

MTK - Baoshan

Ubuntu Core 22

genio-core22-sb-04-25 Image Release Notes

Canonical Devices and IoT, Customer Engineering

Project: Baoshan

Milestone: Ubuntu Core 22 - genio-core22-sb-04-25 release

Release Date: 2025-03-14

Image Release Deliverables

This is the genio-core22-sb-04-25 release for the Mediatek Genio Ubuntu project.

Kernel snap

This release contains the following kernel snap

Linux package	mediatek-genio-kernel (5.15.0-1038.45)
GIT Repository	https://git.launchpad.net/~canonical-kernel/ubuntu/+source/linux-mtk/+git/jammy
Tag	Ubuntu-mtk-5.15.0-1038.45

Boot assets tarballs

Boot assets tarballs are based on following boot firmware released by MediaTek

1. boot-firmware-dev-20250122195343.tar.gz
2. boot-firmware-dev-secureboot-20250122203805.tar.gz

Installation Instructions

Hardware and software requirements

1. A laptop with Ubuntu desktop image installed
2. A released Ubuntu Classic Server image from Canonical
3. A released Mediatek boot assets tarball
4. Mediatek Genio g350, g510, g700, or g1200-evk board with power adapter
5. One USB Type-C to USB Type-A cable for flashing image and one micro USB to USB Type-A cable for UART Debug port (baudrate: 921600)
6. Download the Android platform tools <https://developer.android.com/studio/releases/platform-tools> and export them in your PATH

Flash the installation image to the MTK board

1. Plug the power adapter

Figure 2: Mediatek Genio g510/g700 EVK boards

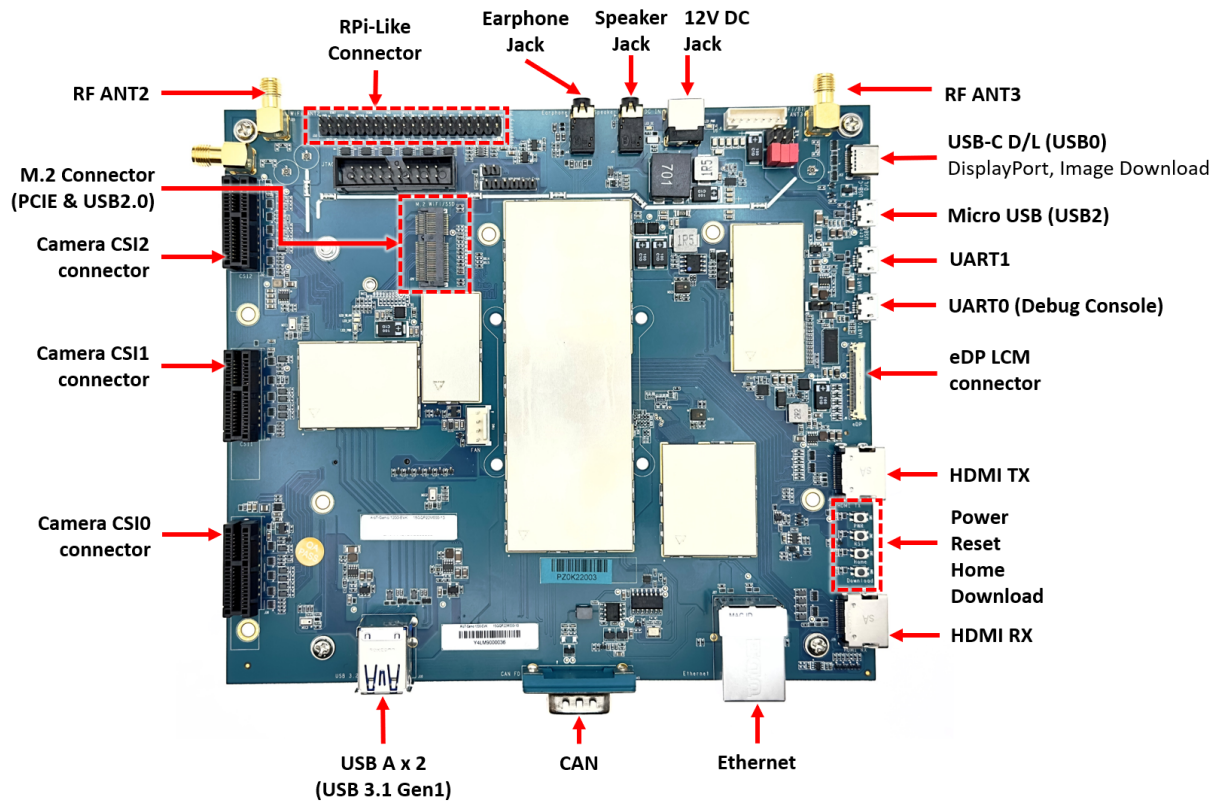


Figure 3: Mediatek Genio g1200-evk board

2. Connect your laptop to the Image Download port (USB Micro USB or Type-C port).
3. Connect your laptop to the USB-UART DEBUG port (micro-USB. Serial devices will be generated in your laptop after you connect your laptop to the debug port:

```
$ sudo minicom -D /dev/ttyUSB0
```

4. Open a terminal on your laptop by shortcut key: Ctrl + Alt + T.
5. Install the flash tool and run genio-config

```
# pip3 >= 20.3 is required for genio-tool, but the latest version in focal-update
# is 20.0.2. Upgrade pip by pip command and remove pip deb packages if your host is
# Ubuntu 20.04 (focal).
$ pip3 install --upgrade pip
$ sudo apt-get remove python3-pip python3-pip-whl
# your host > Ubuntu 22.04 (jammy)
$ sudo apt-get install -y python3-pip python3-pip-whl
```

```
# Install genio-tools
$ cd YOUR_WORKDIR
$ pip3 install -U -e
"git+https://gitlab.com/mediatek/aiot/bsp/genio-tools.git#egg=genio-tools"
$ export PATH=$PATH:/home/$USER/.local/bin/
$ genio-config
fastboot: OK
udev rules: OK (md5: a3b2767b42ee01d7c62bf394400528ae)
Serial device write access: OK
```

6. G1200-evk supports both eMMC and UFS as the boot device. But, eMMC is identified as the default boot device. So, please erase eMMC when you want to use UFS as the boot device.

```
# Erase eMMC with boot asserts of g1200-evk eMMC
$ tar -xvf genio-g1200-evk-boot-assets-X.tar.xz
$ cd genio-g1200-evk-boot-assets-X
$ genio-flash erase-emmc
Genio Tools: v1.4a5.dev1
Ubuntu Image:
    edition: ubuntu classic/core images
    version: 22.04
    codename: jammy

INFO:aiot:Try to automatically reset the board into DOWNLOAD mode...
WARNING:aiot:BoardControl.__init__() got an unexpected keyword argument 'serial'
WARNING:aiot:Board control failed. You could try manually put the board in DOWNLOAD mode.
INFO:aiot:Continue flashing...
Looking for MediaTek SoC matching USB device 0e8d:0003
```

Note:

The “X” needs to be replaced with the actual name of the boot assets tarball.
 Press and hold the “Download” key and then press the “Reset” key.
 Release the “Download” key after seeing the message “Connected to MediaTek SoC”

7. Extract the released tar file and then run genio-flash

```
# BOARD: g350, g510, g700, g1200-evk, or g1200-evk-ufs
$ tar -xvf genio-core-22-X.tar.xz
$ tar --strip-components=1 -xvf genio-BOARD-boot-assets-X.tar.xz -C
genio-core-22-X/
```

```

$ cd genio-core-22-X
# For Genio 350/510/700/1200 EMMC
$ genio-flash
# For Genio 1200 UFS
$ genio-flash --uboot-env-size 8192
Genio Tools: v1.4a5.dev1
Ubuntu Image:
    edition:  ubuntu classic/core images
    version:  22.04
    codename:  jammy

INFO:aiot:Try to automatically reset the board into DOWNLOAD mode...
WARNING:aiot:BoardControl.__init__() got an unexpected keyword argument 'serial'
WARNING:aiot:Board control failed. You could try manually put the board in DOWNLOAD mode.
INFO:aiot:Continue flashing...
Looking for MediaTek SoC matching USB device 0e8d:0003

```

Note:

The “**X**” and “**BOARD**” need to be replaced with the actual name of the image and board. Press and hold the “Download” key and then press the “Reset” key. Release the “Download” key after seeing the message “Connected to MediaTek SoC”

8. Wait for the flash process to complete.

```

Genio Tools: v1.4a5.dev1
Ubuntu Image:
...
Looking for MediaTek SoC matching USB device 0e8d:0003
Opening /dev/ttyACM0 using baudrate=115200
Connected to MediaTek SoC: hw_code[0x8195]
Sending bootstrap to address: 0x201000
Jumping to bootstrap at address 0x201000 in AArch64 mode
...

```

9. The system will auto reboot after flashing is complete.

10. First boot setup

- a. Please stay tuned. It will take 5~10 minutes to boot to the setup menu.
- b. The device will display the prompt “Press enter to configure”.
- c. Press enter then select “OK” to begin configuring your network and an administrator account.

- d. Follow the instructions on the screen, you will be asked to configure your network and enter your Ubuntu SSO credentials.
- e. At the end of the process, you will see your credentials to access your Ubuntu Core machine:

```
This device is registered to <Ubuntu SSO email address>.
```

```
Remote access was enabled via authentication with the SSO user <Ubuntu SSO user name>
```

```
Public SSH keys were added to the device for remote access.
```

```
<Ubuntu SSO user name> can connect remotely to this device via SSH:
```

```
ssh <Ubuntu SSO user name>@<device IP address>
```

11. Once setup is done, you can login with SSH into Ubuntu Core, from a machine on the same network, using the following command:

```
ssh <Ubuntu SSO user name>@<device IP address>
```

Your user name is your Ubuntu SSO user name, it has been reminded to you at the end of the account configuration step.

Release Verification

Tested on the Hardware

- G1200-EVK
 - CID: [202307-31859](#)
 - CID: [202404-33953](#)
- G700
 - CID: [202409-35342](#)
 - CID: [202412-36144](#)
- G510
 - CID: [202312-33205](#)
 - CID: [202405-34023](#)
- G350
 - CID: [202309-32029](#)
 - CID: [202405-34022](#)

Known Issues and Limitations

- [LP#2031203](#) Device tree warnings thrown by the dt_base case of fwts ebbv testing
- [LP#2034498](#) [SRU] Implement jack detection in driver for Headphone, Headset Mic, HDMI, and DP
- [LP#2025972](#) [Upstream bug][g1200-evk][g700][desktop] Unable to switch the Displays to be Mirror mode
- [LP#2056235](#) [Upstream bug][g510][desktop] Unable to switch the Displays to be Mirror mode
- [LP#2025977](#) [Upstream bug][desktop] Unable to drag and drop files via touchscreen
- [LP#2076079](#) [g350] Amic records only left sound when using arecord command with "-c 2" parameter (stereo)
- [LP#2076075](#) [g350] Headset records only left sound when using arecord command with "-c 2" parameter (stereo)
- [LP#2040445](#) [g350] Fail to wake system up from suspend via USB keyboard
- [LP#2092371](#) [Desktop] GL Renderer is llvmpipe instead of Arm Mali

Image Changes and Bugs Fixed

- <https://launchpad.net/baoshan/+milestone/genio-core22-sb-04-25>

New Bugs found during QA validation

-

Reopened Bugs found during QA validation

- NA

Open Bugs

All open bugs can be found at: <https://bugs.launchpad.net/baoshan>

Appendix A How To Add Device-Tree Overlays

1. Press any key to stop U-Boot autoboot

```
U-Boot 2022.10 (Sep 25 2023 - 06:06:56 +0000)
...
eth0: usb_ether
Hit any key to stop autoboot:  0
=>
```

2. Get the number of the firmware partition

```
=> part list mmc 0 (For eMMC)
=> part list scsi 2 (For g1200-evk-ufs)

Partition Map for MMC device 0  --  Partition Type: EFI

Part      Start LBA      End LBA      Name
      Attributes
      Type GUID
      Partition GUID
...
  3      0x00004400      0x000143ff      "firmware"
      attrs: 0x0000000000000000
      type:  384e979b-eb76-435a-a3a6-1a071dbad91d
              (384e979b-eb76-435a-a3a6-1a071dbad91d)
      guid:  31ed96c7-d17c-4cf4-aca4-755c0053fed4
...

```

3. Find all supported DTBO files

```
# BOARD: genio-350-evk, genio-700-evk, genio-1200-evk, or genio-1200-evk-ufs
=> fatls mmc 0:3 FIRMWARE/mediatek/BOARD/
...
    3693  display-edphdmi.dtbo
    4252  display-edp.dtbo
   39069  camera-ar0830-ap1302-csi2.dtbo
     609  display-hdmi.dtbo
...

```

4. Add DTB files to list_dtbo

```
# Current list_dtbo
=> echo $list_dtbo
gpu-mali.dtbo video.dtbo apusys.dtbo
# Add a dtbo file to list_dtbo. Take display-hdmi.dtbo as an example:
```

```
=> setenv list_dtbo "gpu-mali.dtbo video.dtbo apusys.dtbo display-hdmi.dtbo"  
=> saveenv  
# Reboot system to make new settings work  
=> reset
```

Appendix B Mir Enabling Instructions

How to Build Userspace Driver Snap

NOTE: This has to be done on Genio boards with the released image installed

1. Clone mediatek-gpu-drivers-snap

```
# BOARD: g350, g700, or g1200
# CORE_VER: 20 or 22
$ git clone -b BOARD-coreCORE_VER
git+ssh://git.launchpad.net/~baoshan-team/baoshan/+git/mediatek-gpu-drivers-snap
$ cd mediatek-gpu-drivers-snap
```

2. Install snapcraft

```
$ sudo snap install snapcraft --classic
```

5. Initialize lxd

```
$ lxd init --auto
```

6. Build the snap

```
$ snapcraft --use-lxd
```

How to Set up Mir

1. Install mediatek-genio-BOARD-gpu-drivers-coreCORE_VER

```
$ sudo snap install mediatek-genio-BOARD-gpu-drivers-coreCORE_VER_r43p0_arm64.snap --dangerous
```

2. Install ubuntu-frame

```
$ sudo snap install ubuntu-frame --channel=CORE_VER/stable --devmode
```

3. Connect snap interface

```
$ sudo snap disconnect ubuntu-frame:graphics-coreCORE_VER
$ sudo snap connect ubuntu-frame:graphics-coreCORE_VER
mediatek-genio-BOARD-gpu-drivers-coreCORE_VER
```

4. Workaround for core22

```
# Public bug: https://github.com/MirServer/ubuntu-frame/issues/140  
$ sudo snap set ubuntu-frame config=
```

5. Start Mir

```
$ sudo ubuntu-frame
```

Running es2gears_wayland client on ubuntu-frame

1. Install required packages

```
$ sudo apt install -y mesa-utils mir-test-tools qtwayland5 qterminal libffi7  
mir-demos mir-graphics-drivers-desktop glmark2-es2-wayland
```

2. Run es2gears client

```
$ sudo env XDG_RUNTIME_DIR=/run/user/0  
LD_LIBRARY_PATH=/snap/mediatek-genio-g350-gpu-drivers-core20/current/graphics/lib/ glmark2-es2-wayland
```