

Enable BDE-BW3301NP1 with AM62x

1. Description

This guide describes how to enable the BDE-BW3301NP1 module with TI's low-cost AM62x Sitara™ MPU.

2. Get Ready

1.1. Software and Tools

- Ubuntu 18.04
- [Processor SDK Linux for AM62X](#)
- [SD card image](#)
- [balenaEtcher](#)
- Other resources in the root directory, such as "k3-am625-sk.dts" (Need to gain access from BDE)

1.2. Hardware

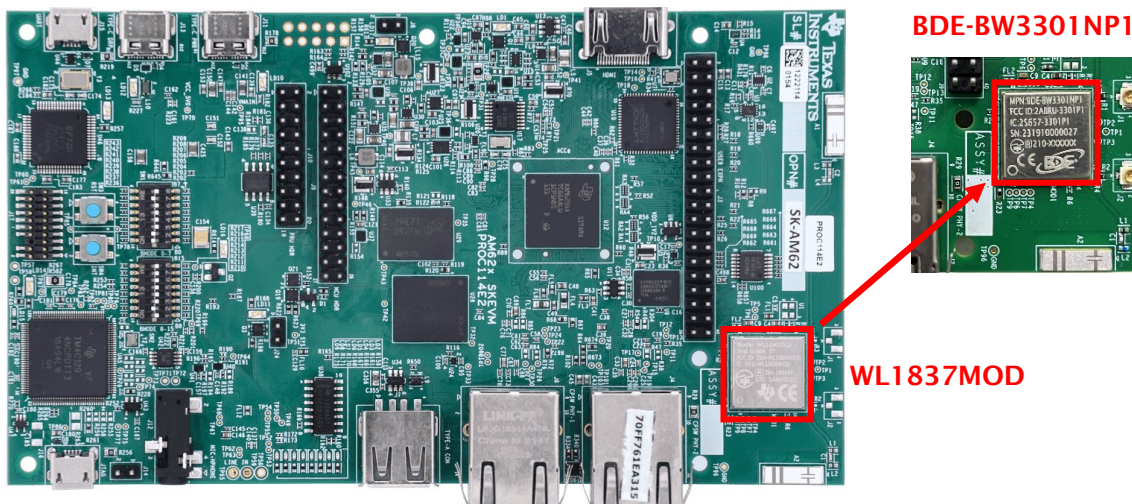
- [BDE-BW3301NP1](#) module or BDE-BW3301NP1M2 M.2 card
- AM62x development Kit
 - [SK-AM62](#) works with BDE-BW3301NP1 module
 - Or [SK-AM62B](#) works with BDE-BW3301NP1M2 M.2 card

The development kit for AM62x can be purchased directly from TI.com, but reworks will be needed to bring it work with BDE's module. Rework steps will be described in the followings.

It is recommended that customers get the dev kit from BDE to avoid the rework process if you choose SK-AM62 with module BDE-BW3301NP1, since the rework process requires strong professional skills.

1.3. Reworks

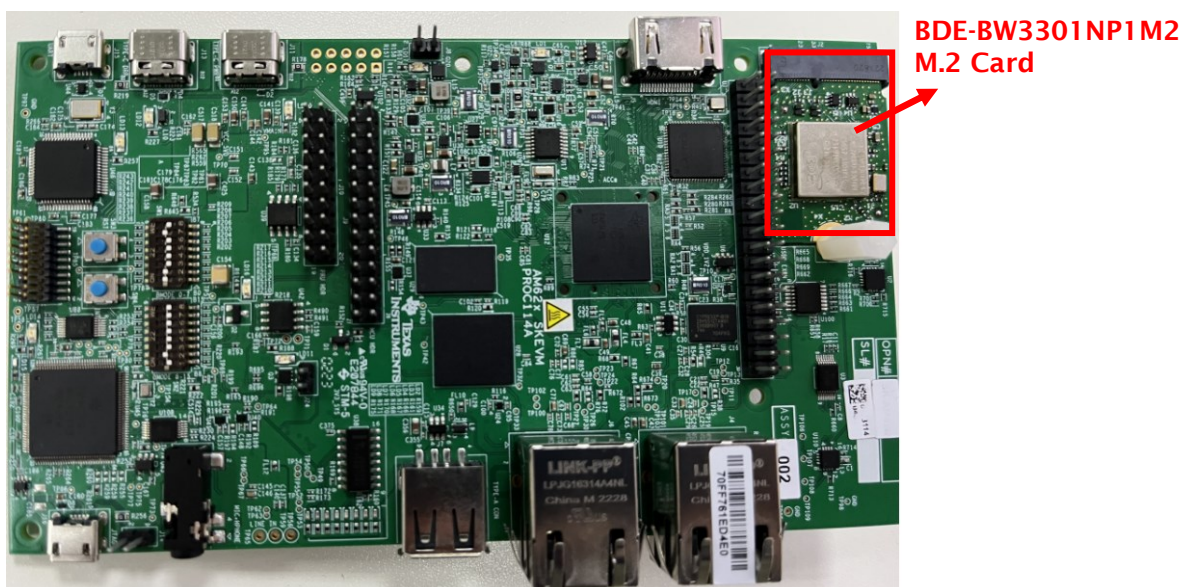
- For SK-AM62
 - Remove WL1837MOD module replace it with BDE-BW3301NP1;



- Remove R6.



- For SK-AM62B
 - Insert BDE-BW3301NP1M2 M.2 card to connector J2;



- No reworks needed.

3. Steps

Follow below steps to bring up the hardware.

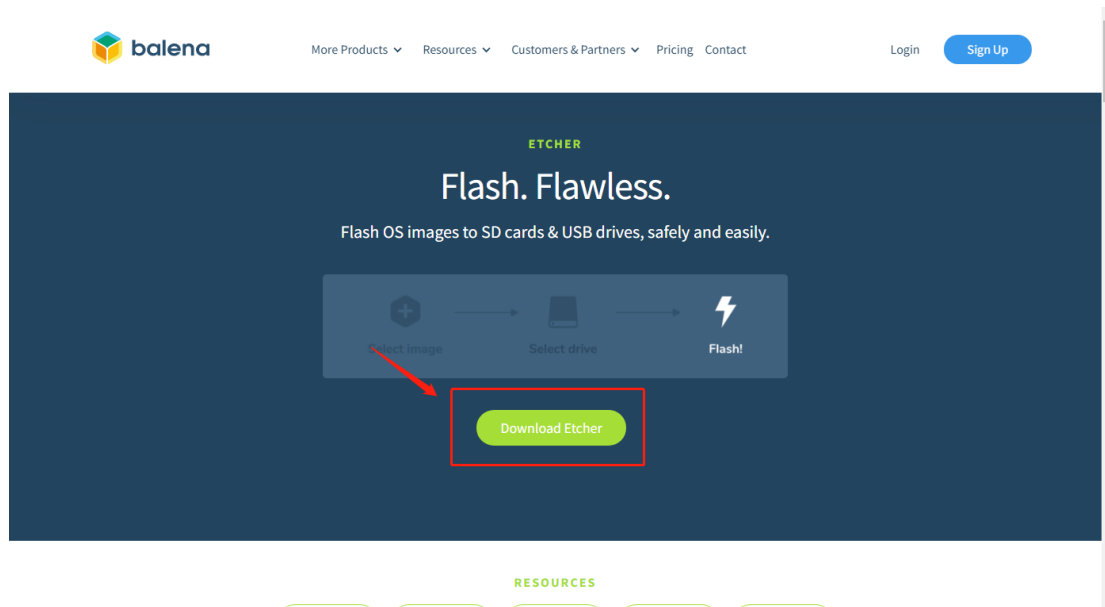
3.1. Download SD Card Image

Download the SD card image with below link.

<https://dr-download.ti.com/software-development/software-development-kit-sdk/MD-PvdSyliioq/08.06.00.42/tisdk-default-image-am62xx-evm.wic.xz>.

3.2. Install SD Card Programming Utility

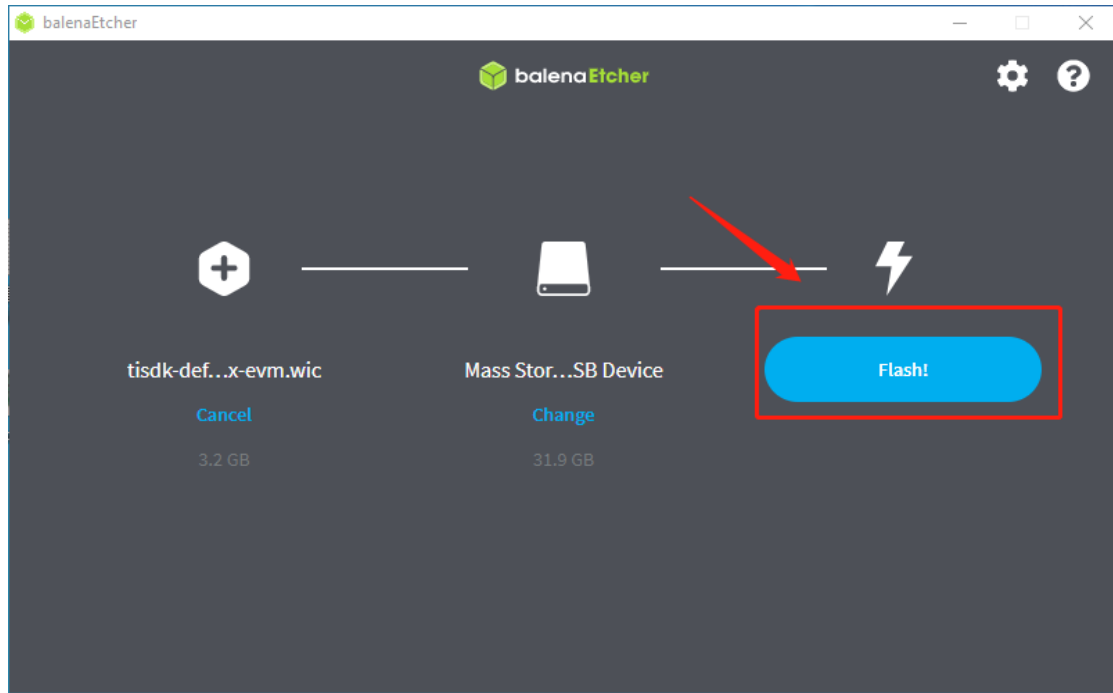
Download and install [balenaEtcher](#).



3.3. Install OS Image on the SD Card

Use your computer's SD slot or a USB adapter to connect the SD card to your computer and write the image to your SD card. Etcher will transparently decompress the image on-the-fly before writing it to the SD card.

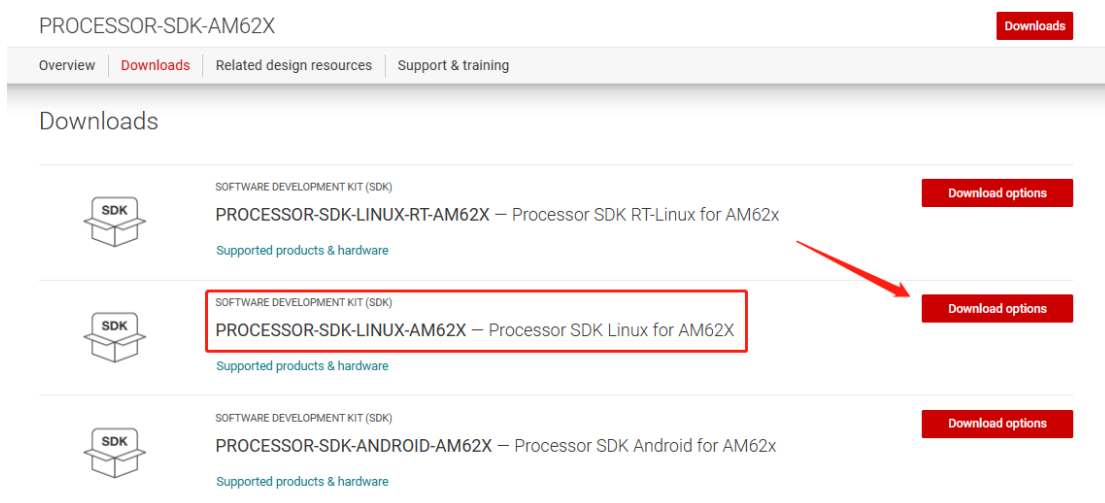
Select the image downloaded in the previous step, then select the target disk and click Flash.



3.4. Download and Install Linux SDK for AM62X

Download the SDK with below link and install.

<https://www.ti.com/tool/PROCESSOR-SDK-AM62X#downloads>



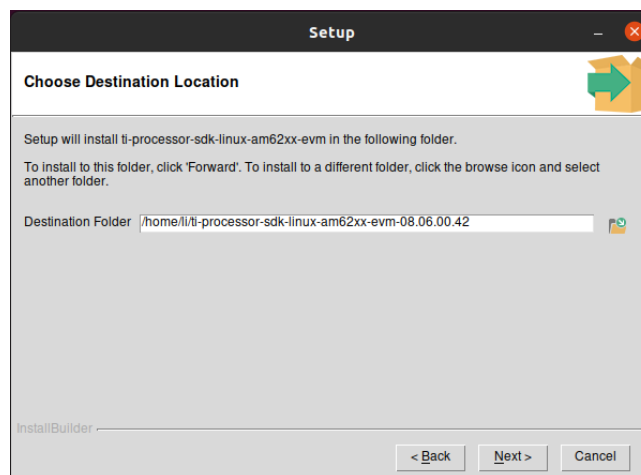


Copy the SDK to Ubuntu home directory and change the file owner. Make sure you have execution permission for the file.

Run the SDK installer.

```
li@li-virtual-machine:~$ ./ti-processor-sdk-linux-am62xx-evm-08.06.00.42-Linux-x86-Install.bin
```

Install with the default Settings.



3.5. Copy AM62x_Plus_BW3301NP_Guide

Copy AM62x_Plus_BW3301NP_Guide.zip to Ubuntu home directory and decompress it.

3.6. Apply Patches and Build

- Go to Linux kernel directory into AM62xx TI Processor SDK:
 - \$ cd ~/ti-processor-sdk-linux-am62xx-evm-<version>/board-support/linux-5.10.xxx/
- Execute the following commands:
 - \$ patch -p0 < ~/AM62x_Plus_BW3301NP_Guide/patches/cc33xx_kernel.patch
 - \$ patch -p0 < ~/AM62x_Plus_BW3301NP_Guide/patches

```
/am62e3_enable_cc33xx_fcs3.patch
```

- Copy the k3-am625-sk.dts to overwrite the original files in the SDK, then execute the following commands:
 - `$ sudo cp ~/AM62x_Plus_BW3301NP_Guide/k3-am625-sk.dts ~/ti-process-sdk-linux-am62xx-evm-<version>/board-support/linux-5.10.xxx/arch/arm64/boot/dts/ti/`
- Apply new am62xx defconfig and rebuild kernel modules and dtb:
 - `$ make ARCH=arm64 CROSS_COMPILE=aarch64-none-linux-gnu-tisdk_am62xx-evm_defconfig`
 - `$ make ARCH=arm64 CROSS_COMPILE=aarch64-none-linux-gnu- Image modules dtbs`

3.7. Install Kernel Modules and dtbs

- Insert SD card into Host PC (Ubuntu). Then execute the following commands: **(Note: If you are using SK-AM62B, skip this step)**
 - `$ sudo cd /media/<user>/root/`
 - `$ sudo cp tiboot3.bin tiboo3.bin.bak`
 - `$ sudo cp tiboot3-am62x-gp-evm.bin tiboot3.bin`
- Go to Linux kernel directory into AM62xx TI Processor SDK:
 - `$ cd ~/ti-processor-sdk-linux-am62xx-evm-<version>/board-support/linux-5.10.xxx/`
- Install kernel modules and dtbs:
 - `$ sudo cp arch/arm64/boot/Image /media/<user>/root/boot/`
 - `$ sudo make ARCH=arm64 modules_install INSTALL_MOD_PATH=/media/<user>/root/`
 - `$ sudo cp arch/arm64/boot/dts/ti/k3-am625-sk.dtb /media/<user>/root/boot/`
 - `$ sync`

3.8. Add FW and Scripts

- Copy contents under “cc33xx_rootfs” directory into SD card’s root directory and merge. Execute the following commands:
 - `$ sudo cp -rf ~/AM62x_Plus_BW3301NP_Guide/cc33xx_rootfs/* /media/<user>/root/`
 - `$ sync`

3.9. Power Up and Boot

Remove SD Card from SD card slot of PC or the adaptor, and insert it to the SD card slot of SK-AM62/SK-AM62B, power on SK board and wlan0 interface should now be up. By now, you should have successfully enabled the module on SK-AM62/SK-AM62B.


```

am62xx-evm login: root
root@am62xx-evm:~# ifconfig
eth0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500 metric 1
    ether 34:08:e1:80:89:ed txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth1: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500 metric 1
    ether 70:ff:76:1e:ce:46 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536 metric 1
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 82 bytes 6220 (6.0 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 82 bytes 6220 (6.0 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlan0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500 metric 1
    ether f0:f8:f2:2f:12:3c txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

4. Revision History

Revision	Date	Description
V0.1	20-July-2023	Preliminary version, draft
V0.2	24-July-2023	Remove rework steps for SK-AM62B

You can find the latest documentation in this [Link](#).

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