

MTK - Baoshan

Ubuntu Server 22.04

Genio-server-cam-08-28 Image Release Notes

Canonical Devices and IoT, Customer Engineering

Project: Baoshan

Milestone: Ubuntu Server 22.04 - genio-server-cam-08-28 release

Release Date: Aug 28, 2025

Goal of Release and Delivery Summary

This image is a RC image for MIPI camera support on MediaTek Genio G350/G510/G700/G1200 EVK running with Ubuntu 22.04 Desktop image.

Linux package

This release contains the following Linux package

Linux package	linux-mtk (5.15.0.1041.49)
GIT Repository	https://git.launchpad.net/~canonical-kernel/ubuntu/+source/linux-mtk/+git/jammy
Tag	Ubuntu-mtk-5.15.0-1041.49

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

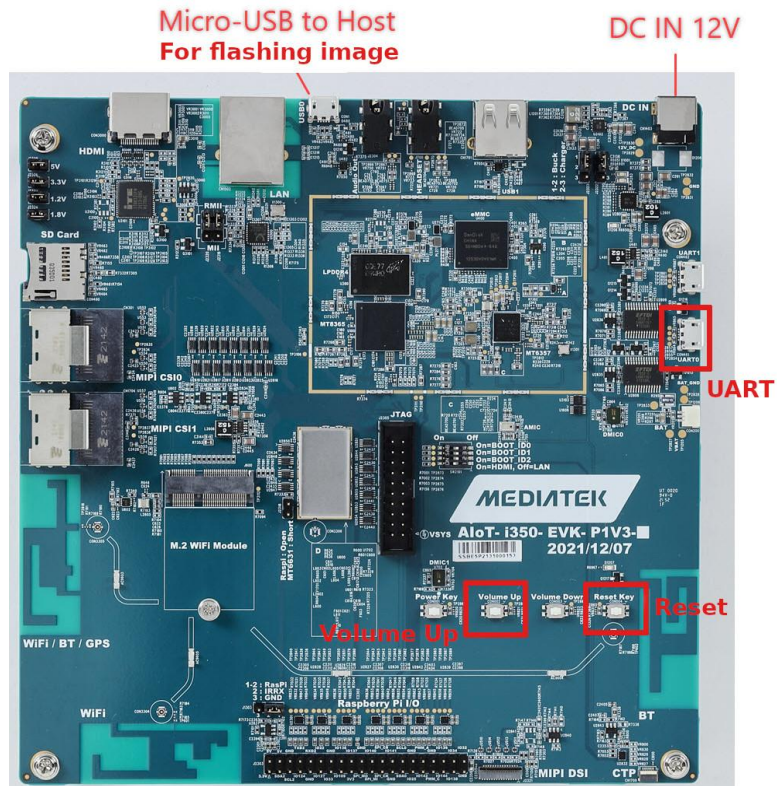


Figure 1: Mediatek Genio g350 EVK board

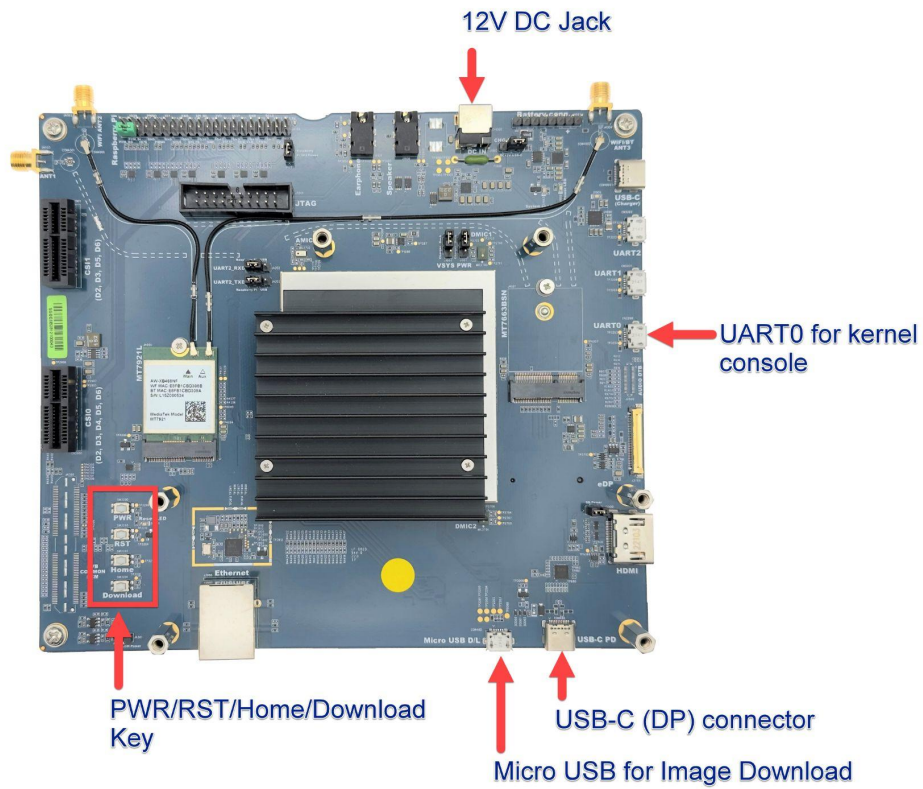


Figure 2: Mediatek Genio g510/g700 EVK boards

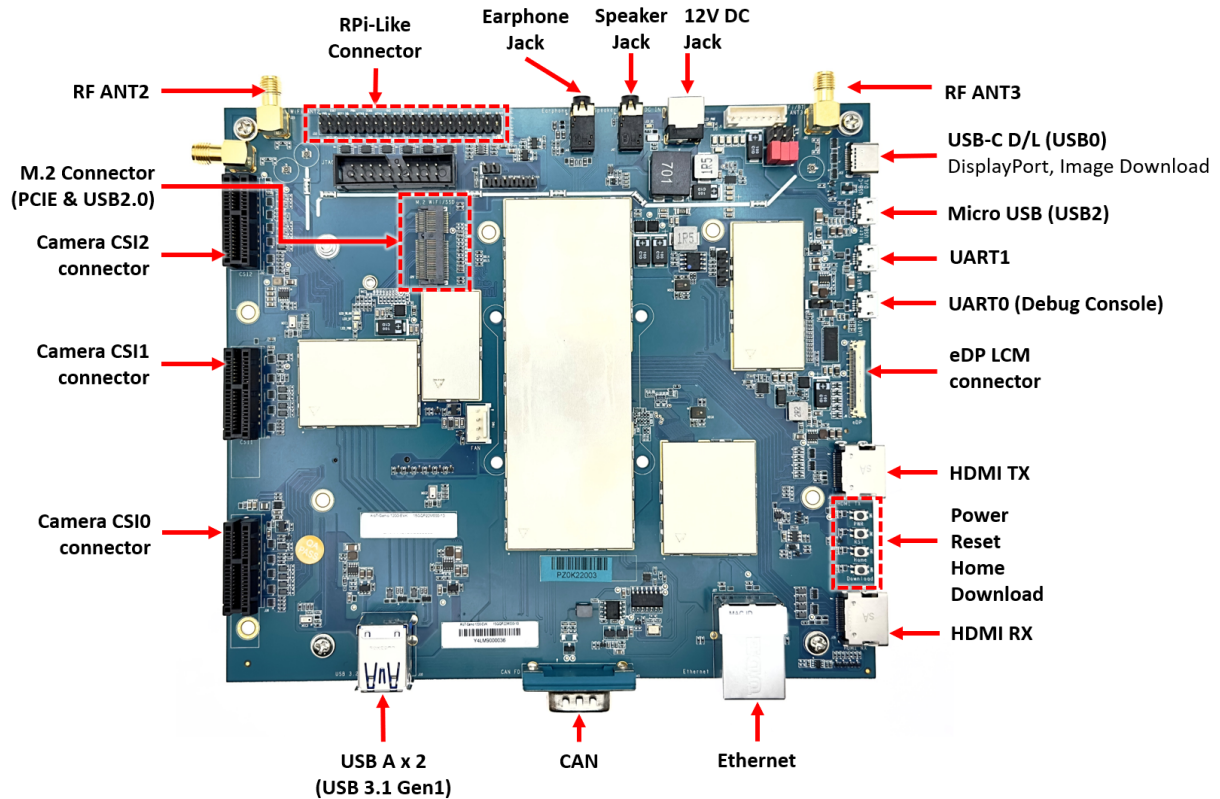


Figure 3: Mediatek Genio g1200-evk board

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
AIoT Tools: v1.3.3
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-classic-server-2204-X.tar.xz
$ tar --strip-components=1 -xvf genio-BOARD-boot-assets-X.tar.xz -C
genio-classic-server-2204-X/
$ cd genio-classic-server-2204-X
```

```

$ genio-flash
AIOt Tools: v1.3.3
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-flash
AIOt Tools: v1.3.3
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 and boot to the login screen after flashing is complete.

10. The Default account/password: ubuntu/ubuntu

At first boot, Cloud-init will create the account and initialize the system. Please stay tuned. It will take 2~3 minutes to finish the initialization.

Release Verification

Tested on the Hardware

G1200, G700, G510 only test the automatic and stress test plans because the manual part is already covered by the desktop image.

G350 will keep one SKU for full manual testing and another for partial.

- 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 ebb 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#2040445](#) [g350] Fail to wake system up from suspend via USB keyboard
- [LP#2076075](#) [g350] Headset records only left sound when using arecord command with "-c 2" parameter (stereo)

Image Changes and Bugs Fixed

- <https://launchpad.net/baoshan/+milestone/genio-server-cam-08-28>

Reopened Bugs

-

New Bugs found during QA validation

-

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 (Jul 24 2023 - 09:23:45 +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-510-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: How to Enable MediaTek Imgsensor

1. (G510) Please ensure these jumper has been setup correctly ([LP#2092700](#))
 - Set J4207, J4208, J4209, and J4215 all to [1-2].
 - <https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/app-dev/peripheral/peripheral-g700-evk.html#id2>
 - Do not set a jumper on RPI hat 19 (SPI2_MOSI) & 21 (SPI2_MISO)
 - <https://mediatek.gitlab.io/aiot/doc/aiot-dev-guide/master/sw/yocto/app-dev/peripheral/peripheral-g700-evk.html#id1>
2. Based on the sensors you have connected to the device, you need to select a dtbo according to [this table](#).
 - For example, if you are using Genio 1200-EVK, you have an IMX214 connected via CSI0 port, an AP1302+ AR0830 connected via CSI1 port, and an IMX214 connected via CSI2 port, then you should use camera-imx214-csi0-ar0830-ap1302-csi1-imx214-csi2.dtbo
3. Add [baoshan-ppa/baoshan-release](#) ppa
 - You need permission from Canonical
 - Following "Adding this PPA to your system" in the web page [baoshan-ppa/baoshan-release](#)
4. Run this command to install the following packages:

```
$ sudo apt-get install
linux-modules-mediatek-camisp-genio1200-5.15.0-1041-mtk
mediatek-camd-genio1200
```

- For G510/G700, please run this command:

```
$ sudo apt-get install
linux-modules-mediatek-camisp-genio510-5.15.0-1041-mtk
mediatek-camd-genio700
```

5. For ap1302 module, you also need to install firmware
 - Please download firmware from https://github.com/ONSemiconductor/ap1302_binaries/tree/main/MediaTek_Genio and save to /lib/firmware/
 - Please make sure using the “Download raw file” button to download the file
6. Check systemd service “mediatek-camd-genio1200” is running
 - Please replace genio1200 to genio700 if you are running on G510/G700

```
ubuntu@mtk-genio:~$ sudo systemctl status
mediatek-camd-genio1200
● mediatek-camd-genio1200.service - V4L2 COMMON Daemon
   Loaded: loaded
   (/lib/systemd/system/mediatek-camd-genio1200.service; enabled;
   vendor preset: enabled)
   Active: active (running) since Thu 2024-12-19 15:49:24
   CST; 49s ago
     Main PID: 105810 (camd)
        Tasks: 6 (limit: 9257)
       Memory: 1.0M
          CPU: 7ms
       CGroup: /system.slice/mediatek-camd-genio1200.service
               └─105810 /usr/bin/camd

Dec 19 15:49:24 mtk-genio systemd[1]: Started V4L2 COMMON
Daemon.
Dec 19 15:49:24 mtk-genio camd[105810]: camd without fuse
Dec 19 15:49:24 mtk-genio camd[105810]: [v4l2] open vcu fd=3
Dec 19 15:49:24 mtk-genio camd[105810]: camd:
shmем_length=12288, shmем=0xffff842ba000
Dec 19 15:49:24 mtk-genio camd[105810]: The firmware version is
0.2.13
Dec 19 15:49:24 mtk-genio camd[105810]: --[v4l2]
create_rt_thread,line:320
```

- If camd raise this error, please check if your dtbo has been correctly load in U-Boot and the jumper is in correct state (G510/G700)

```
Jun 06 02:57:15 mtk-genio camd[5043]: [v4l2] open vcu failed
(No such file or directory)
Jun 06 02:57:15 mtk-genio systemd[1]:
mediatek-camd-genio1200.service: Main process exited,
code=exited, status=255/EXCEPTION
```

```
Jun 06 02:57:15 mtk-genio systemd[1]:  
mediatek-camd-genio1200.service: Failed with result  
'exit-code'.
```

7. enable [mediatek-genio/genio-public](#) PPA, to use gstreamer with NM12 pixel format, v4l2 encoder and v4l2 decoder.
8. You can refer to [the MediaTek documentation](#) for how to use the camera.