IMSI460087029239695)
exten => 2116,1,Dial(SIP/IMSI460087029239696)
exten => 2117,1,Dial(SIP/IMSI460087029239697)
exten => 2118,1,Dial(SIP/IMSI460087029239698)
exten => 2119,1,Dial(SIP/IMSI460087029239699)

/etc/asterisk/extensions.conf [dos] 73L, 2438C 1,1 Top
```

Pic-22

exten => 2101,1,Dial(SIP/IMSI460087029239681)

exten => 2105,1,Dial(SIP/IMSI460087029239685)

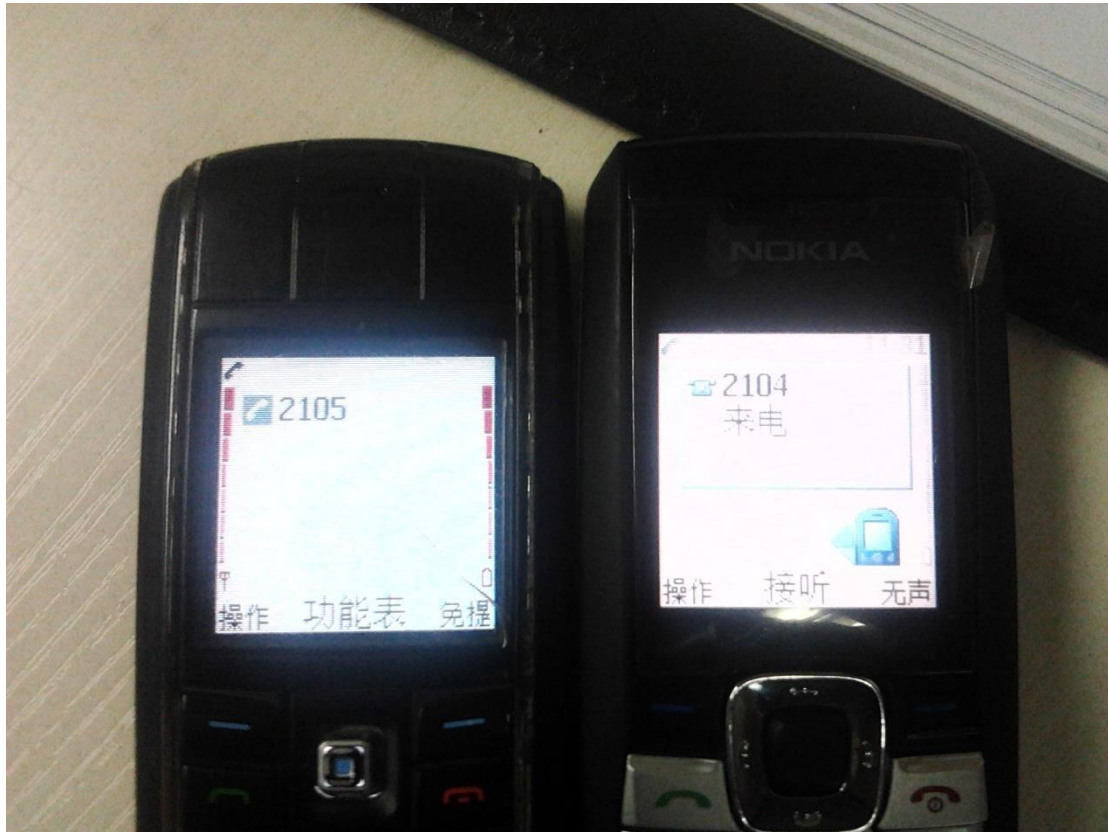
(5) Again to reload on asterisk profile

#sudo su

#asterisk

#asterisk -rx " sip reload "

#asterisk -rx " dialplan reload "



Pic-23

五、TIPS:

1、 When the user starts using the drive mode to be noted that the system and source code changes need to back up to a local hard drive or mobile device, otherwise it will disappear after the restart, because the disc can not save data. For details about the linux, please refer to the relevant literature.

2、 Under linux direct operation requires administrator privileges on the hardware, so before you run all the instructions, enter **sudo su**, and enter a password to gain **root privileges**.

3、 If Iplinkme or openbts @ me and other box boot from the start, if we find the phone does not detect the base station network:

Prerequisites to perform a shutdown command station: (**#stop openbts**) do the following

(1) in accordance with (Section 三) test. Test equipment integrity.

(2) to open the terminal to see if there are zombie processes

ps -aux | grep transceiver

If there is an executable:

kill -9 [ID]

Open in new base stations:

#start openbts

3、Examples of the base station due to the stability of the experimental platform, when searching base station signal and call please try several times for help with our group please