

GPS Receiver Set up and Procedure on OpenBoard-AM335x



Figure:1

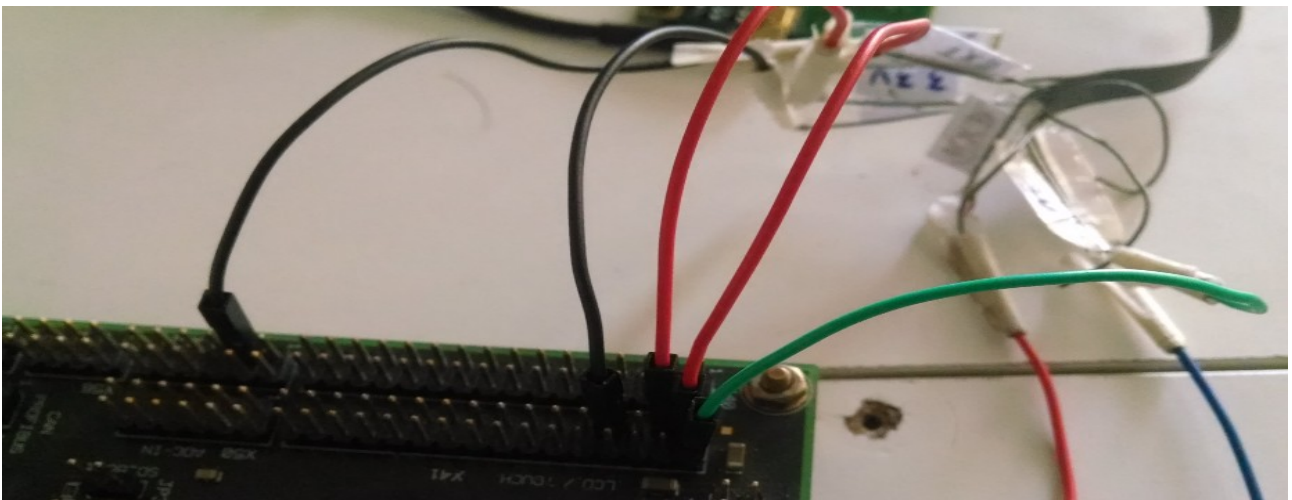


Figure:2

The above pictures (Figure 1 and 2) shows the connections of GPS Receiver to the OpenBoard-AM335x.

We have made connections from GPS receiver to OpenBoard-AM33x as following:

- 5V of GPS receiver to pin no.2 on X41 connector on OpenBoard.
- 3.3 v of GPS receiver to pin no.1 of X 41 connector on OpenBoard.
- 3.3 v of GPS receiver to pin no.3 of X 41 connector on OpenBoard.
- GND of GPS receiver to pin no.7 of X 41 connector on OpenBoard.
- PPS of GPS receiver to pin no.13 of X 27 connector on OpenBoard.
- Tx of GPS receiver to pin no.3 of X 51 connector on OpenBoard.

Note: We have enabled GPIO3_19 pin as PPS on pin no.13 of X 27 connector.

Boot the OpenBoard-AM33x with kernel Image and root file system which we shared in this mail.

Then give the following commands in order to check the required peripherals are enabled:

```
$ dmesg | grep Machine
```

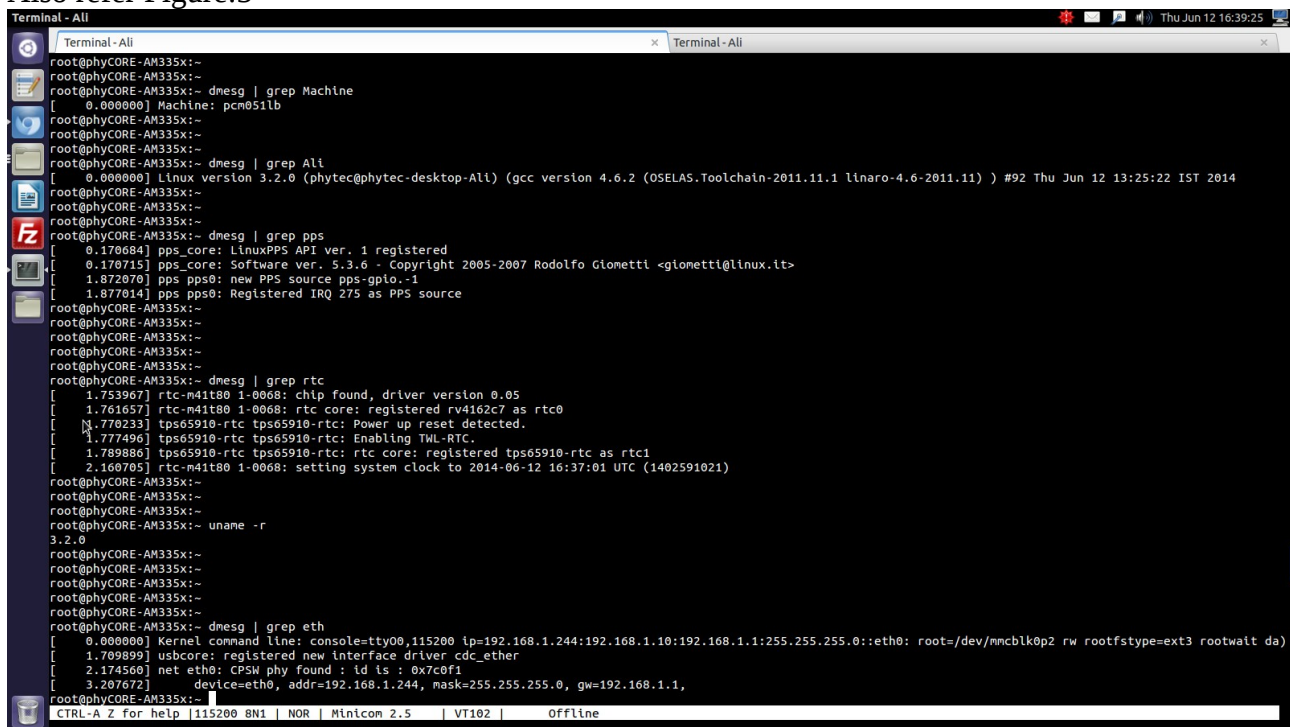
```
$ dmesg | grep pps
```

```
$ dmesg | grep rtc
```

```
$ uname -r
```

```
$ dmesg | grep eth
```

Also refer Figure:3



```
Terminal - Ali
root@phyCORE-AM335x:~# dmesg | grep Machine
[ 0.000000] Machine: pcm051b
root@phyCORE-AM335x:~# dmesg | grep Ali
[ 0.000000] Linux version 3.2.0 (phytec@phytec-desktop-Ali) (gcc version 4.6.2 (OSELAS.Toolchain-2011.11.1 linaro-4.6-2011.11) ) #92 Thu Jun 12 13:25:22 IST 2014
root@phyCORE-AM335x:~# dmesg | grep pps
[ 0.170684] pps_core: LinuxPPS API ver. 1 registered
[ 0.170715] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti <giometti@linux.it>
[ 1.872070] pps pps0: new PPS source pps-gpio.-1
[ 1.877014] pps pps0: Registered IRQ 275 as PPS source
root@phyCORE-AM335x:~# dmesg | grep rtc
[ 1.753967] rtc-m41t80 1-0068: chip found, driver version 0.05
[ 1.761657] rtc-m41t80 1-0068: rtc core: registered rv4162c7 as rtc0
[ 1.770233] tps65910-rtc tps65910-rtc: Power up reset detected.
[ 1.777490] tps65910-rtc tps65910-rtc: Enabling TML-RTC.
[ 1.789806] tps65910-rtc tps65910-rtc: rtc core: registered tps65910-rtc as rtc1
[ 2.160705] rtc-m41t80 1-0068: setting system clock to 2014-06-12 16:37:01 UTC (1402591021)
root@phyCORE-AM335x:~# uname -r
3.2.0
root@phyCORE-AM335x:~# dmesg | grep eth
[ 0.000000] Kernel command line: console=ttyO0,115200 ip=192.168.1.244:192.168.1.10:192.168.1.1:255.255.255.0::eth0: root=/dev/mmcblk0p2 rw rootfstype=ext3 rootwait da
[ 1.709899] usbcore: registered new interface driver cdc_ether
[ 2.174560] net eth0: CPSW phy found : id is : 0x7c0f1
[ 3.207672] device=eth0, addr=192.168.1.244, mask=255.255.255.0, gw=192.168.1.1,
root@phyCORE-AM335x:~#
```

Figure:3

RTC settings:

Now in order to set the date for External RTC, give the below commands:

```
$ date <Month:Date:Hour:Minute:Year>
```

```
$ hwclock -w -f /dev/rtc0
```

```
$ hwclock -r -f /dev/rtc0
```

```
$ date
```

Ethernet Settings:

Now for the ethernet connections give the following commands:

```
$ ifconfig -a
```

```
$ ifconfig eth0 <target ip> up
```

```
$ ifconfig -a
```

```
$ ping <host ip>
```

```

$ ping 192.168.1.1
$ ping www.google.com
$ route
$ route add default gw 192.168.1.1
$ route
$ echo "nameserver 192.168.1.1" > /etc/resolv.conf
$ ping www.google.com

```

NTP settings:

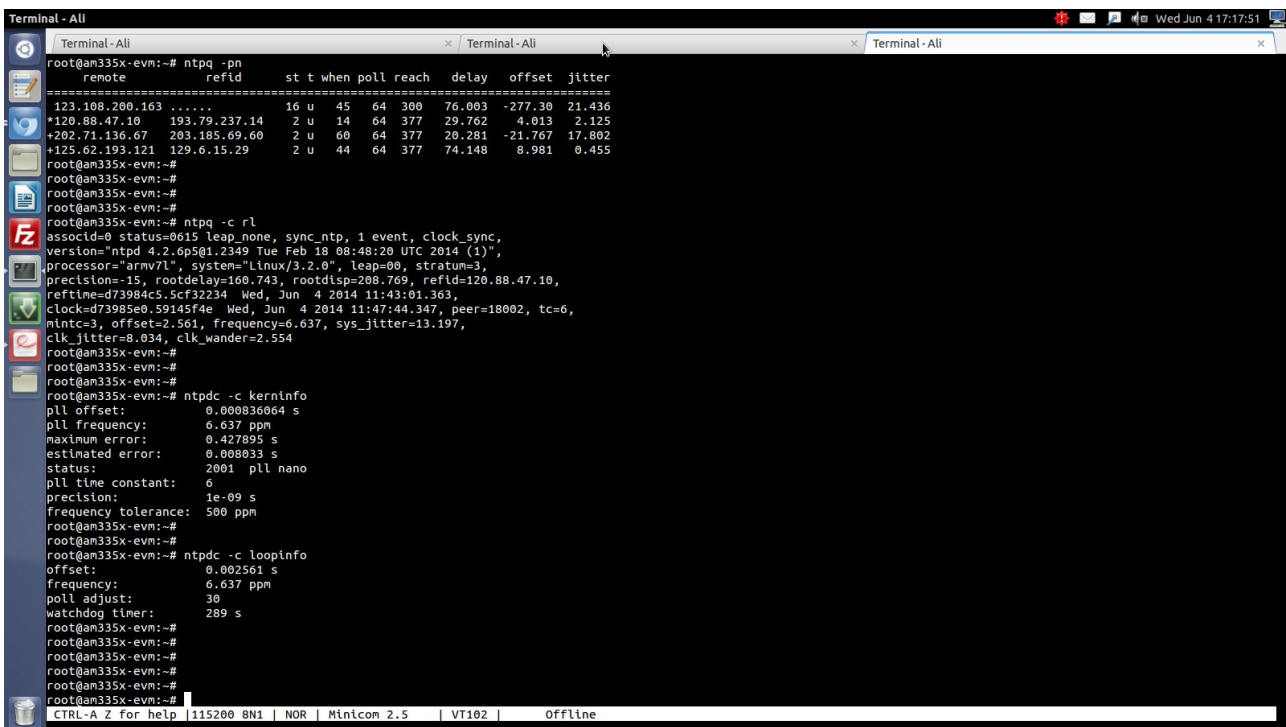
In order to check the NTP values please give the below commands:

```

$ ntpdate pool.ntp.org
$ ntpd
$ ntpq -p or ntpq -pn
$ ntpdc -c kerninfo

```

Also please refer the below screen shots which we kept in testing for three days continuously.



```

Terminal - Ali
root@an335x-evm:~# ntpq -pn
remote           refid          st t when poll reach  delay  offset jitter
-----
123.108.200.163  . . . . .    16 u  45  64  300  76.003 -277.30 21.436
+120.88.47.10   193.79.237.14 2 u  14  64  377  29.762  4.013  2.125
+202.71.136.67 203.185.69.60 2 u  60  64  377  20.281 -21.767 17.802
+125.62.193.121 129.6.15.29   2 u  44  64  377  74.148  8.981  0.455
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~# ntpq -c rl
associd=0 status=0615 leap_none, sync_ntp, 1 event, clock_sync,
version="ntpd 4.2.6p5@1.2349 Tue Feb 18 08:48:20 UTC 2014 (1)",
processor="armv7l", system="Linux/3.2.0", leap=00, stratum=3,
precision=-15, rootdelay=160.743, rootdisp=208.769, refid=120.88.47.10,
reftime=d73984c5.5cf32234 Wed, Jun  4 2014 11:43:01.363,
clock=d73985e0.59145f4e Wed, Jun  4 2014 11:47:44.347, peer=18002, tc=6,
mintc=3, offset=2.561, frequency=6.637, sys_jitter=13.197,
clk_jitter=8.034, clk_wander=2.554
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~# ntpdc -c kernInfo
pll offset:           0.000836064 s
pll frequency:       6.637 ppm
maximum error:       0.427895 s
estimated error:     0.008033 s
status:              2001 pll nano
pll time constant:   6
precision:           1e-09 s
frequency tolerance: 500 ppm
root@an335x-evm:~#
root@an335x-evm:~# ntpdc -c loopInfo
offset:              0.002561 s
frequency:          6.637 ppm
poll adjust:        30
watchdog timer:     289 s
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
root@an335x-evm:~#
CTRL-A Z for help 115200 8N1 | NOR | Minicon 2.5 | VT102 | Offline

```

Figure:4

