THine Solutions

THSCP101
Start Guide

Rev. 1.00

1. The Items You Need

- MediaTek Pumkin i350 EVK
- Power supply
  - 5.2V/2.5A with USB3 Type-C plug (※)
- USB Type-C cables (2 pcs)
- Display and HDMI cable
  - Display with HDMI port
  - HDMI cable
- PC
  - Windows10
- Linux binary of Pumkin i350 EVK for THSCP101
  - Request the Linux binary to THine Solutions.
    https://www.thinesolutions.com/support-request
- THSCP101
  - Camera board (THSCG101)
  - FFC cable
  - Adapter card

(※) You can use the power supply included in the MediaTek Pumpkin i350 EVK.

2. PC Setup

Step 1 : Install the software tools into PC.

- Follow the steps in the web page of MediaTek.

  https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/env-setup/flash-env-windows.html#

3. Linux Binary Preparation for Pumpkin i350 EVK

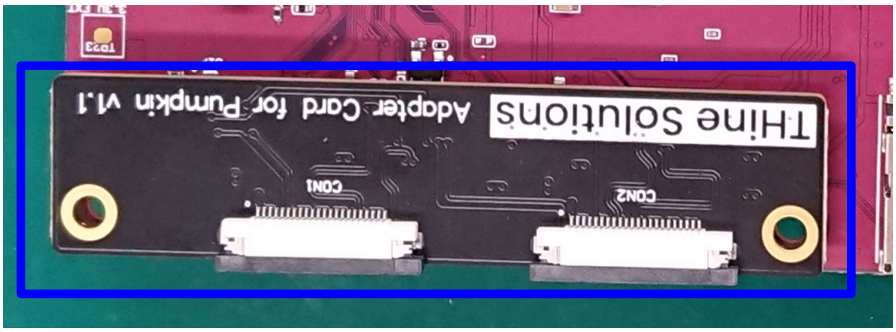
Step 1 : Get .tar.gz file of Linux binary for Pumpkin i350.

- Request the latest Linux binary to THine Solutions.
  https://www.thinesolutions.com/support-request

Step 2 : Decompress as the Administrator mode

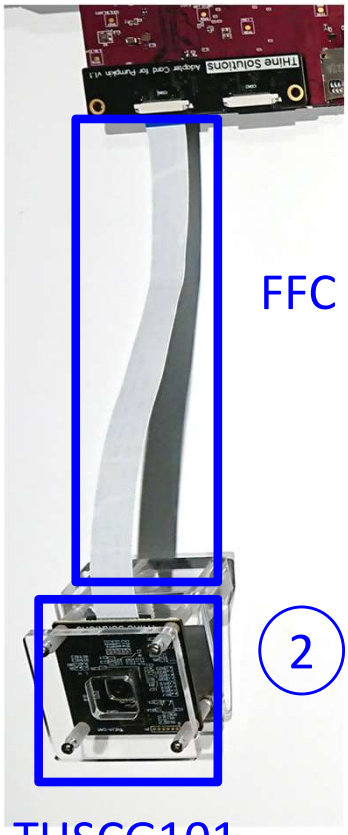
- Decompress the THEIA-CAM_P101_i350 folder from .tar.gz file.
- There is “i350-pumpkin” folder in the “THEIA-CAM_P101_i350”

4. Pumpkin i350 EVK Hardware Setup (1/2)



①

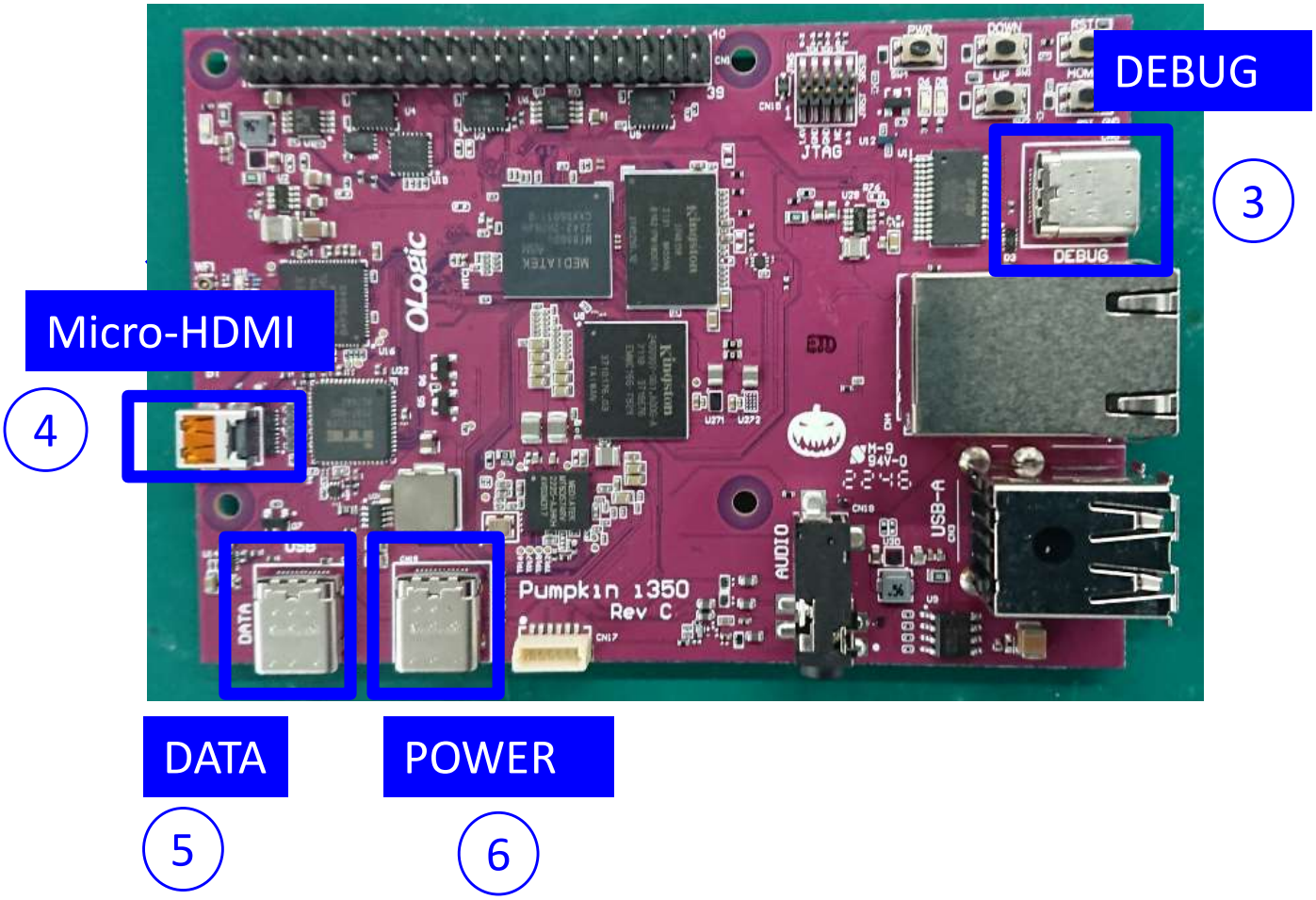
Adapter Card



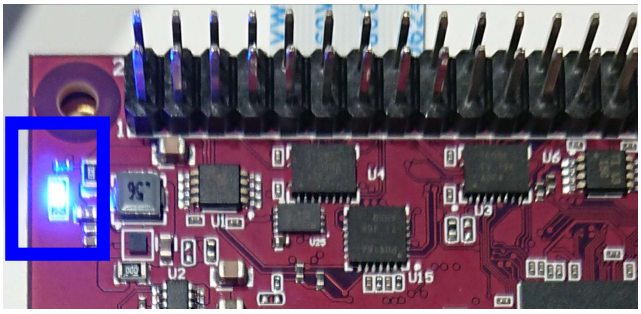
THSCG101

① Connect the adapter board with the Pumpkin i350 EVK.
② Connect the THSCG101 to adapter card with FFC.
- Remove the cover on the camera module.

4. Pumpkin i350 EVK Hardware Setup (2/2)



③ Connect PC with “DEBUG” port via USB Type-C cable.
④ Connect HDMI display with “Micro-HDMI” via HDMI cable.
⑤ Connect PC with “DATA” port via USB Type-C cable.
⑥ Connect power outlet with “POWER” port AC adapter.
Pumpkin i350 EVK power on.

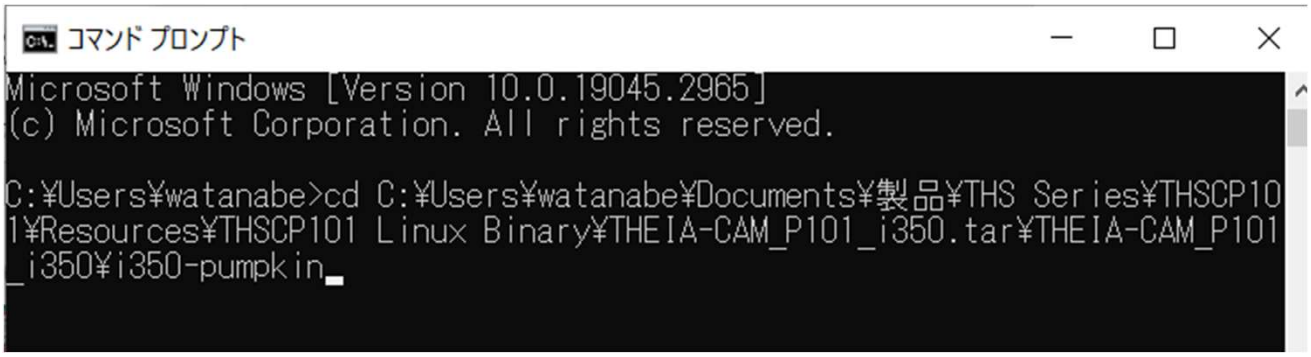


5. Program Linux Binary to Pumpkin i350 EVK (1/3)

Perform only the first time.

Step 1 : Launch Command Prompt of Windows.

Step 2 : Change the working folder to the folder where “i350-pumpkin” locates.



Step 3 : Enter the following command to program the Linux binary to Pumpkin i350.

- `aiot-flash --load-dtbo video.dtbo --load-dtbo gpu-mali.dtbo --load-dtbo camera-thp7312-imx258-single.dtbo`

5. Program Linux Binary to Pumpkin i350 EVK (2/3)

Perform only the first time.

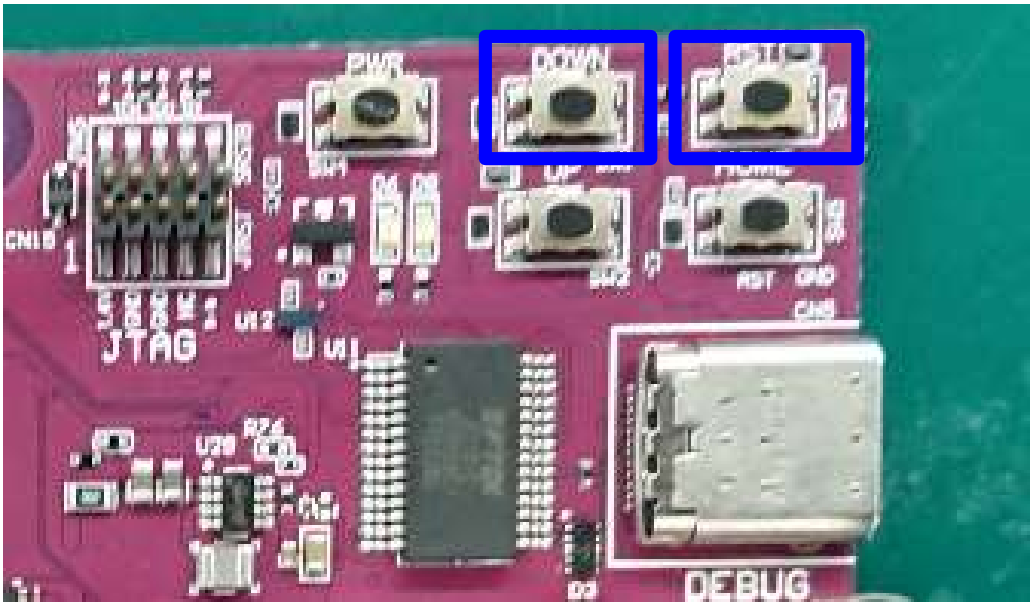
Step 4 : Wait “Looking for MediaTek SoC matching USB device 0e8d:0003” is shown in the prompt.

```
AIoT Tools: v1.3.0
Yocto Image:
        name:     Rity Demo Image (rity-demo-image)
        distro:   Rity Demo Layer 22.2-release (rity-demo)
        codename: kirkstone
        machine:  i350-pumpkin
        overlays: ['video.dtbo', 'gpu-mali.dtbo', 'camera-thp7312-imx258
-single.dtbo']

Looking for MediaTek SoC matching USB device 0e8d:0003
```

Step 5 : Press “DOWN” then press “RST” button on the Pumpkin i350 EVK.

Then release “RST” and “Down”button.



5. Program Linux Binary to Pumpkin i350 EVK (3/3)

Perform only the first time.

Step 6 : Wait until the Command Prompt is ready for input.

Note

Update the Android Bootloader Interface Driver from the following URL if you find that “aiot-flash” stops after you see "jumping to bootstrap" on the Command Prompt.

https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/get-started/flash/flash-troubleshoot-windows.html#missing-yocto-driver

Step 7 : Remove USB cable from “DATA” port.

6. Login Linux on Pumpkin i350 EVK (1/3)

Step 1 : Launch “device manager”

- Type in “device manager” in Windows search bar.

Step 2 : Check COM port number.

- Scroll down in the device manager to “Ports (COM & LPT)” & verify the correct port.
- There should be “USB Serial Port (COM<N>)”.

Step 3 : Launch “Putty” on your Windows PC,

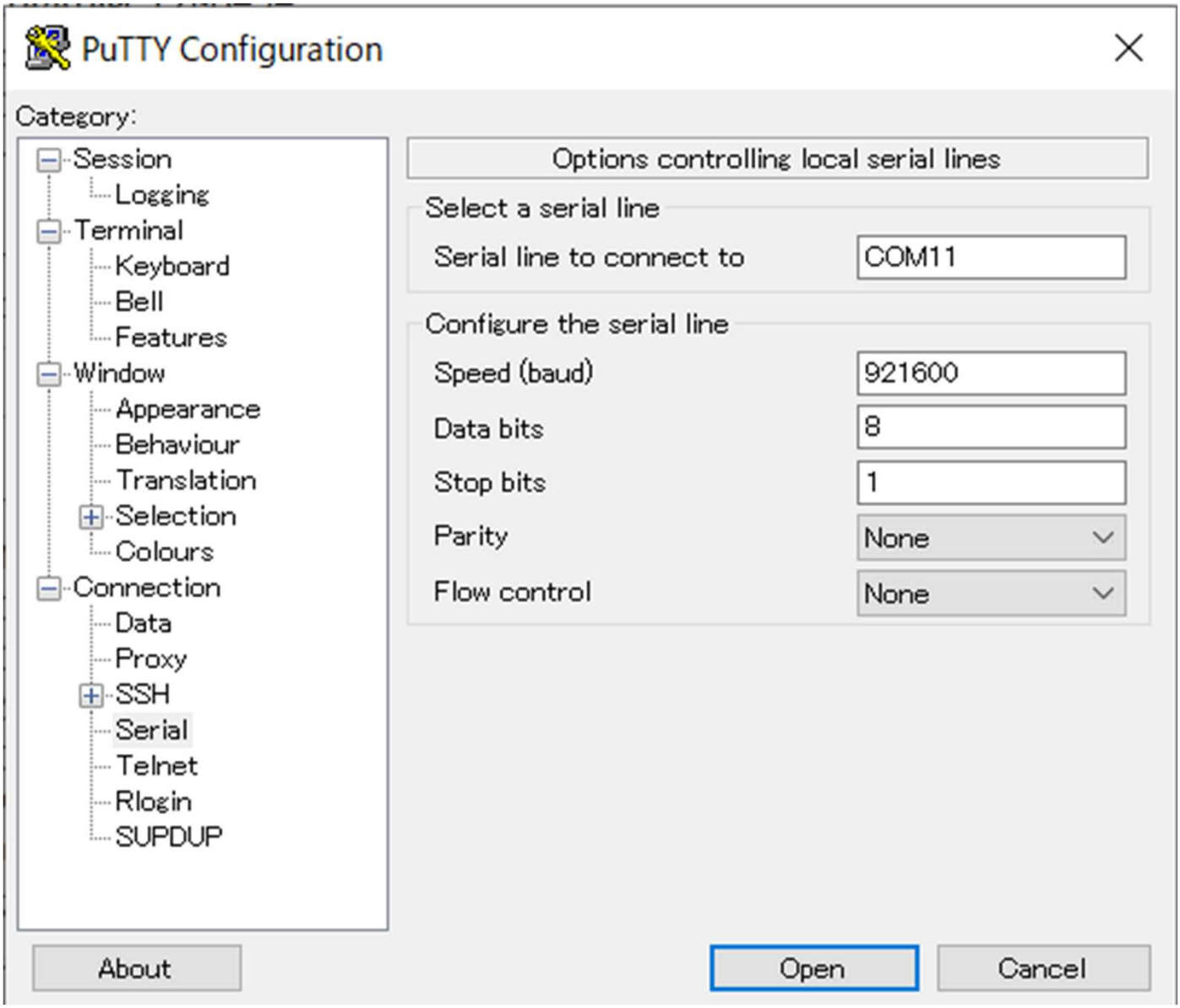
- You may need to install VCP driver.
  - http://www.ftdichip.com/Drivers/VCP.htm

6. Login Linux on Pumpkin i350 EVK (2/3)

Step 4: Select “Serial” in the Category.

Step 5: Fill in the connection settings as follows

- COM<N> might be different from the following figure, but <N> should be the number checked in the Step 2.

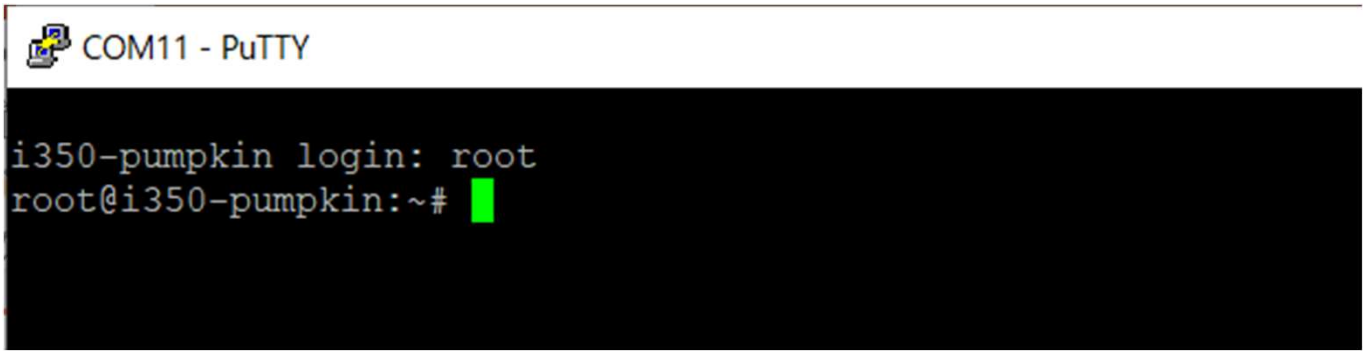


6. Login Linux on Pumpkin i350 EVK (2/3)

Step 6: Press enter key, then Putty displays the following message.

Step 7: Login as "root“

- Enter “root”, then press enter key.



Step 8: Reboot the Pumpkin i350 EVK and login as root.

- Enter “reboot”, then press enter key.

7. THSCP101 Firmware Update (optional) (1/3)

Step 1: Check THSCP101 firmware version.

1-1) Identify the firmware version in the hardware.

You can identify the THP7312-P firmware version in the THSCP101 hardware by the following command.

- `v4l2-ctl -d /dev/v4l-subdev1 --get-ctrl=thp7312_firmware_version`

```
thp7312_firmware_version: 'THSCG101:THP7312 firmware version = xx.xx'
```

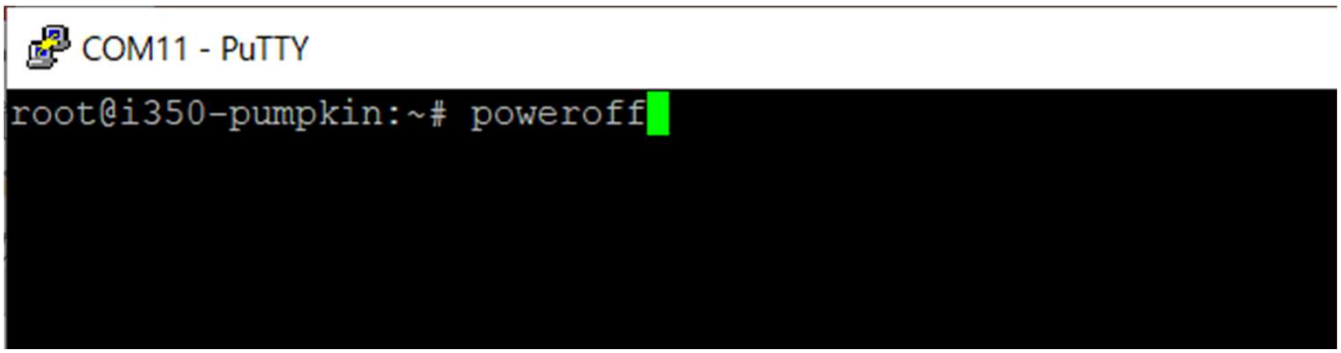
1-2) Identify the firmware version in the latest release pack

You can identify the THP7312-P firmware version of THSCP101 in the README.txt file that is in the pack of the decompressed THSCP101 Linux Binary .tar.gz file.

1-3) Compare the firmware version

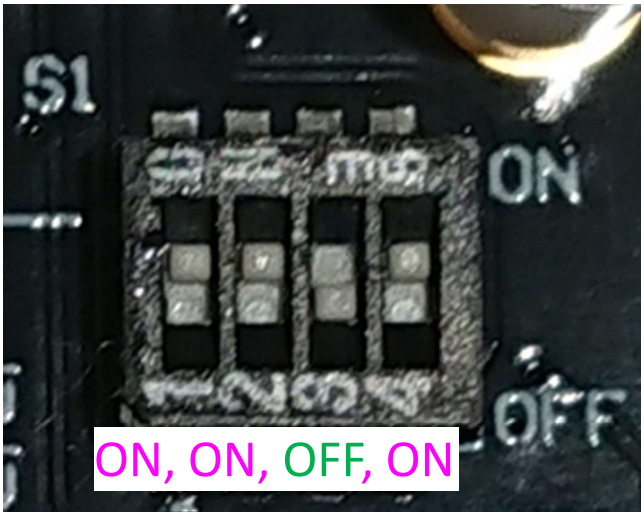
You can go to section 7 if the firmware version in the hardware is the latest.

Step 2: Shutdown and power off Pumpkin i350 EVK.



7. THSCP101 Firmware Update (optional) (2/3)

Step 3: Change the DIP switch(S1) as follows.



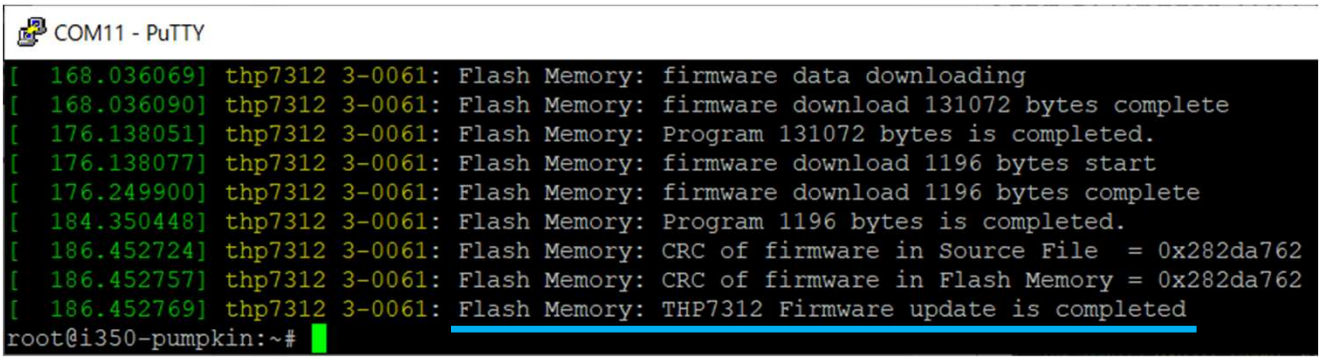
Step 4:Power on Pumpkin i350 EVK and login as root.

- Push “PWR” button for several seconds.

7. THSCP101 Firmware Update (optional) (3/3)

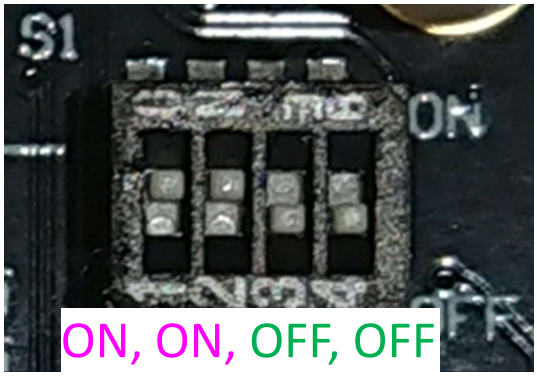
Step 5: Update THSCP101 firmware

- `v4l2-ctl -d /dev/v4l-subdev1 --set-ctrl=thp7312_firmware_update=1`
- Wait 35 seconds and enter “dmesg” to check if “Flash Memory: THP7312 Firmware update is completed” is shown. You can enter "dmesg" multiple times to check the update completion.



Step 6: Shutdown and power off Pumpkin i350 EVK

Step 7: Change the #4 of DIP switch(S1) to “STRM” mode.



Step 8: Power on Pumpkin i350 EVK and login as root.

8. Stream 13M@20fps Images

Step 1: Enter the following command to stream 4K 30fps image.

- media-ctl -d /dev/media0 –r
- media-ctl -d /dev/media0 -l "'thp7312 3-0061':0" -> "'15040000.seninf':1 [1]'"
- media-ctl -d /dev/media0 -V "'thp7312 3-0061':0 [fmt:YUYV8_1X16/4160x3120@1/20 field:none]"
- media-ctl -d /dev/media0 -V "'15040000.seninf':4 [fmt:YUYV8_1X16/4160x3120 field:none]"
- gst-launch-1.0 v4l2src device=/dev/video0 ! video/x-raw,format=YUY2,width=4160,height=3120,framerate=20/1 ! queue max-size-time=0 ! waylandsink sync=false fullscreen=true

You can see the streaming images on the display.