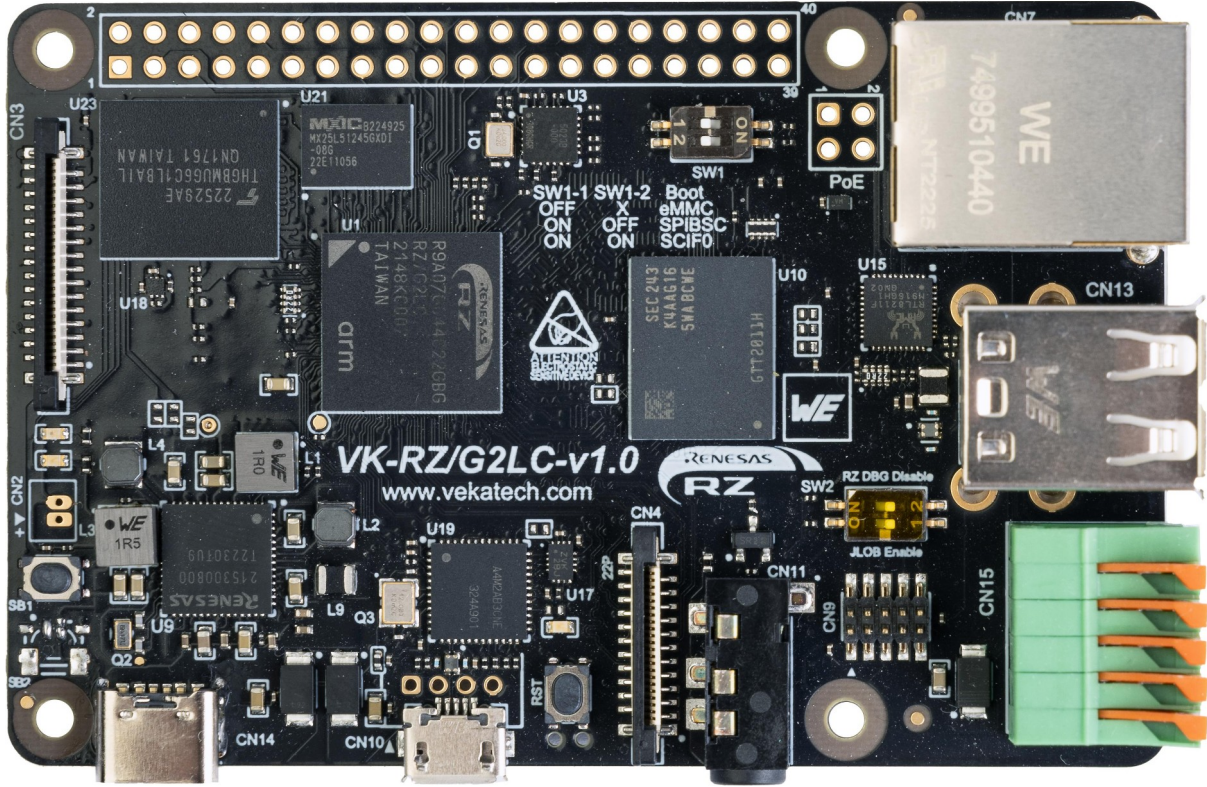


# VK-RZ/G2LC How to Reflash MMC



VK-RZ/G2LC v1.0 Board



# How To Reflash MMC

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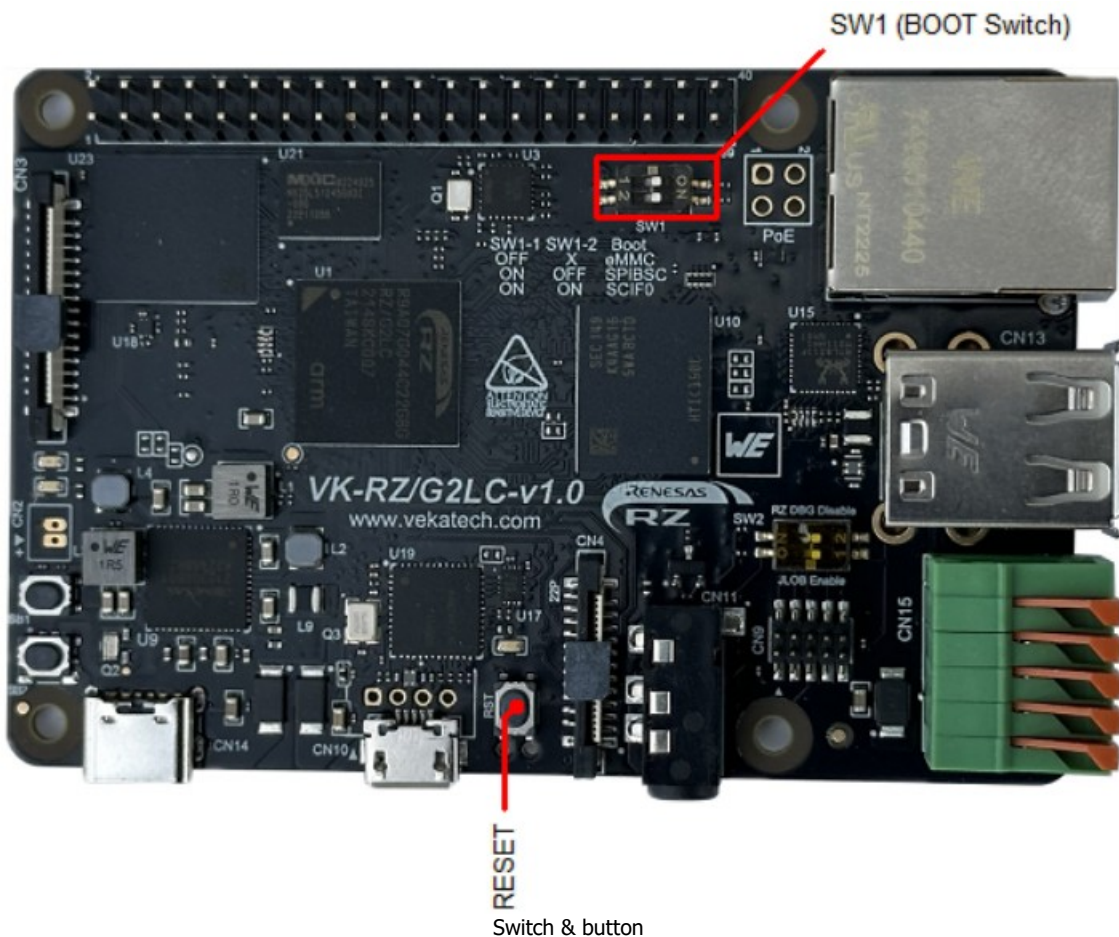


# How To Reflash MMC

## 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





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## 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**).



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- Hit **START** & wait completion (Status **READY**), eject the  $\mu$ SD card from the PC.
- Plug the  $\mu$ SD 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.

```
COM75 - PuTTY
[ OK ] Reached target graphical.target - Graphical Interface.
Starting systemd-update-ut... Record Runlevel Change in UTMP...
[ OK ] Finished systemd-update-ut... - Record Runlevel Change in UTMP.
[ 18.438219] RTL8211F Gigabit Ethernet 11c20000.ethernet-ffff:ffff:ffff:ffff:00: attached PHY driver [RTL
i_bus:phy_addr=11c20000.ethernet-ffff:ffff:ffff:ffff:00, irq=141)

Debian GNU/Linux 12 vkrzg2lc ttySC0

vkrzg2lc login: [ 628.236756] rcar-du 10890000.display: vertical blanking timeout

vkrzg2lc login: vkrz
Password:
Linux vkrzg2lc 5.10.184-cip36-yocto-standard #1 SMP PREEMPT Tue Apr 5 23:00:00 UTC 2011 aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
vt220 80x24 -> 123x65
vkrz@vkrzg2lc:~$
```

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  $\mu$ SD 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.



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## 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: **vkrgz** & password: **vkrgz2lc**.
- 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.

```
COM75 - PuTTY
ted Hostname Service.
[ OK ] Started User Manager for UID 0.
[ OK ] Started Session c1 of user root.
[ 12.485001] rawb 11c20000.ethernet eth0: Link is Up - 1Gbps/Full - flow control off
[ 12.492701] IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
[ 12.539768] 8021q: 802.1Q VLAN Support v1.8

Poky (Yocto Project Reference Distro) 3.1.26 vkrzg2lc ttySC0

BSP: RZG2LC/VK-RZ/G2LC-v1.0/3.0.5
LSI: RZG2LC
Version: 3.0.5
vkrgz2lc login: [ 44.764636] audit: type=1334 audit(1707914991.072:13): prog-id=10 op=UNLOAD
[ 44.771664] audit: type=1334 audit(1707914991.072:14): prog-id=9 op=UNLOAD

vkrgz2lc login: █
```

Yocto Login screen



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## Revision overview list

| Revision number | Description changes |
|-----------------|---------------------|
| 0.1             | Initial             |

Vekatech Ltd.

63, Nestor Abadzhiev st.  
4023 Plovdiv  
Bulgaria  
Tel.: +359 (0) 32 262362  
info@vekatech.com

[www.vekatech.com](http://www.vekatech.com)