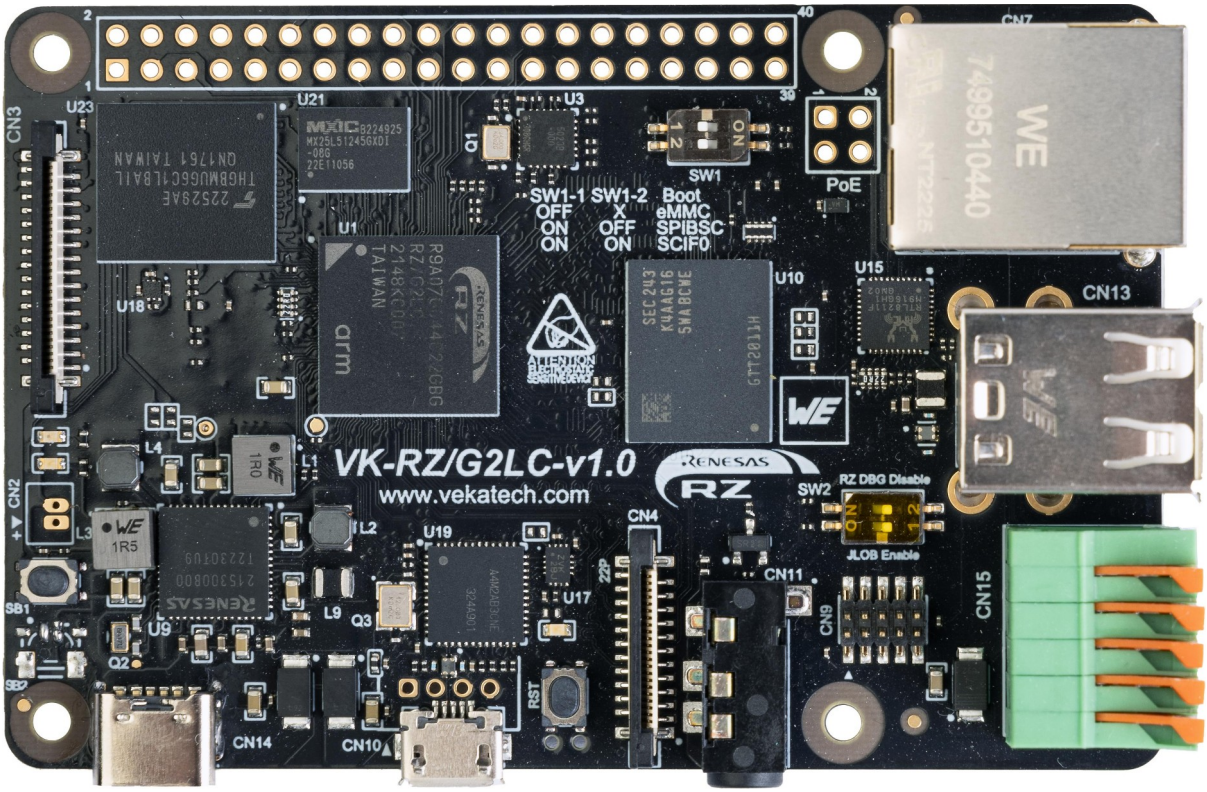
VK-RZ/G2LC How to Reflash MMC



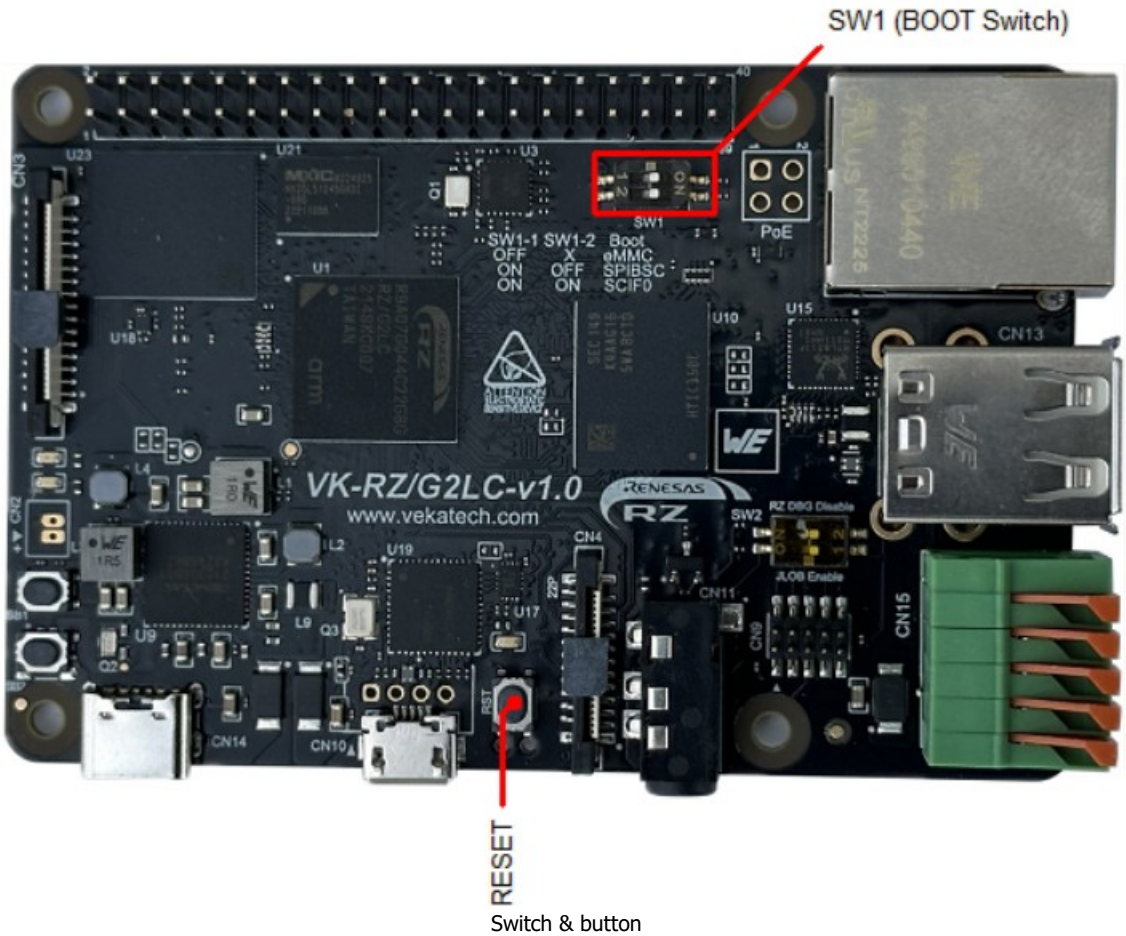
VK-RZ/G2LC v1.0 Board

Content:

1. Introduction

VK-RZ/G2LC is industrial oriented board, compatible with Raspberry Pi 4 shields. It is based on Renesas **R9A07G044C22GBG, Dual ARM Cortex-A55 + Cortex-M33 MCU**. The main purpose of this manual is to show how to reflash existing images of U-boot & Linux in MMC with new ones. For more details on what else can be done with the board, please read the full manual.

1.1 Points of interest



Switch & button

2. Delete all data on the MMC

Probably there is some working image in MMC so it needs to be wiped out:

- Set the **SW1** switch to (**1:ON | 2:ON**), so it can boot from **SCIF0**.
- Connect **VK-RZ/G2LC** to the PC (through **USB Type B micro**) & see what COM port is assigned by the OS in the Device Manager. Remember its number, you will need it.
- Unzip **vkrzg2lc-program-utility.zip**. & launch **ttermpro.exe** located in the utils folder.
- Go to **File** → **New Connection...** → select **Serial** & choose the **COM** you remembered.
- Press **Reset** button on the **VK-RZ/G2LC**. You should see message **... please send !**.
- Go to **File** → **Send File...** → browse to **images** folder, select **Flash_Writer_SCIF_VKRZG2LC_DDR4_2GB_1PCS.mot** and wait sending to end.
- You will have to see new message added to the screen ending to **>**.
- Type **EM_E** & hit Enter. For Select area hit **0** & hit Enter. Great, The Linux image is gone.
- Type **EM_E** & hit Enter. For Select area this time hit **1** & hit Enter. The U-boot is gone.
- Type **EM_E** & hit Enter. For Select area hit **2** & hit Enter. U-boot's env. parameters gone.

Congrats, the MMC is completely empty.

3. Install U-boot (on the MMC)

The U-boot firmware is in the images folder.

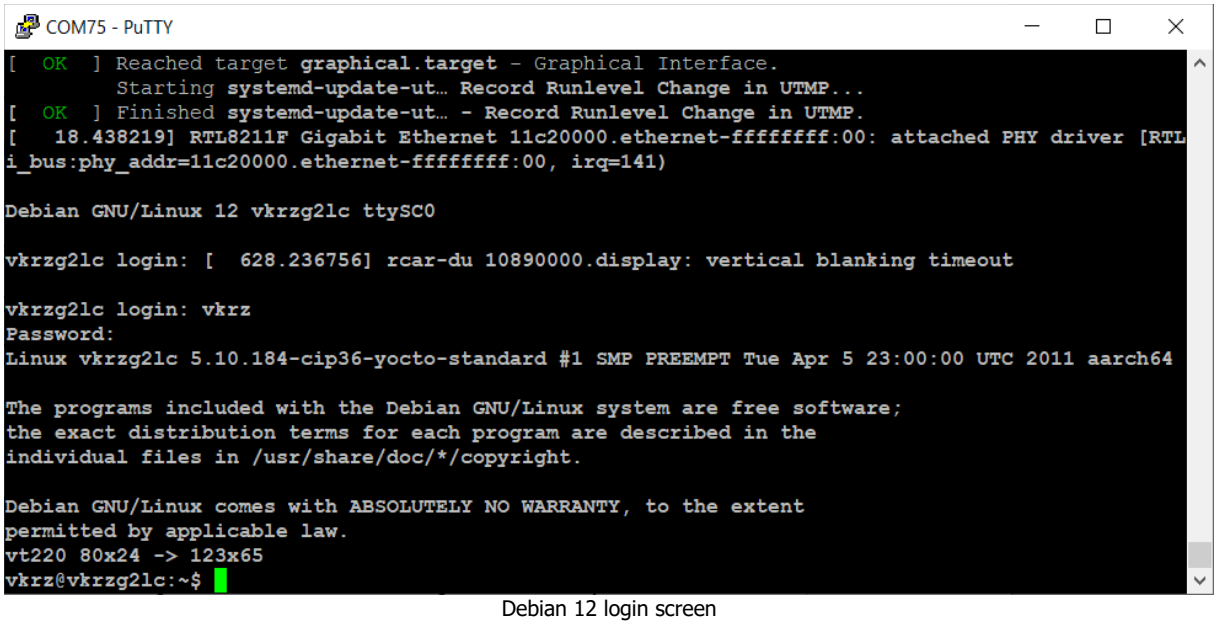
- Close the **ttermpro** & open the **cfgcom_vkrzg2lc.ini** file, alter the **COM** number by typing the one you remembered from chapter **2**.
- Make sure the **SW1** is still set to **SCIF0** (**1:ON | 2:ON**).
- Execute **vkrzg2lc_bootloader-emmc.bat**.
- Press **Reset** button on the **VK-RZ/G2LC** and wait download to complete.

4. Install Linux on µSD card (to boot from)

This card will help to write the MMC later.

- To prepare the **µSD** card, download Debian Linux image from our site.
- Get a **µSD** card with **min 4 G** capacity and plug it into the **PC**.
- Download a tool named **Rufus** from here.
- Unzip the image you downloaded (**debian-bookworm-vkrzg2lc.img.xz**).
- Launch Rufus, for **Device** select µSD card drive, for **boot section** select desired Linux image file (in this case **debian-bookworm-vkrzg2lc.img**).

- Hit **START** & wait completion (Status **READY**), eject the µSD card from the PC.
- Plug the µSD card into VK-RZ/G2LC's holder & set **SW1** to **SPIBSC** (1:ON | 2:OFF).
- Launch **ttermpro.exe** located in the utils folder.
- Go to **File** → **New Connection…** → select **Serial** & choose the **COM** you remembered.
- Press **Reset** on the VK-RZ/G2LC & wait the boot to complete (the **vkrzg2lc login:** msg).
- Login with **`vkrz`** & type **`vkrzg2lc`** for password.



Debian 12 login screen

- Give **internet** to the VK-RZ/G2LC by plugging a cable to the **Ethernet** connector.
- Wait a little for the board to get an **IP** from your **LAN** infrastructure.
- **Install** tool to transfer the image: `sudo apt-get install bmap-tools`.
- **Install** partition editor `sudo apt-get install parted`.
- **Extend** the root **partition** to **half** of the **µSD** card size: For example: If you have 4GB card, replace the word half with the correspond digit you got. i.e. in this case it is 2.
  `sudo parted /dev/mmcblk1 resizepart 2 halfG`.
- **Fix** filesystem **block size**: `sudo resize2fs /dev/mmcblk1p2`.
- **Make new partition**:
  `sudo parted /dev/mmcblk1 "mkpart primary fat32 halfG -1"`.
- **Format** that new **partition**: `sudo mkfs.vfat -F 32 /dev/mmcblk1p3`.
- Type `sudo poweroff` and wait the board to stop writing to the screen.
- Take out the card.

5. Install Linux on MMC (flash the MMC)

Write the MMC with the new Yocto image.

- Get the **µSD** card prepared in chapter **4** and plug it into the **PC**.
- **Open** the **empty** partition you've created with the VK-RZ/G2LC board in chapter **4**.
- Place **core-image-qt-vkrzg2lc.wic.bmap** & **core-image-qt-vkrzg2lc.wic.xz** files in that empty partition.
- **Eject** µSD card from the PC and **plug** it into VK-RZ/G2LC's holder.
- Make sure **SW1** is still set to **SPIBSC SPI** (1:ON | 2:OFF) & press reset.
- Wait Debian to boot and login with user: **vkrz** & password: **vkrzg2lc**.
- Make partition 3 accessible: `sudo mount /dev/mmcblk1p3 /mnt`.
- Transfer the image in to eMMC: `sudo bmaptool copy /mnt/core-image-qt-vkrzg2lc.wic.xz /dev/mmcblk0`.

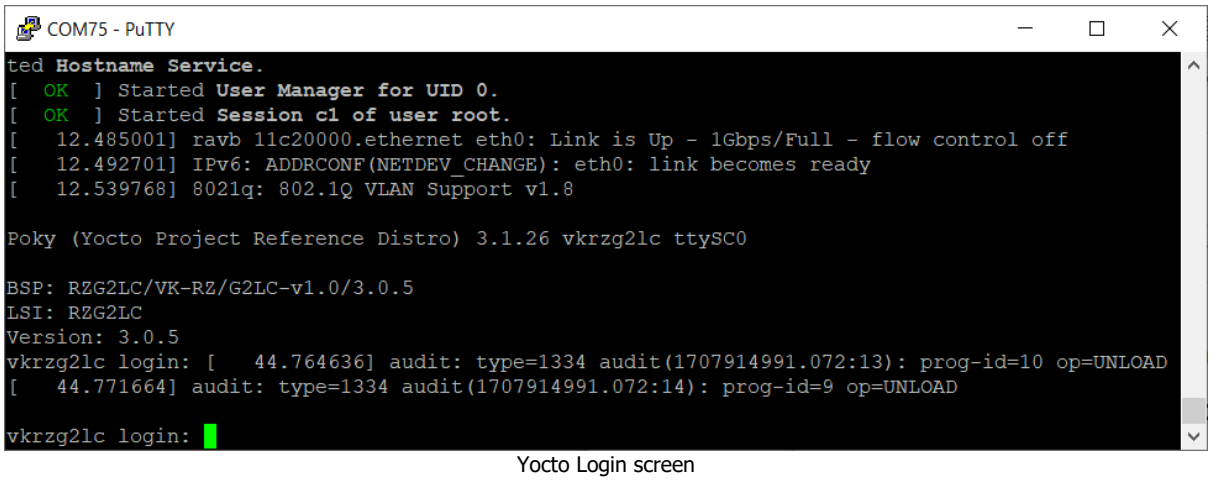
Or alternatively unzip the .xz image & then copy it with dd command:

`dd if=core-image-qt-vkrzg2lc.wic of=/dev/mmcblk0 bs=1M iflag=fullblock oflag=direct conv=fsync status=progress`.

- Extend the root partition to use the full capacity of the eMMC:

`sudo growpart /dev/mmcblk0 2 && sudo resize2fs /dev/mmcblk0p2`.

- Discard partition 3: `sudo umount /mnt`.
- Make sure **SW1** is set to boot from **eMMC** (1:OFF | 2:OFF) & press reset.
- You should now be able to see login screen of the Yocto, use `root` to login.



Yocto Login screen

Revision overview list

Revision number	Description changes
0.1	Initial

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