# ORION T-7 Getting Started

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1. ORION T-7 Hardware Introduction
   a. Overview

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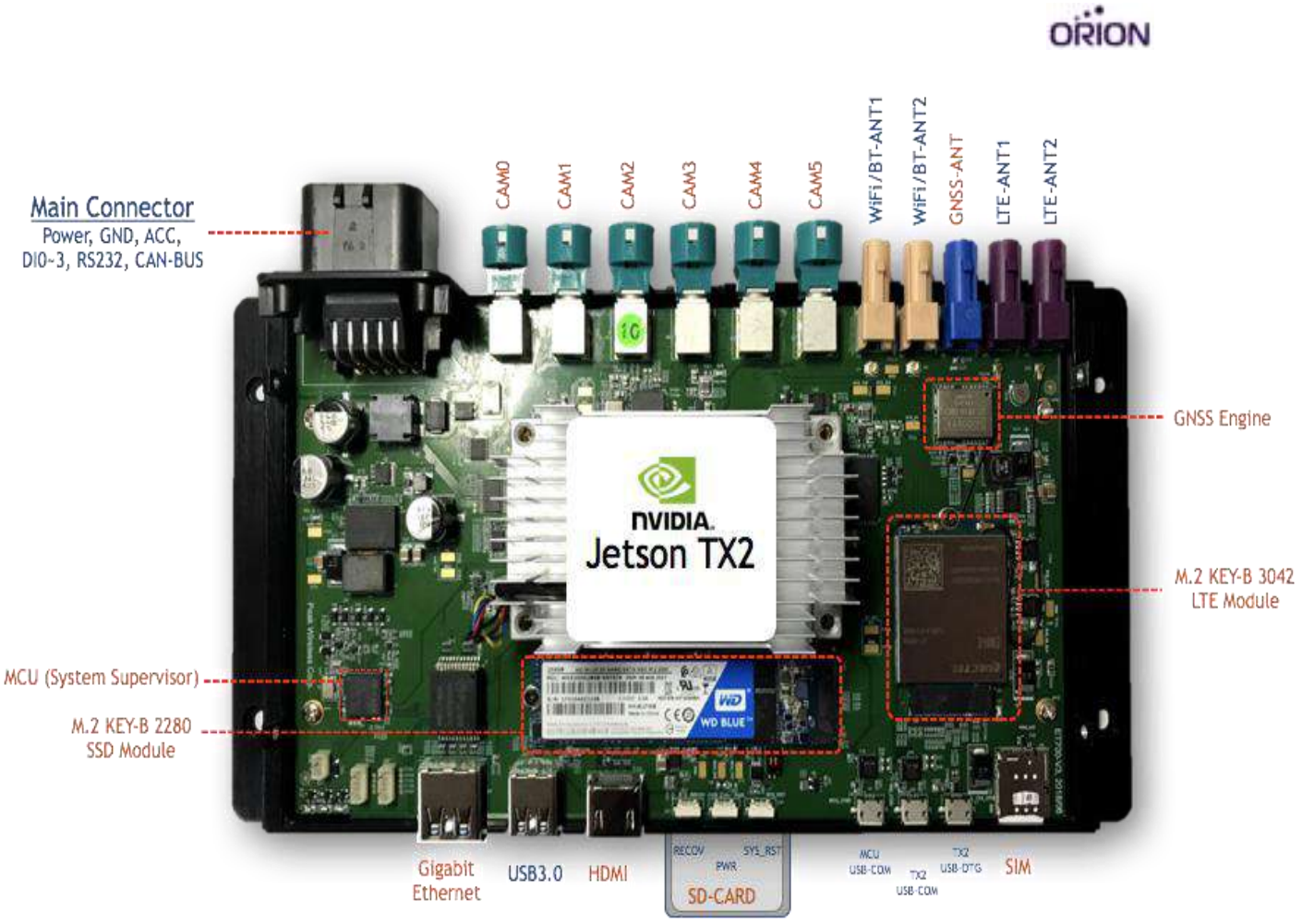


b. Main connector

Cable side:

776273-1

ORION T-7 side:

776266-1

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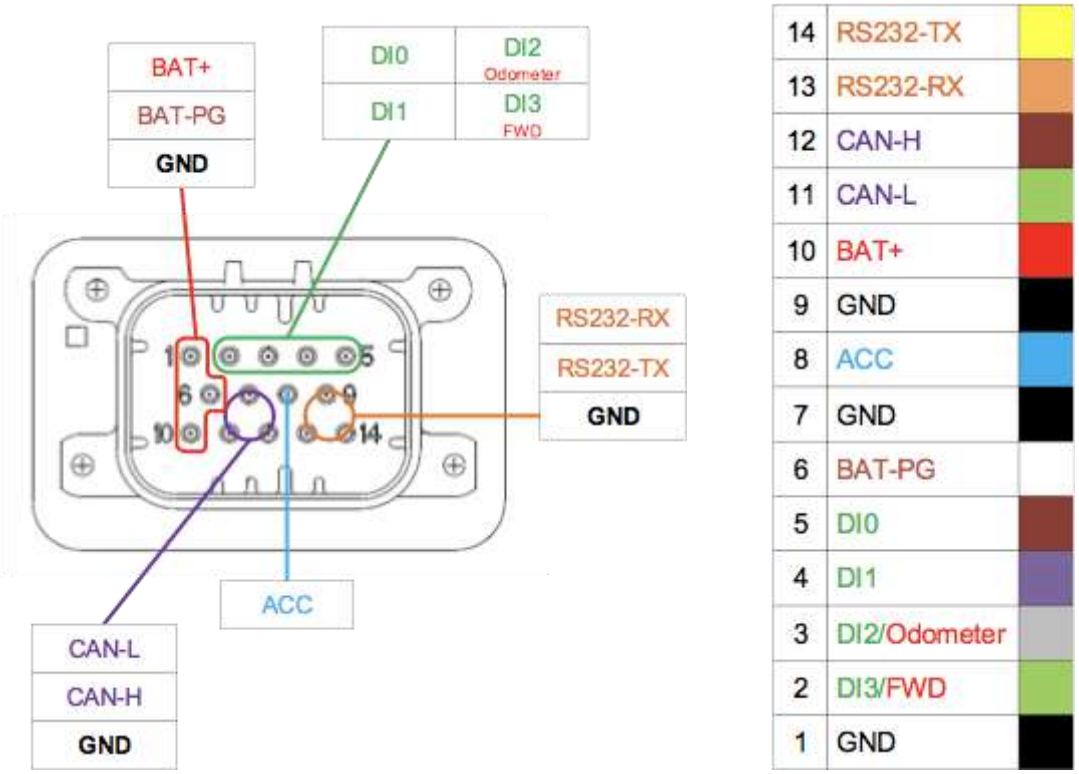
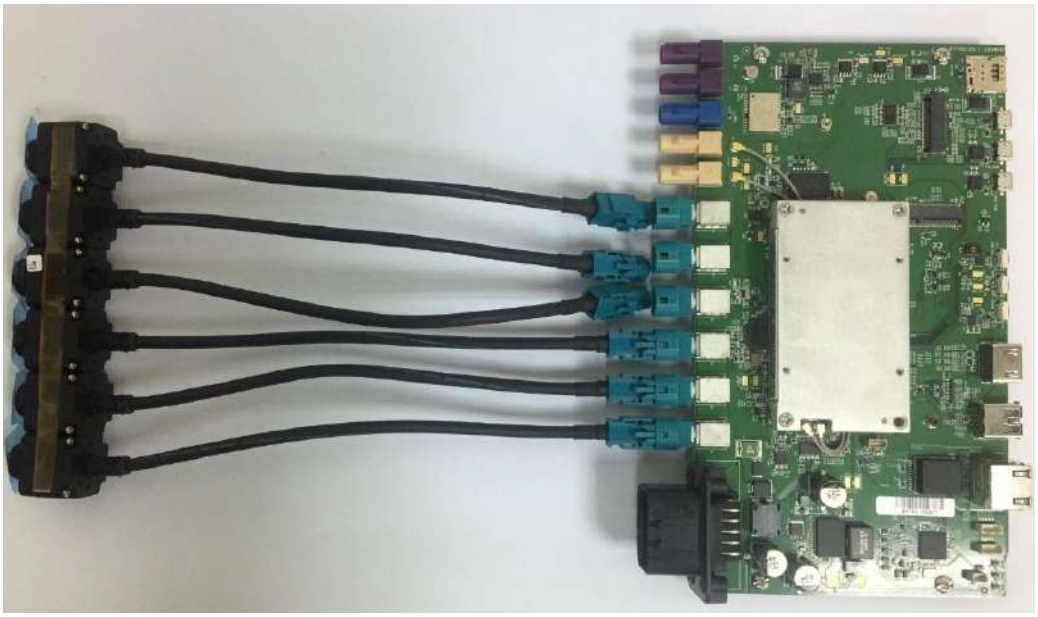



| | | |
|---|---|---|
| 14 | RS232-TX | |
| 13 | RS232-RX | |
| 12 | CAN-H | |
| 11 | CAN-L | |
| 10 | BAT+ | |
| 9 | GND | |
| 8 | ACC | |
| 7 | GND | |
| 6 | BAT-PG | |
| 5 | DI0 | |
| 4 | DI1 | |
| 3 | DI2/Odometer | |
| 2 | DI3/FWD | |
| 1 | GND | |

Note:
1. BAT-PG (Battery Power-Good), Reserved for external UPS module.
2. DI* : Positive Digital Input

2. 6-CH Serdes carmera
    a. Installation:
        i. Connect 6-CH cameras to ORION T-7



        ii. Connect Power cable

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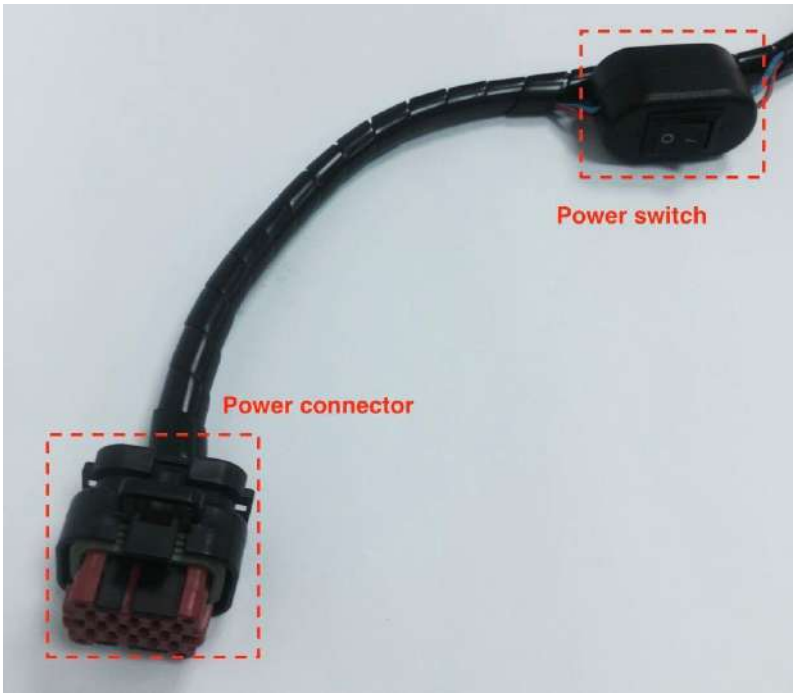
Please check power button off when connecting cable

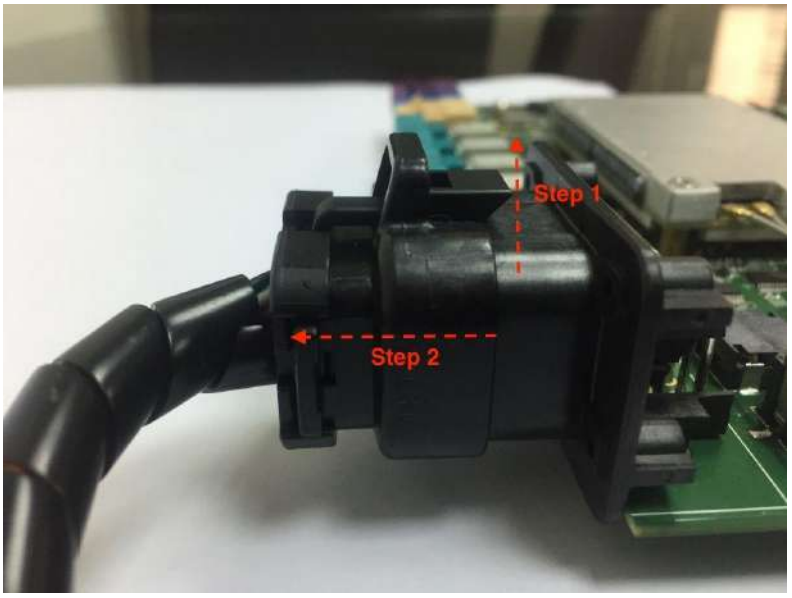



iii. Turn on power button

Note: How to disconnect power connector

Step 1. Open latch

Step 2. Pull back cable

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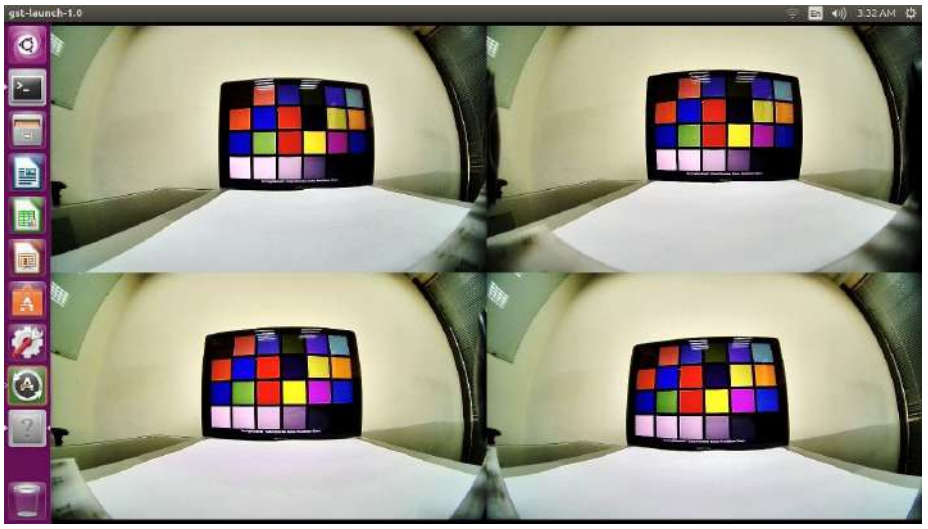
b. How to use script file to test camera

i. Open terminal (Ctrl + Alt + T):

- 1-CH command : sh v.sh 0~5
  0~5(camera index : cam0~cam5)
  Connect successfully as below

- 4-CH command : sh 4cams.sh
  Connect successfully as below

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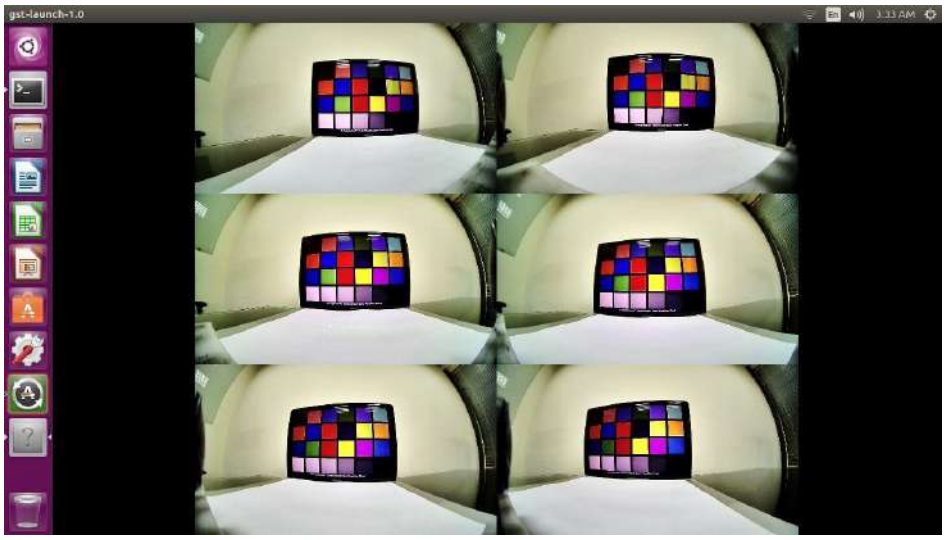
- 6-CH command : sh 6cams.sh
  Connect successfully as below




c. Close video command : Ctrl + C Note:

1. Do not disconnect camera when video streaming is in view mode.
2. Do not bend the camera cable to 90 degrees

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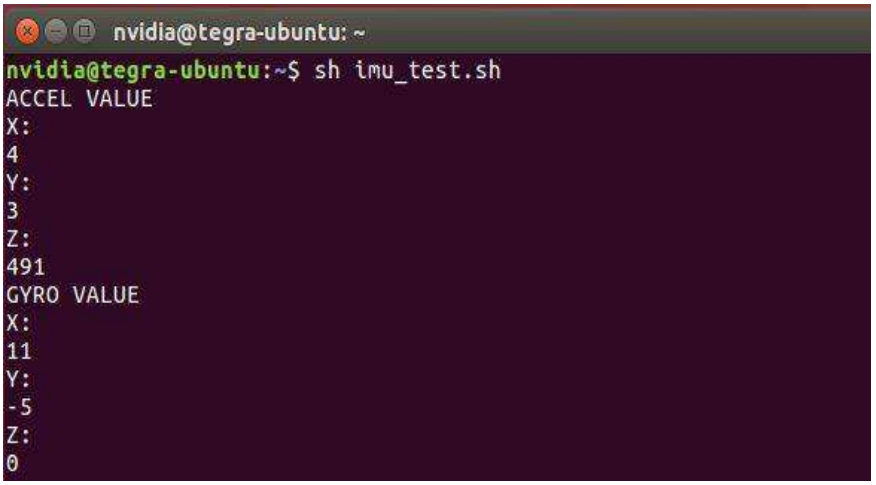
3. Inertial Measurement Unit(IMU)

a. How to use script file to test IMU

i. Open terminal (Ctrl + Alt + T)

- Command : sh imu_test.sh

  As you can see acceleration 3-axis values and gyro 3-axis values




ii. Acquire acceleration 3-axis values

- Command: cd /sys/bus/iio/devices/iio:device3/
  - X value command: cat in_accel_x_raw
  - Y value command: cat in_accel_y_raw
  - Z value command: cat in_accel_z_raw
- Check acceleration sampling frequency options :
  Command: cat sampling_frequency_available
- Change sampling frequency Command: echo > (frequency) in_accel_sampling_frequency

iii. Acquire gyro 3-axis values

- Command: cd /sys/bus/iio/devices/iio:device2/
  - X value command: cat in_anglvel_x_raw
  - Y value command: cat in_anglvel_y_raw
  - Z value command: cat in_anglvel_z_raw ●

  Check gyro sampling frequency options:
  Command: cat sampling_frequency_available ●

Change sampling frequency

Command:

echo > (frequency) in_anglvel_sampling_frequency

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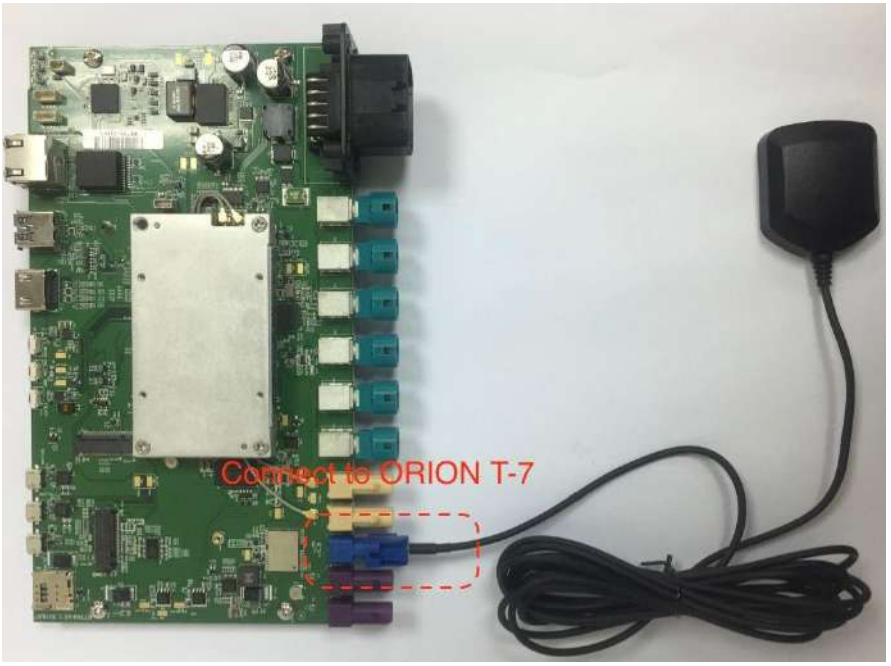
4. GPS
   a. Installation : connect GPS antenna to ORION T-7




   b. How to use script file to test GPS
      i. Open terminal (Ctrl + Alt + T)
         - Command : sh telecom3p_test.sh
         - Acquire NMEA Data

```
nvidia@tegra-ubuntu:~$ sh telecom3p_test.sh
115200
$GNRMC,005655.000,V,0000.00000,N,00000.00000,E,0.0,0.0,071214,,,N*6A

$GNGGA,005655.000,0000.00000,N,00000.00000,E,0,00,99.0,100.00,M,0.0,M,,*71

$GNVTG,0.0,T,,M,0.0,N,0.0,K,N*1C

$GNGSA,A,1,,,,,,,,,,,,99.0,99.0,99.0*1E

$GNGSA,A,1,,,,,,,,,,,,99.0,99.0,99.0*1E

$GNGSA,A,1,,,,,,,,,,,,99.0,99.0,99.0*1E

$GNGSA,A,1,,,,,,,,,,,,99.0,99.0,99.0*1E

$GNGLL,0000.00000,N,00000.00000,E,005655.000,V,N*5C

$GNZDA,005655.00,07,12,2014,00,00*78

$PSTMDRCAL,0,0,0,1,3f,1,1,N*58
```

      Please check the third parameter of GNRMC:

      A=active or V=Void

   c. How to configure UART port to acquire GPS Data
      i. Set up UART port:

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Command: stty -F /dev/ttyTHS2 speed 115200 cs8 -cstopb -parenb Then you can monitor ttyTHS2 to fetch GPS data ii. Fetch GPS Data:

Command: cat /dev/ttyTHS2

5. M.2 SSD
   a. Installation: insert M.2 SSD 2280 to ORION T-7

Note: The SSD Spec. must “M2 KEY-B 2280 SSD module”

   b. SSD size check:

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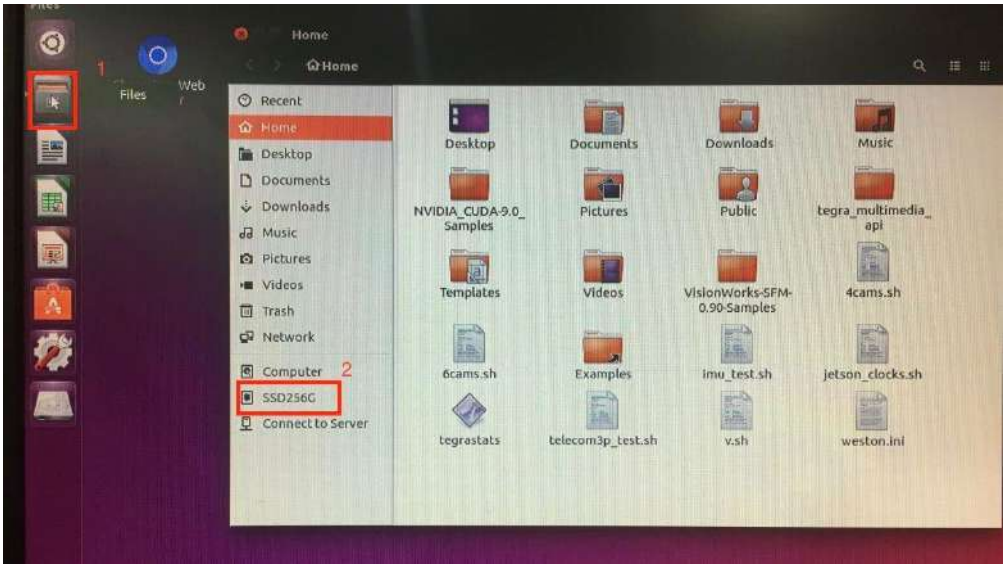


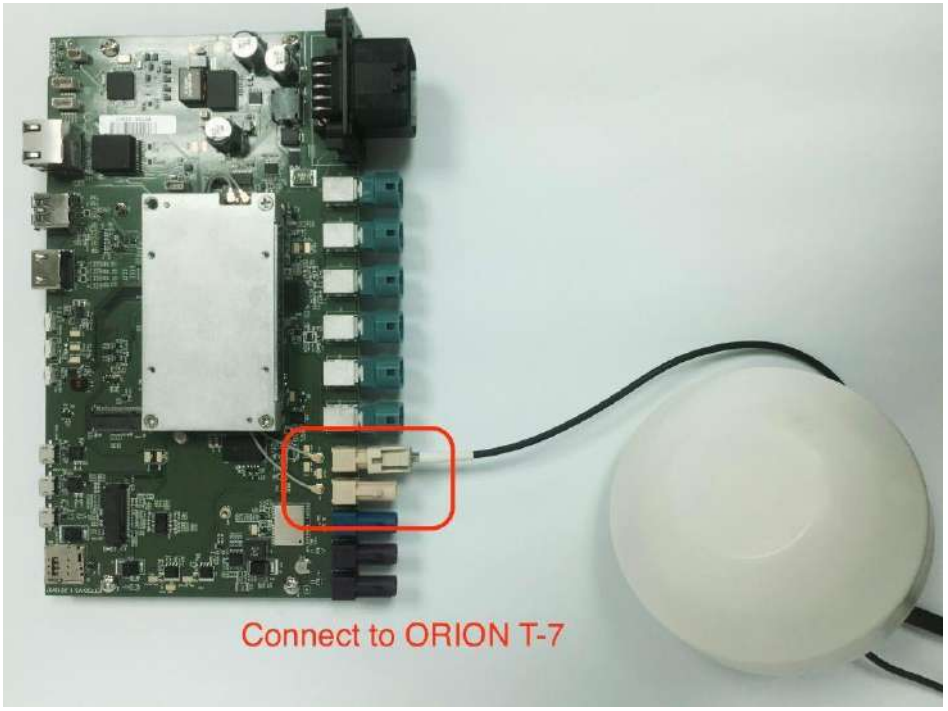

i. Double Click file icon

ii. Check SSD Size: for example : SSD 256G

6. Wi-Fi

a. Installation: There are two ports for Wi-Fi antenna, you can connect any one port to ORION T-7

- Keep antenna upward




b. Set up Wi-Fi Network :

- Enable Wi-Fi

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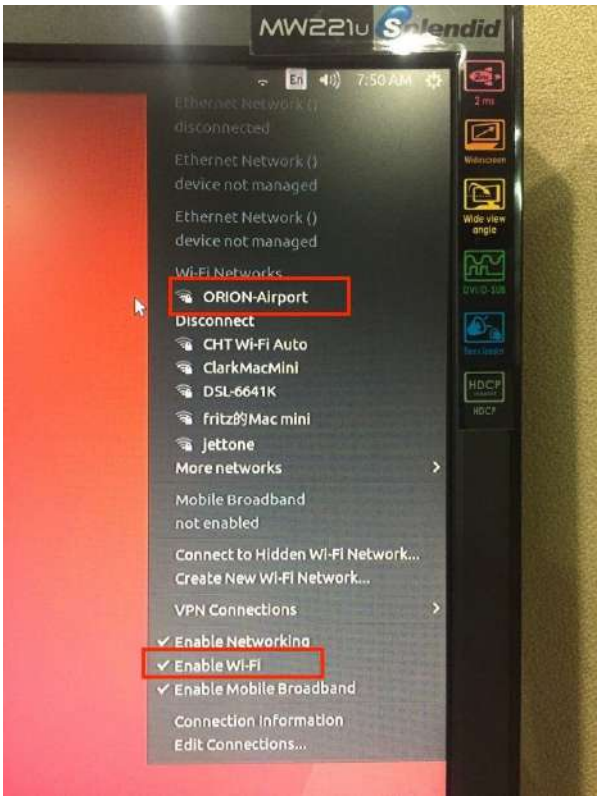
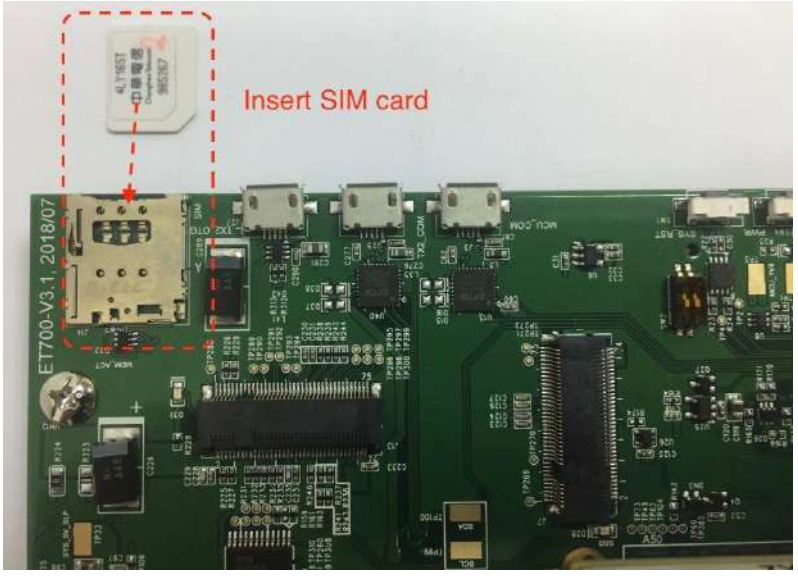
- Check Wi-Fi Networks connected




7. 4G LTE Module configuration
   a. Installation: insert Micro SIM card




   b. Set up 4G LTE module configuration:
      i. Check Mobile Broadband option and click connection

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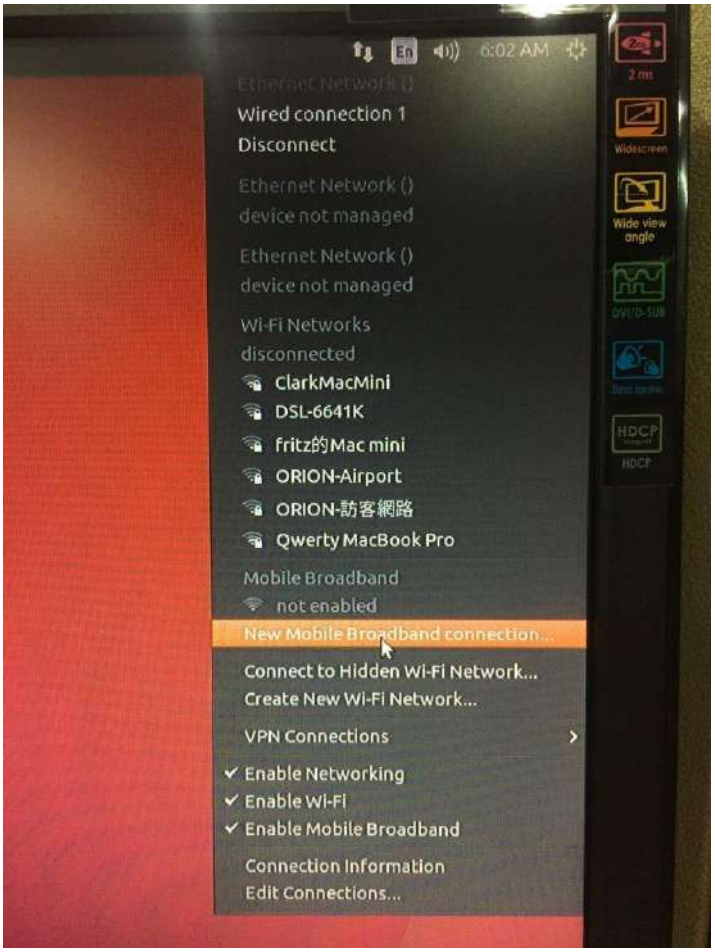


## ii. Set up Mobile Broadband connection

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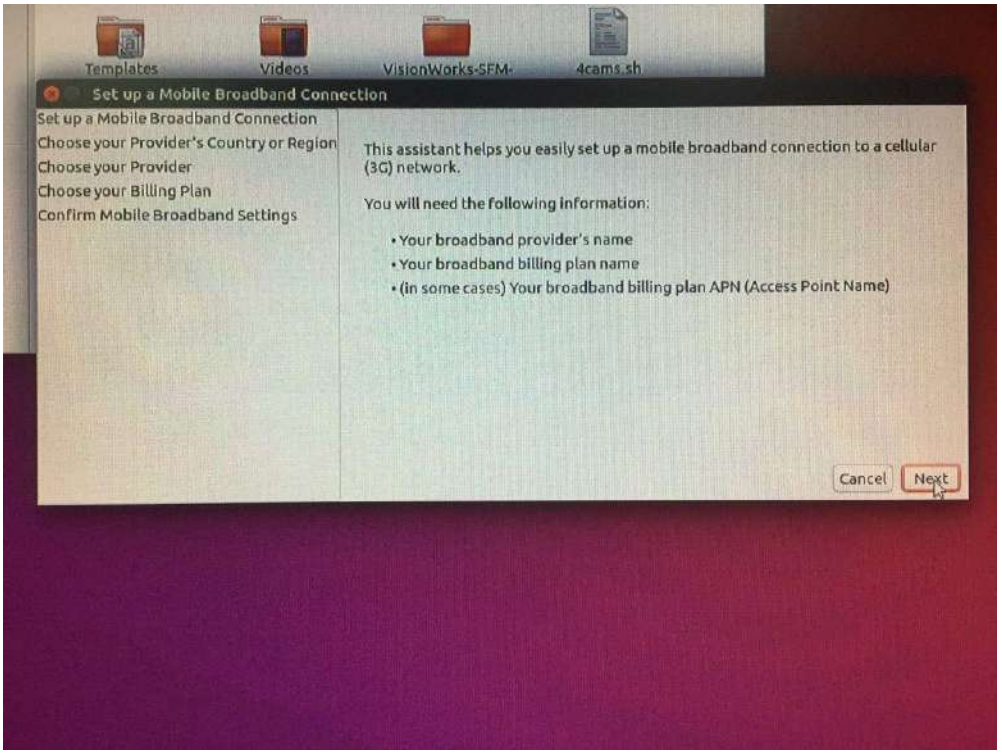
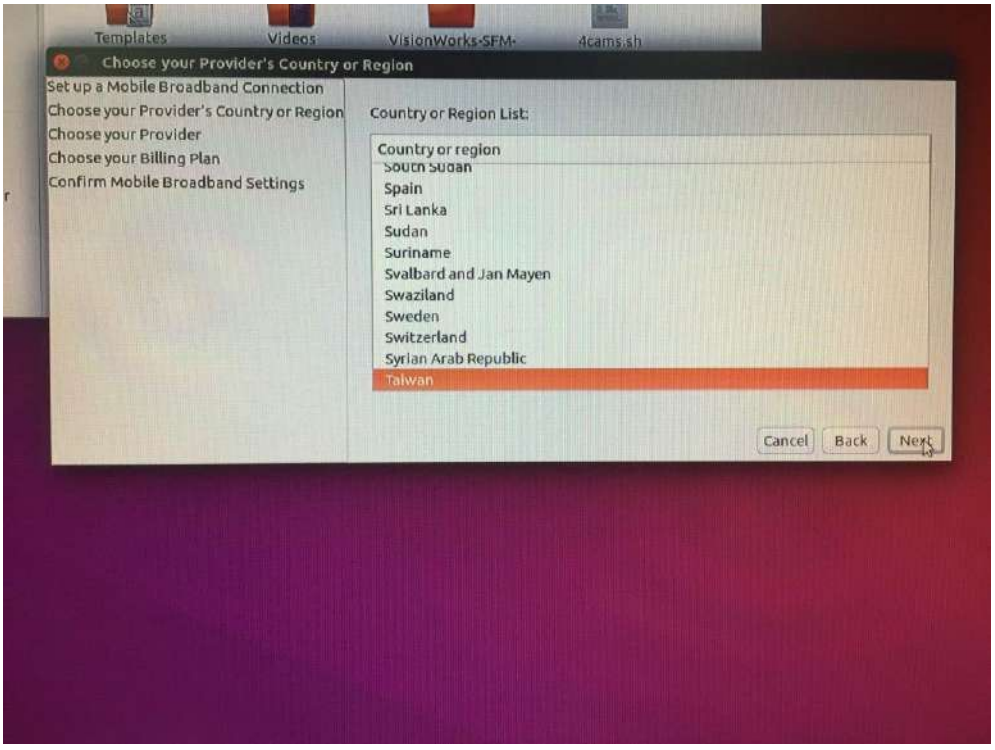



iii. Choose your country




iv. Choose your provider

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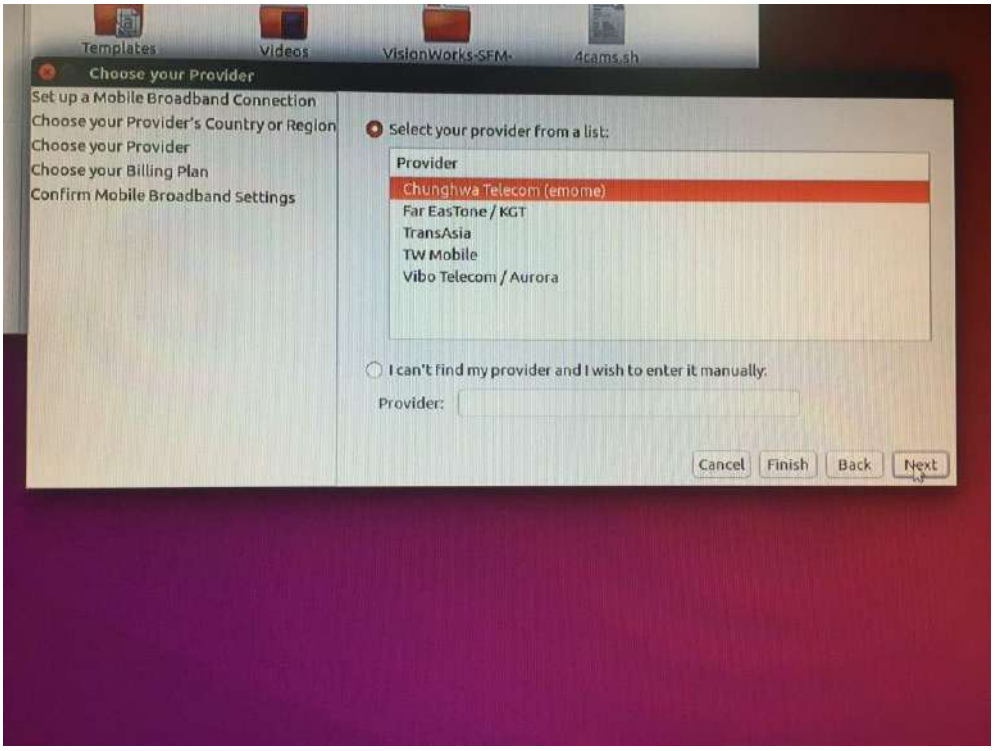
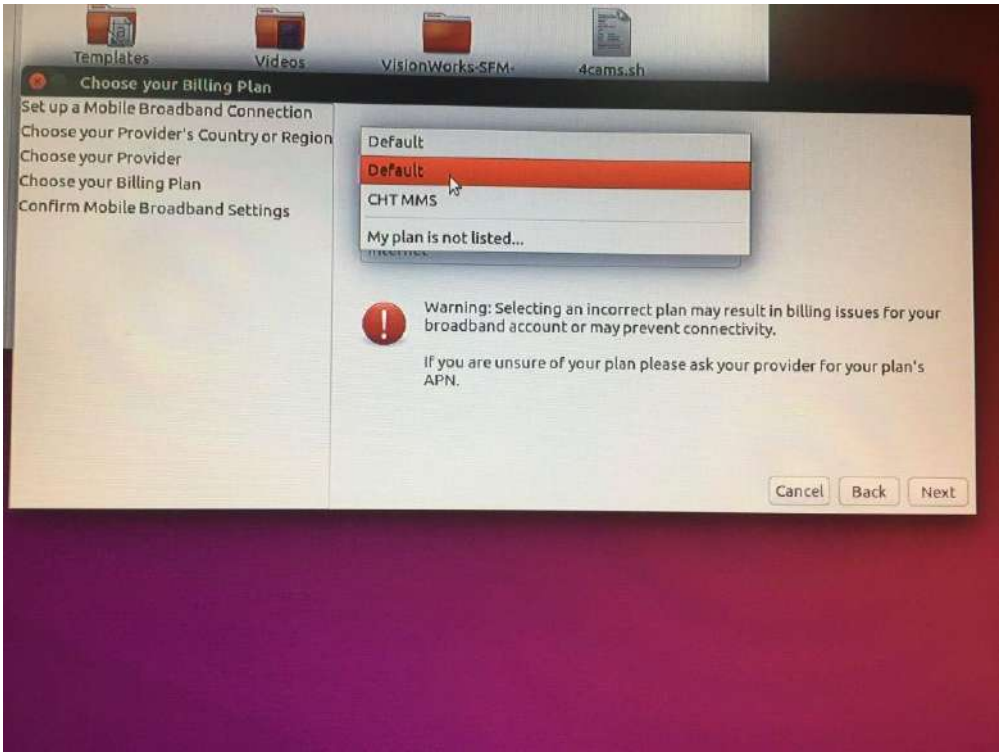



v. Choose your billing plan select the second “Default”




vi. Click Apply

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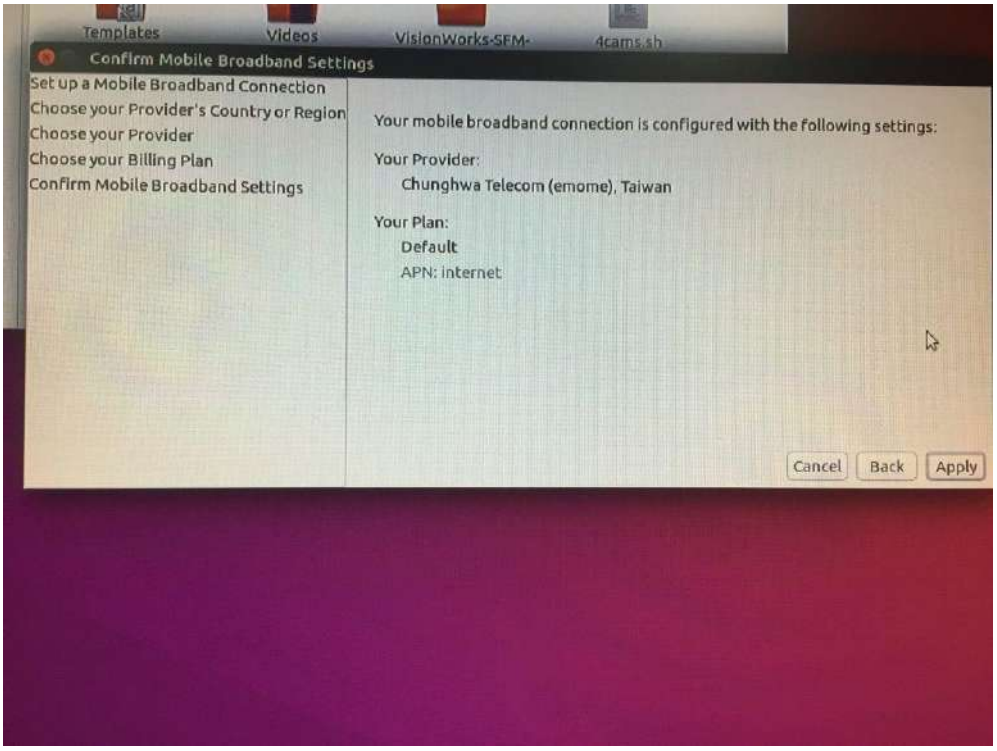
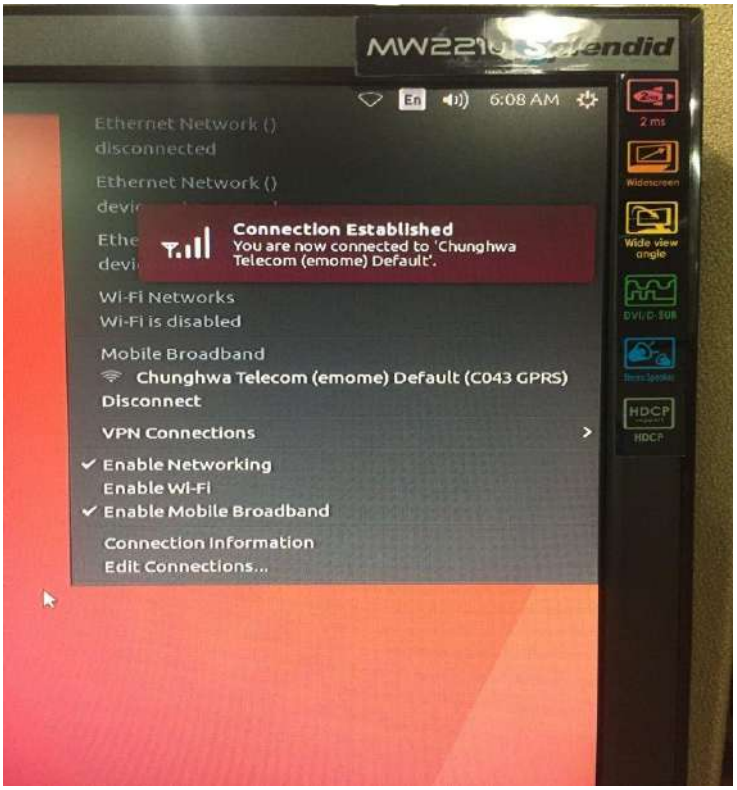



vii. Mobile Broadband connected successfully

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