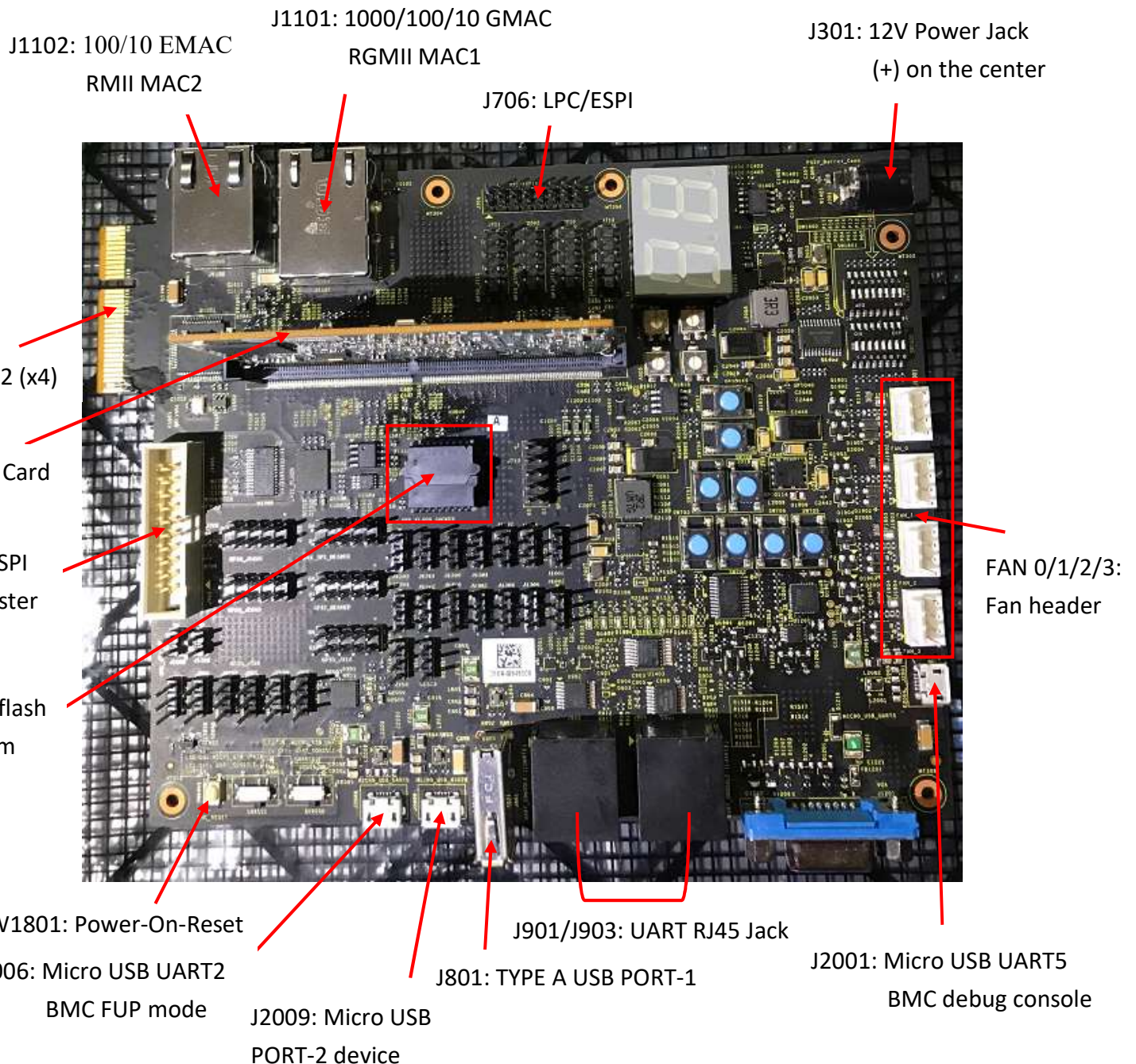


**HSBUV Board with Nuvoton NPCM7mnx RunBMC module  
Quick (Standalone) Setup Guide**

This Quick Setup guide describes how to set up the NPCM7mnx  
HSBUV Board + Nuvoton RunBMC module.

## A. HSBUEV + Nuvoton RunBMC module Overview



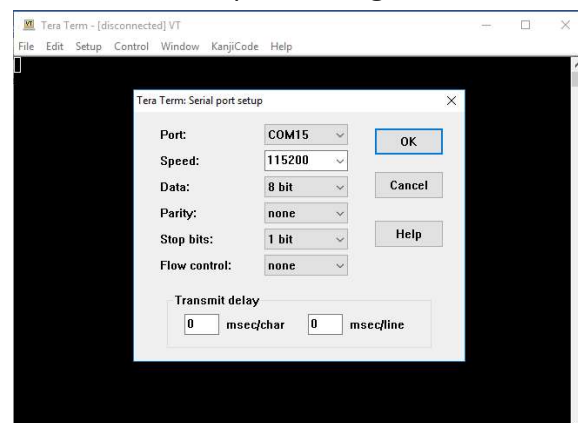
**Figure 1: Connectors on the HSBUEV Board**

**Note:** Instruction refer to Figure 1, above.

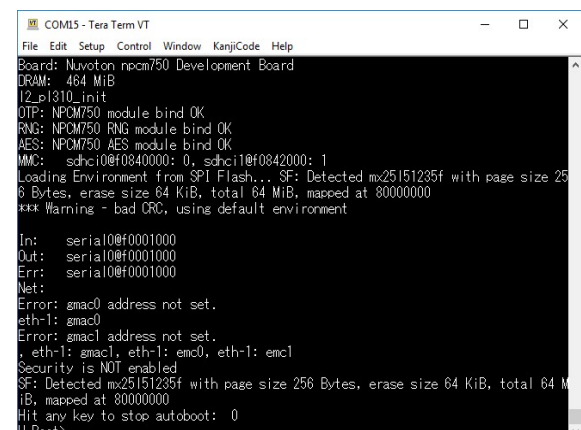
- Power-On and Reset:
  - a. Connect the 12V power supply to power jack J301. The power supply should be 12V and at least 2A; the jack should be 2.5x 5.5 x9.5mm in diameter
  - b. Press and release PWR-ON-RST (SW1801) push-button.
- USB-to-UART5 for BMC debug console:
  - a. Download and install the USB-to-UART driver from:  
<http://www.ftdichip.com/Drivers/VCP.htm>  
according to the host OS.
  - b. Connect a mini-USB cable between the PC host and HSBUV J2001. J2001 is Micro\_USB\_UART5.  
connector to the Serial Interface (SI2) of the BMC. Uboot and Linux terminal messages are sent though this port.
  - c. Wait for the FTDI driver to be installed automatically. The COM port of number is assigned automatically.
  - d. Verify that one green power LED (D2008) is ON.
- Terminal:
  - a. Open a terminal (e.g., Tera Term version 4.87) and set the correct COM port number assigned by the FTDI driver (in Step 2c).  
The COM port should be configured as follows:  
115200 Kbps, 8 bit, 1 stop-bit, no parity no flow control.
  - b. Press and release the PWR-ON-RST (SW1801) push-button to issue a Power-On reset.
  - c. Verify that the boot block, Uboot and Linux versions are up-to-date. Check with Nuvoton support for the most recent versions.

**Figure 2: boot into boot block, Uboot**

Tera Term Serial port setting:



boot into Uboot:

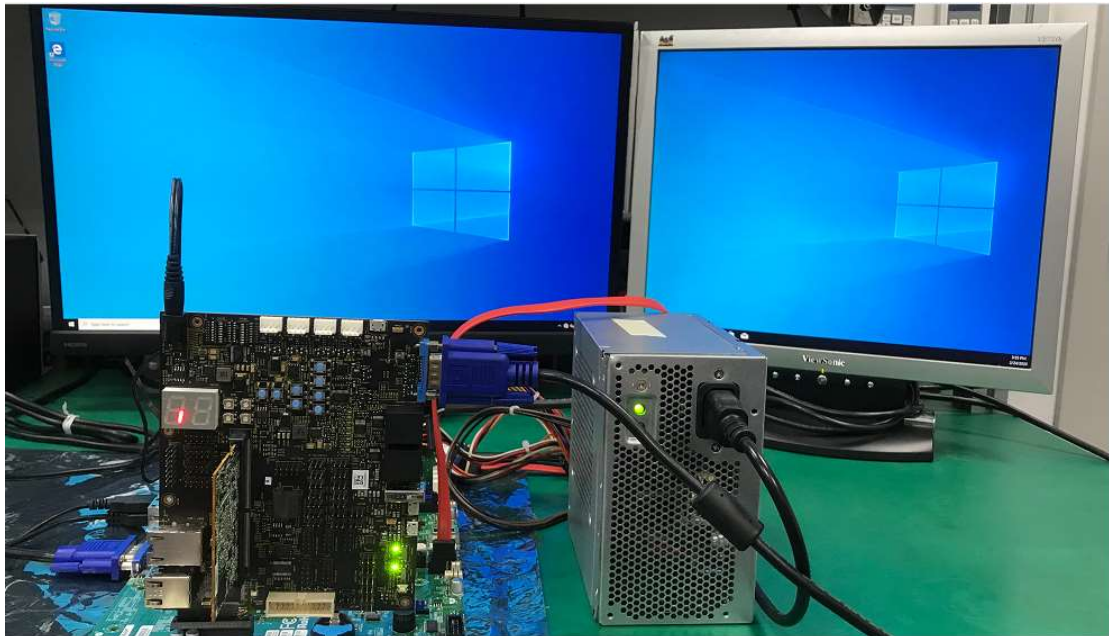


- The PCI-Express Interface which supports a PCIe Gen 2 (x4) connection (Note: ). This interface shall be insert the system MB of PCIe slot for VGA display mailbox function. These signals are expected to be dedicated to PCIe functionality and should not offer a secondary function.

Note:

- Only x1 lane is been used.
- RunBMC can be used as a secondary video card since RunBMC card does not include on-board VGA BIOS and since MB does not include Matrox VGA BIOS.

**Figure 3: HSBUV + RunBMC module boot into Win 10, the VGA display is ok**



## B. Build OpenBMC

<https://github.com/Nuvoton-Israel/openbmc/tree/runbmc>

### ➤ How to Build

- Ubuntu 18.04 as example

```
$ sudo apt-get install -y git build-essential libssl1.2-dev texinfo gawk chrpath diffstat
```

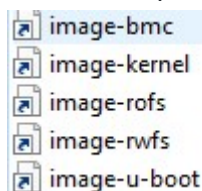
```
$ git clone -b runbmc --single-branch https://github.com/Nuvoton-Israel/openbmc
```

```
$ cd openbmc
```

```
$ . setup buv-runbmc
```

```
$ bitbake obmc-phosphor-image
```

- If built successfully, you will find images in openbmc/build/buv-runbmc/tmp/deploy/images/buv-runbmc/

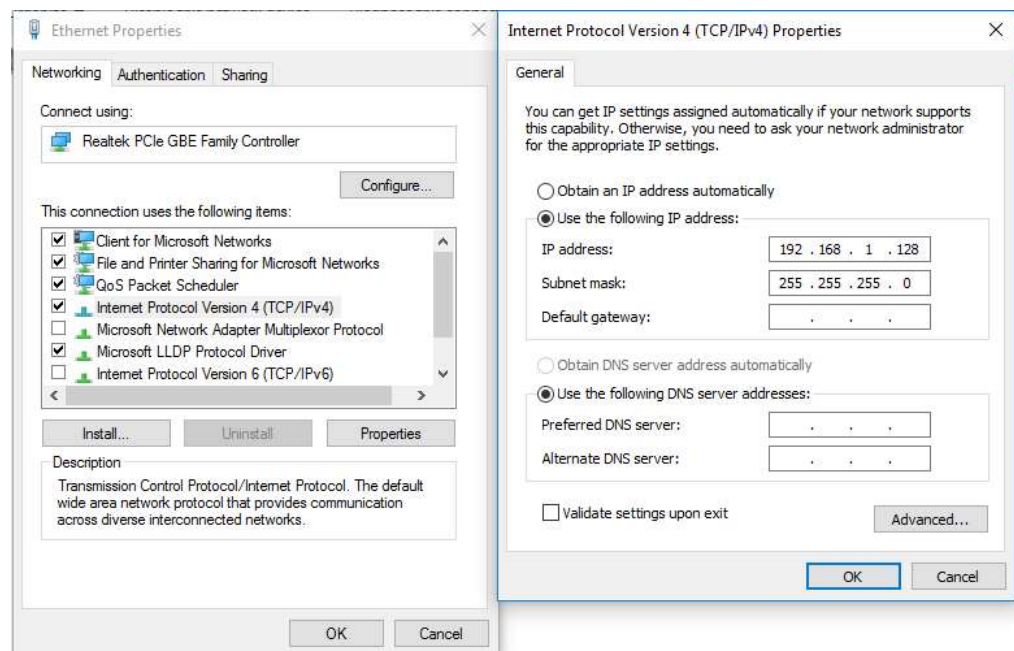


### ➤ How to flash image-bmc

- BMC FW update over u-boot TFTP

- Setup IP Environment:

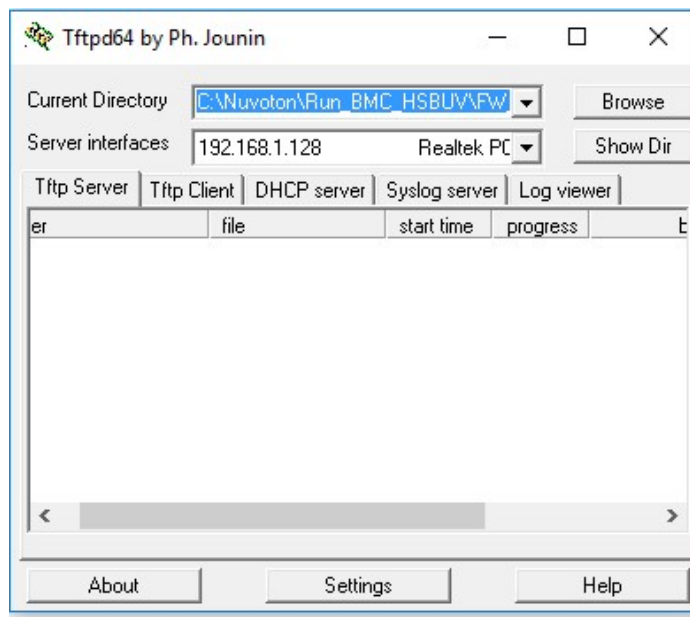
NB IP: 192.168.1.128



HSBUV IP: 192.168.1.15



- Put image-bmc into your tftp server IP:



- Update u-boot env with [https://github.com/Nuvoton-Israel/nuvoton-info/blob/master/npcm7xx-poleg/evaluation-board/sw\\_deliverables/uboot\\_env\\_parameters.txt](https://github.com/Nuvoton-Israel/nuvoton-info/blob/master/npcm7xx-poleg/evaluation-board/sw_deliverables/uboot_env_parameters.txt)  
(please make sure the serverip is your tftp server)
- Input command in u-boot console:

**U-Boot> run ftp\_prog; reset**

```
U-Boot>run ftp_prog; reset
mdio_register: non unique device name 'emc0'
mdio_register: non unique device name 'emc1'
Speed: 1000, full duplex
Using gmac0 device
TFTP from server 192.168.1.128; our IP address is 192.168.1.15
Filename 'image-bmc'.
Load address: 0x10000000
Loading: #####
```

- Update fw done and boot into OpenBMC:

- Username: root
- Password: OpenBmc

```
Starting Phosphor Network Manager...
Starting OpenBMC Software Update Manager...
Starting Phosphor BMC State Manager...
Starting Phosphor Chassis State Manager...
[ OK ] Started Phosphor Settings Daemon.
[ OK ] Started Phosphor Log Manager.
[ OK ] Started Phosphor Download Manager.
[ OK ] Started Avahi mDNS/DNS-SD Stack.
[ OK ] Started Phosphor Dump Manager.
[ OK ] Started Rsyslog config updater.
[ OK ] Started Phosphor LDAP privilege mapper.
[ OK ] Started Wait for /xyz/open...ontrol/host0/restriction_mode.
[ OK ] Started Wait for /xyz/open...t/control/host0/boot/one_time.
[ OK ] Started Wait for /xyz/open...ol/host0/power_restore_policy.

Phosphor OpenBMC (Phosphor OpenBMC Project Reference Distro) 0.1.0 buv-runbmc tt
yS0

buv-runbmc login: root
Password:
npcm7xx-emc f0825000.eth:

npcm7xx_get_settings
root@buv-runbmc:~#
```

### C. OpenBMC WebUI

https://<BMC\_IP>

Username: root

Password: OpenBmc



BMC HOST OR BMC IP ADDRESS


USERNAME

PASSWORD

**Log in**

OpenBMC

Log out


 buu-runbmc  
192.168.1.6


Server health >  
Good


Server power >  
Off


Data last refreshed  
Jan 21, 2020 上午10:59:40 [GMT+8]


Refresh

 Server overview

 Server health

 Server control

 Server configuration

 Access control

Sensors (20)	Low critical	Low warning	Current	High warning	High critical
Temperature Buv Board	NaN ° C	NaN ° C	25.25 ° C	NaN ° C	NaN ° C
Fan Tach Fan1	-- RPMs	-- RPMs	0 RPMs	-- RPMs	-- RPMs
Fan Tach Fan2	-- RPMs	-- RPMs	0 RPMs	-- RPMs	-- RPMs
Fan Tach Fan3	-- RPMs	-- RPMs	0 RPMs	-- RPMs	-- RPMs
Fan Tach Fan4	-- RPMs	-- RPMs	0 RPMs	-- RPMs	-- RPMs
Voltage 3V3 Input	NaN VOLTS	NaN VOLTS	3.388 VOLTS	NaN VOLTS	NaN VOLTS
Voltage 12V Input	NaN VOLTS	NaN VOLTS	0.168 VOLTS	NaN VOLTS	NaN VOLTS
Voltage ADC0	NaN VOLTS	NaN VOLTS	2.997 VOLTS	NaN VOLTS	NaN VOLTS
Voltage ADC1	NaN VOLTS	NaN VOLTS	3.346 VOLTS	NaN VOLTS	NaN VOLTS
Voltage ADC2	NaN VOLTS	NaN VOLTS	3.363 VOLTS	NaN VOLTS	NaN VOLTS
Voltage ADC3	NaN VOLTS	NaN VOLTS	3.332 VOLTS	NaN VOLTS	NaN VOLTS
Voltage ADC4	NaN VOLTS	NaN VOLTS	3.288 VOLTS	NaN VOLTS	NaN VOLTS
Voltage ADC5	NaN VOLTS	NaN VOLTS	1.954 VOLTS	NaN VOLTS	NaN VOLTS

- BMC FW update over OpenBMC

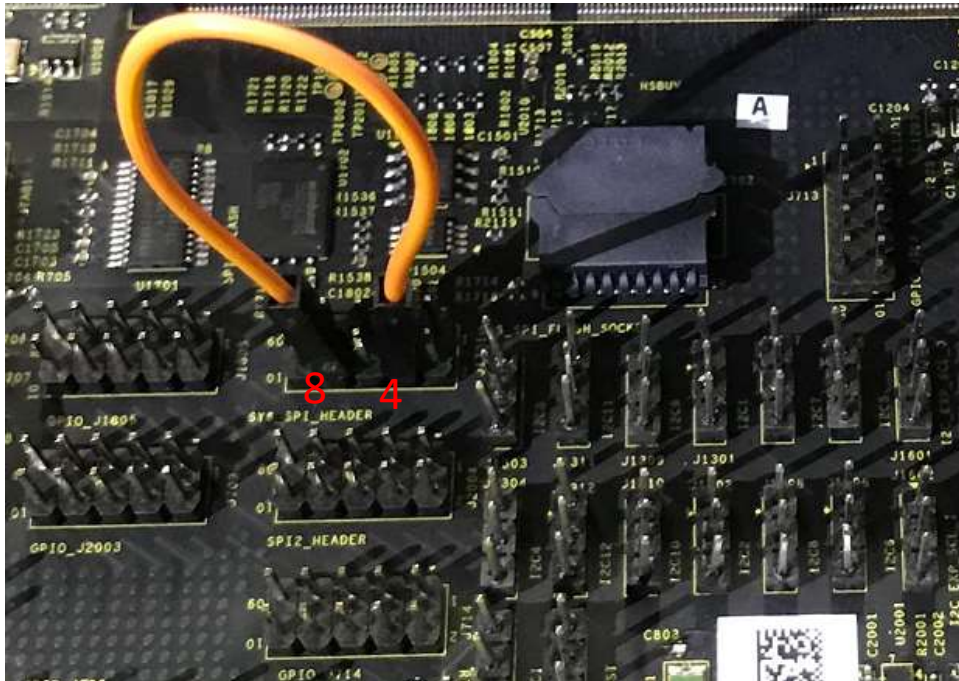
<https://github.com/Nuvoton-Israel/openbmc/tree/runbmc/meta-quanta/meta-olympus-nuvoton#bmc-firmware-update>



#### D. FUP mode for emergency firmware update (Boot-Block and Uboot)

Steps:

1. Remove HSBUV board AC Power 12V(J301) and Micro USB UART - BMC Debug UART (J2001)
2. Connects pin8 and pin4 of J1701 header



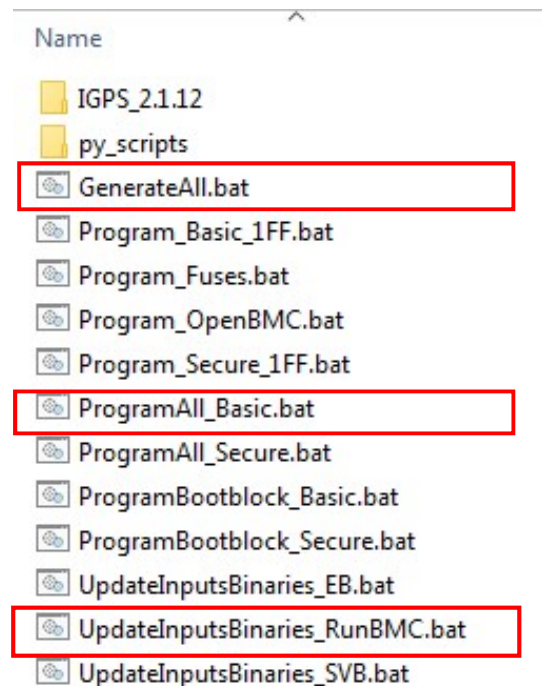
3. Connects USB cable to Micro USB UART - BMC FUP mode (J2006)



#### 4. Recovery BMC over IGPS:

<https://github.com/Nuvoton-Israel/igps>

#### Programmer fw list (.bat file)



#### Steps:

##### (1) Run UpdateInputsBinaries\_RunBMC.bat

```
C:\windows\system32\cmd.exe
C:\Nuvoton\Run_BMC_HSBUV\FW_update\IGPS_2.1.12>echo off
Updating input binaries for Nuvoton's RunBMC
Copy ImageGeneration\versions\Poleg_bootblock_secure.10.10.09.bin to ImageGeneration\inputs\Poleg_bootblock.bin
Copy ImageGeneration\references\BootBlockAndHeader_RunBMC.xml to ImageGeneration\inputs\BootBlockAndHeader.xml
Copy ImageGeneration\versions\u-boot_2019.01.7.5.bin to ImageGeneration\inputs\u-boot.bin
Copy ImageGeneration\references\UbootHeader_RunBMC.xml to ImageGeneration\inputs\UbootHeader.xml
Copy ImageGeneration\versions\runbmc-uimage_4.17.4.01.03.RE2_customer to ImageGeneration\inputs\uimage
Copy ImageGeneration\versions\runbmc-nRamdisk_4.17.4.01.03.RE2_customer to ImageGeneration\inputs\uRamdisk
Copy ImageGeneration\versions\runbmc-npcm750-evb_4.17.4.01.03.RE2_customer.dtb to ImageGeneration\inputs\npcm750.dtb
Copy ImageGeneration\references\uboot_env_runbmc.bin to ImageGeneration\inputs\uboot_env.bin
Binaries for Nuvoton's RunBMC are ready in 'inputs'
Press any key to continue . . . .
Microsoft Bopomofo 半 :
```

## (2) Run GenerateAll.bat

```
C:\windows\system32\cmd.exe
Bingo version 0.0.2
Input XML path: inputs\poleg_key_map.xml      Output Bin path: output_binaries\Secure\poleg_key_map.bin
SUCCESS
=====
Generating output_binaries\Secure\poleg_fuse_map.bin
Bingo - Binary Construction and Generation Tool
Bingo version 0.0.2
Input XML path: inputs\poleg_fuse_map.xml      Output Bin path: output_binaries\Secure\poleg_fuse_map.bin
SUCCESS
=====
Generating output_binaries\Secure\mergedFuses.bin
Bingo - Binary Construction and Generation Tool
Bingo version 0.0.2
Input XML path: inputs\mergedFuses.xml      Output Bin path: output_binaries\Secure\mergedFuses.bin
SUCCESS
=====
Merging secure output_binaries\Secure\mergedBootBlockAndUboot.bin and output_binaries\Secure\mergedFuses.bin
Bingo - Binary Construction and Generation Tool
Bingo version 0.0.2
Input XML path: inputs\mergedSecureBoot.xml      Output Bin path: output_binaries\Secure\mergedSecureBoot.bin
SUCCESS
Press any key to continue . . . -
Microsoft Bopomofo ㄆ :
```

## (3) Run ProgramAll\_Basic.bat

```
C:\windows\system32\cmd.exe
=====
Reading 0x6a3d8 bytes from SPI...
=====
Port \\.\COM17 Opened
Performing a Host/Device synchronization check...
Reading [435160] bytes in [1700] packets
Received packet of size 216 bytes, packet [1700] out of [1700]
=====
Read monitor log to file cmp_flash_prog_monitor_log.bin
=====
Port \\.\COM17 Opened
Performing a Host/Device synchronization check...
Reading [256] bytes in [1] packets
Received packet of size 256 bytes, packet [1] out of [1]
SPI Reading Passed
=====
read monitor log to cmp_flash_prog_monitor_log.bin
=====
Port \\.\COM17 Opened
Performing a Host/Device synchronization check...
Reading [256] bytes in [1] packets
Received packet of size 256 bytes, packet [1] out of [1]
Loading Monitor Log Passed
=====
Program C:\Nuvoton\Run_BMC_HSBUV\FW_update\IGPS_2.1.12\py_scripts\ImageGeneration\output_binaries\Basic\mergedBootBlockAndUboot.bin Passed
Press any key to continue . . . -
Microsoft Bopomofo ㄆ :
```