Windows on Radxa Dragon Q6A - 251213

This document is intended for preview. Please check for updates in https://docs.radxa.com/ when available!

1.1 Supported Features and Usage Instructions

1.1.1 Booting Generic Image/Installer without Drivers

The system can be booted normally without drivers. Available features when running without drivers include:

- HDMI output (Inherited from UEFI GOP)
- PCIe (NVMe available; system does not include network card drivers)
- eMMC
- UFS
- USB2
- USB3 (Devices must be connected before booting into the system)

1.1.2 Hardware video acceleration

Capability

Max codec performance:

- Decoder: 4096 x 2160 at 60 fps, 250 Mbps (H264 / HEVC 10-bit / VP9 10-bit)
- Encoder: 3840 x 2160 at 30 fps, 150 Mbps (H264 / HEVC)

Supported API:

- Decoder: D3D11VA (recommended) or DXVA2
- Encoder: MediaFoundation

Notes regarding 4K 60fps 10-bit video decoding, or high bitrate decoding:

The QCS6490 SoC has limited memory bandwidth (~22 GB/s), so you may notice dropped frames in some third party video players. Here are some suggestions to achieve optimal performance and power efficiency:

- If possible, just use the pre-installed Windows Media Player
- If using mpv, try these options:

```
mpv somevideo.mkv --vo=gpu --hwdec=d3d11va --d3d11va-zero-copy=yes --profile=fast
```

Application

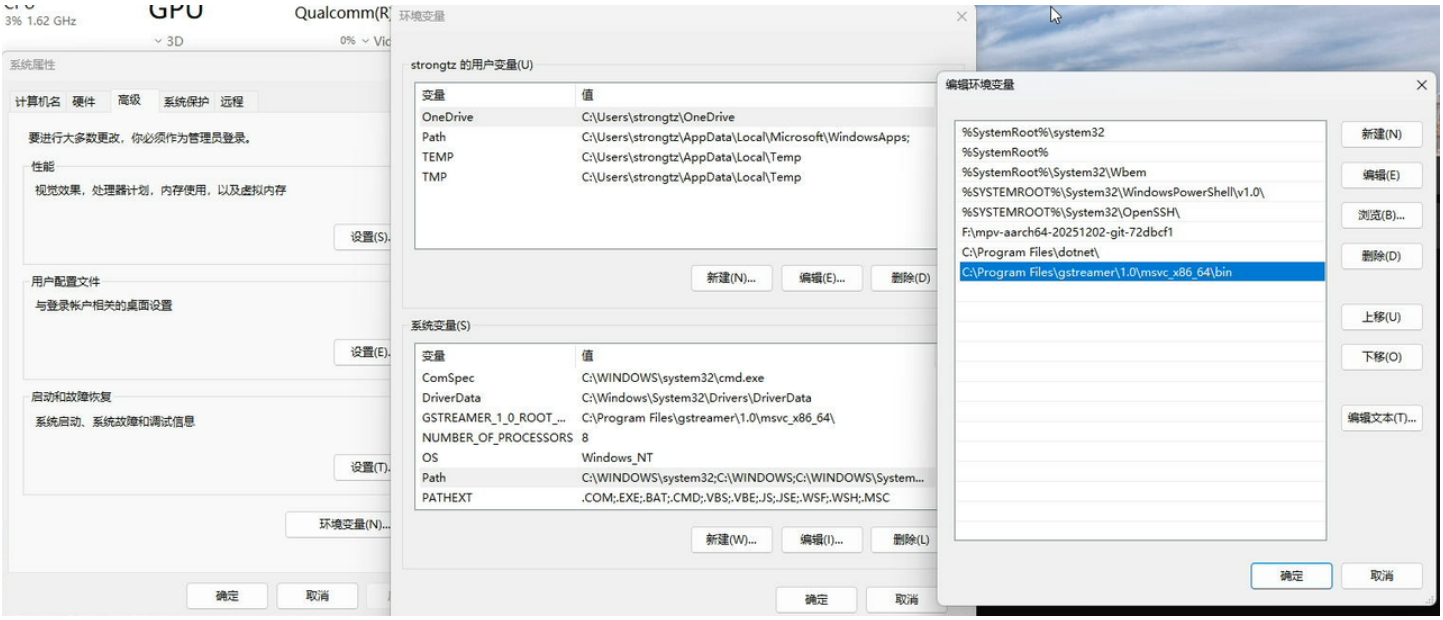
Regular video playback

Use Windows Media Player, mpv, VLC, etc.

GStreamer

GStreamer is a cross-platform pipeline-based multimedia framework that links together a wide variety of media processing systems to complete complex workflows.

To install gstreamer, download the MSVC 64-bit runtime installer from the official website. After installation, you can add the gstreamer bin path to system environment variables.



Example pipelines:

Transcode video from H265 10-bit to H264 8-bit (CBR 15Mbps)

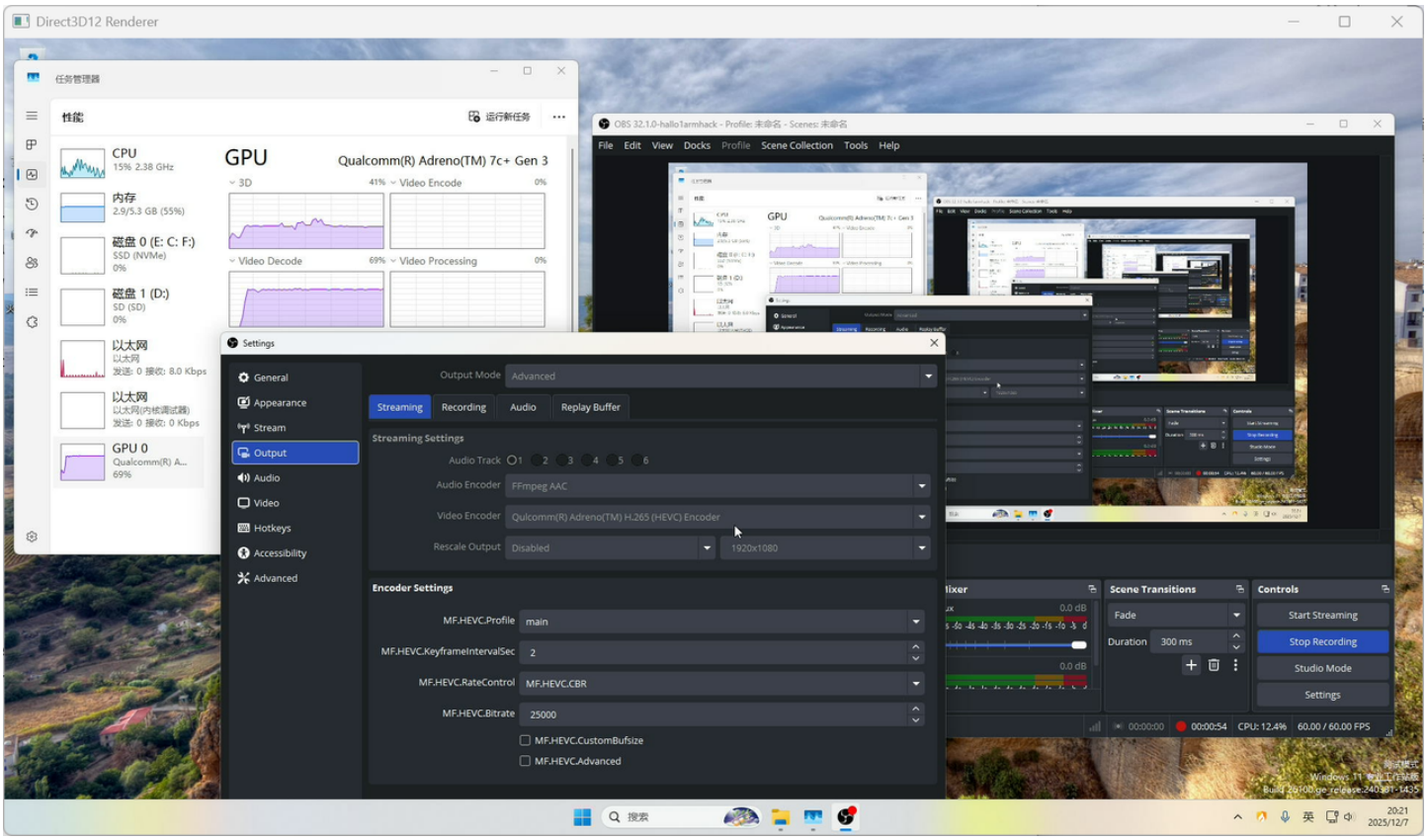
代码块

```
gst-launch-1.0 -v filesrc location="F:\BanG Dream! It's MyGO!!!!! - 01 [WebRip 1080p HEVC-10bit AAC ASSx2].mkv" ! `
        matroskademux name=demux demux.video_0 ! queue ! h265parse ! `
        d3d11h265dec ! `
        d3d11convert ! `
        "video/x-raw(memory:D3D11Memory),format=NV12" ! `
```

```
d3d11download ! video/x-raw,format=NV12 ! `
mfh264enc rc-mode=cbr bitrate=15000 ! `
 h264parse ! matroskamux ! filesink location=transcode_h264.mkv
```

OBS Studio

Support for MediaFoundation hasn't yet been merged into upstream OBS. However, there's a community build on GitHub which works on QCS6490 in Windows.



1.1.3 GPU

Capability

- Direct3D 12 Feature Level 12_1
- OpenCL 3.0 (arm64/x64 only, no 32-bit support)
- Vulkan 1.3 (arm64/x64 only, no 32-bit support)
- OpenGL 4.1

`OpenCL™, OpenGL®, and Vulkan® Compatibility Pack` needs to be manually installed from Microsoft Store for OpenGL to work.

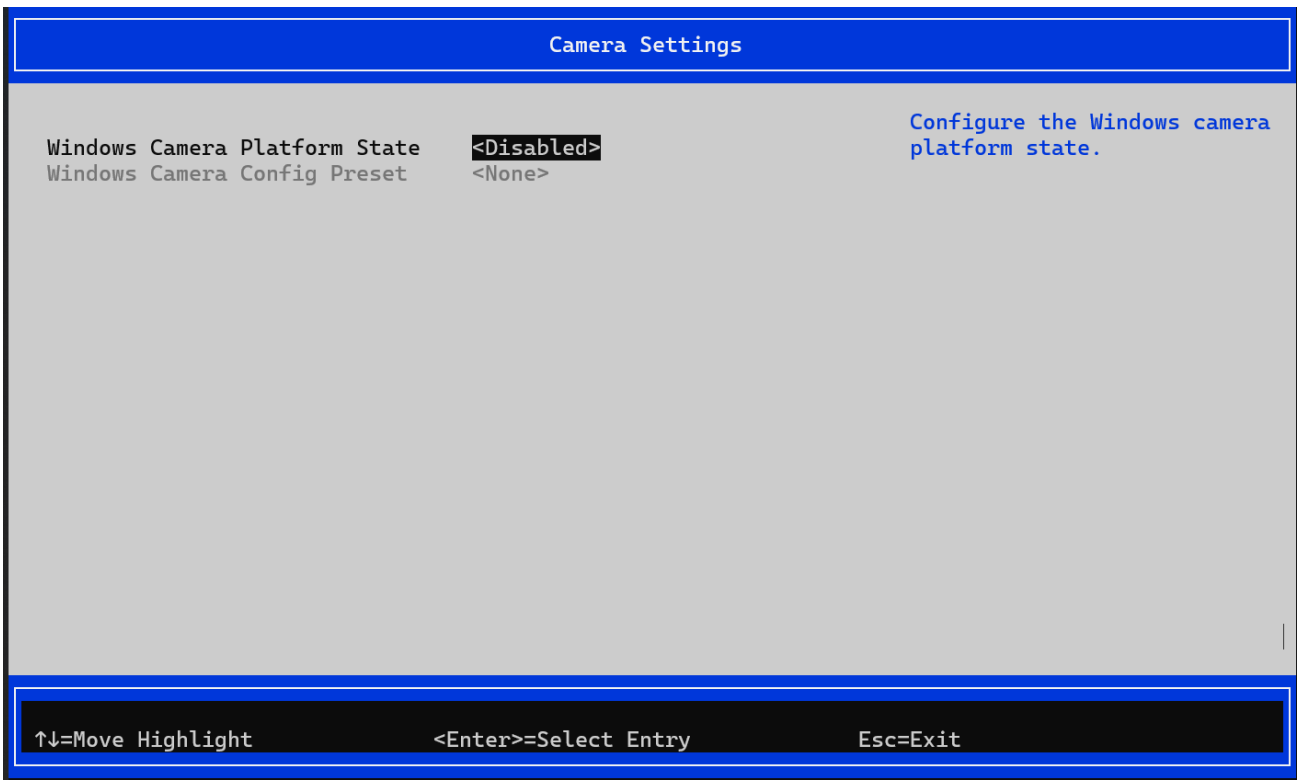
1.1.4 MIPI CSI Camera

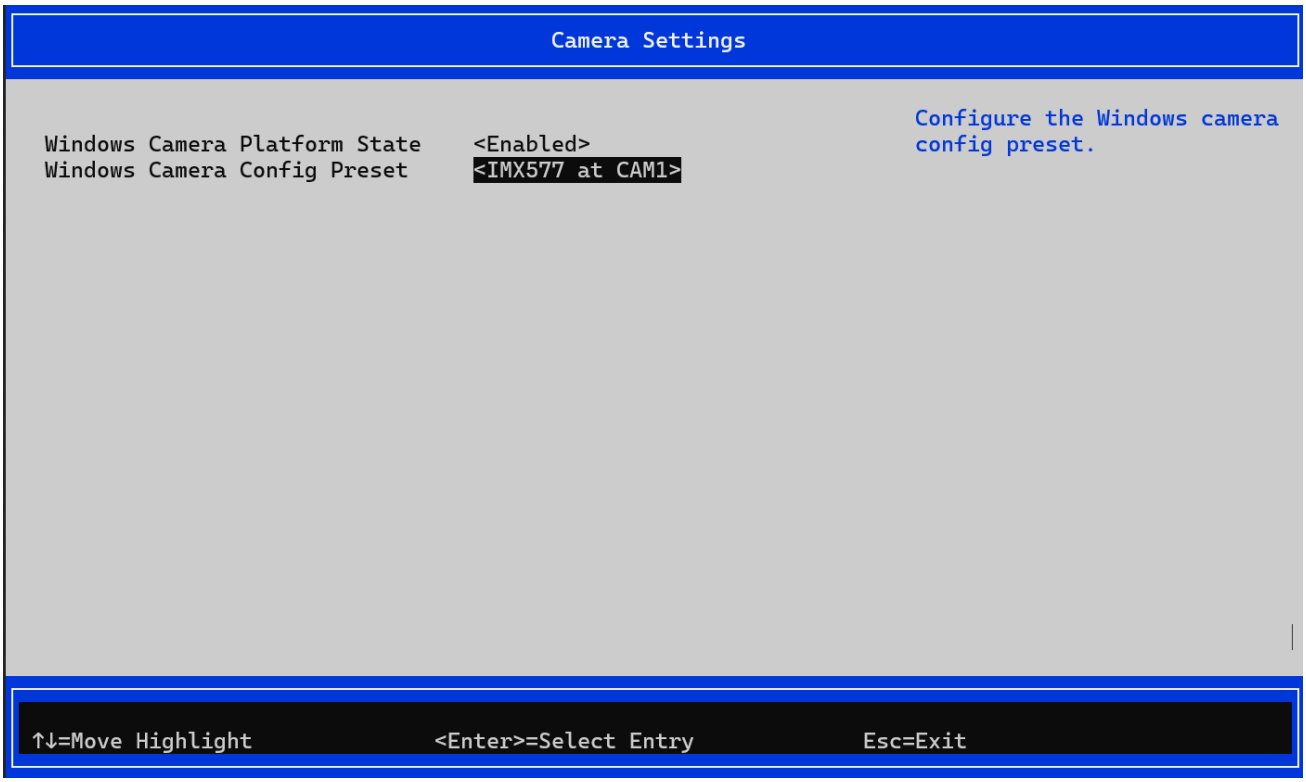
Capability

- Qualcomm Spectra 570L ISP
- 4K@30fps 10 bit video recording
- Hardware JPEG Encode (Windows imaging component (WIC) interface)

Preparation

Enable the required camera module in UEFI Setup.





Currently supported camera modules:

- Radxa Camera 12M (imx577)

Application

Windows Camera

The Windows Camera application can be used to take photos and record videos.

GStreamer

The `mfvideosrc` plugin can be used to capture video from MIPI CSI cameras.

Example pipelines:

Capture from the default video capture device and render to autovideosink.

```
代码块
1    gst-launch-1.0.exe mfvideosrc ! queue ! autovideosink
```

Capture from the default video capture device, then encode using H265 VBR and save to file.

```
代码块
1    gst-launch-1.0.exe mfvideosrc ! queue ! `
2            mfh265enc rc-mode=qvbr bframes=1 qp=20 qp-b=20 qp-i=20 qp-p=20 ! `
3            h265parse ! matroskamux ! filesink location=camera_h265.mkv
```

Capture from the default video capture device, then encode using H265 CBR and save to file.

代码块

```
gst-launch-1.0.exe mfvideosrc ! queue ! `
        mfh265enc rc-mode=cbr bitrate=20000 ! `
        h265parse ! matroskamux ! filesink location=camera_h265.mkv
```

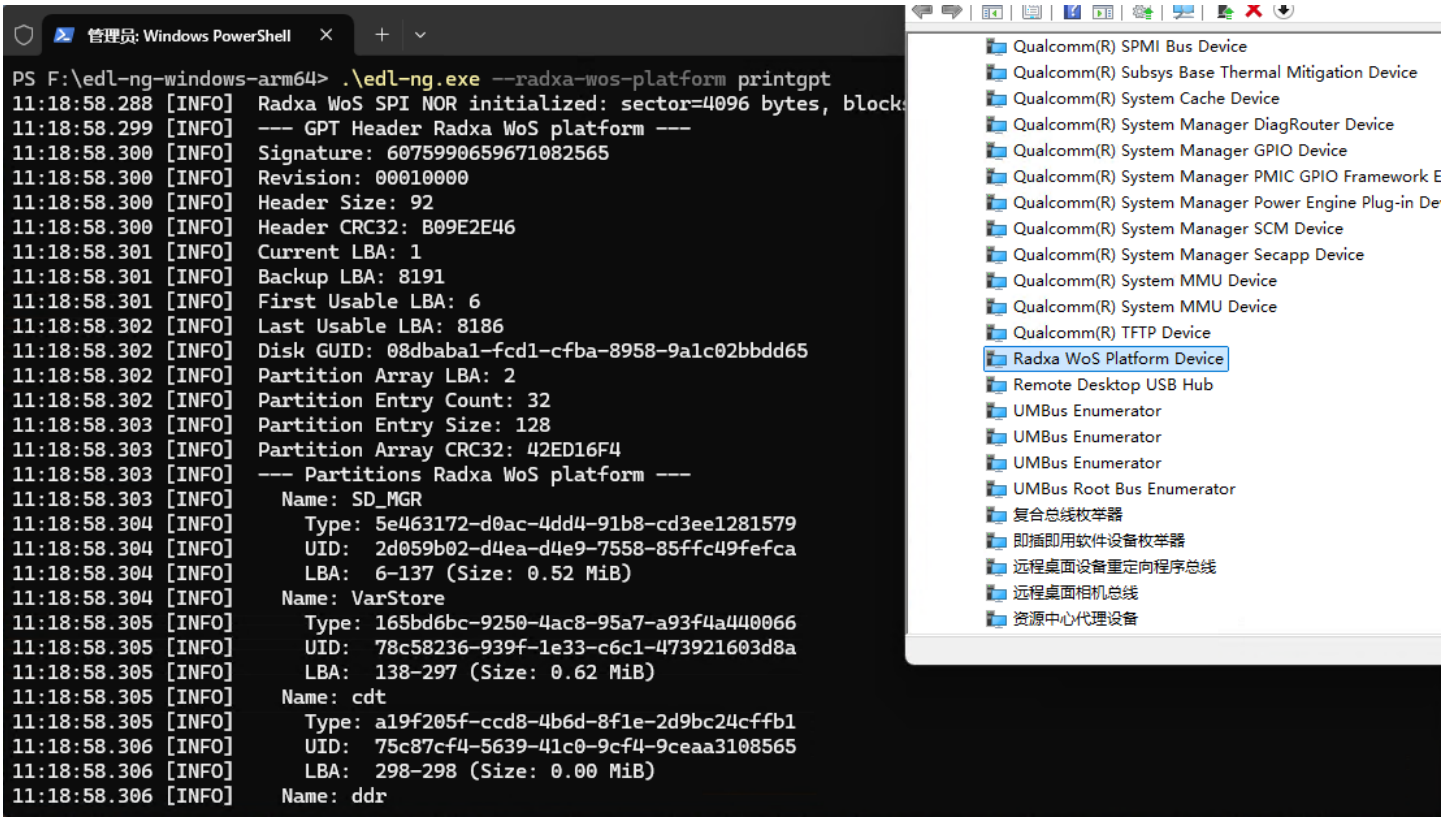
1.1.5 40-Pin GPIO

https://github.com/strongtz/radxa-wos-gpio-demo/releases/tag/v1

1.1.6 Firmware update

edl-ng (version v1.5.0+) can be used to update the firmware on the SPI Flash in Windows.

You need to specify the option *--radxa-wos-platform* when using edl-ng on Windows.



1.1.7 Software

Windows 11 24H2 included a new emulator called Prism, which allows both x86 and x64 apps to run without modification.

Support for AVX and AVX2 was added to Windows 11 24H2 and 25H2 via an update in December 2025.

If a native ARM64 version of an application is unavailable, it is recommended to use the x64 (64-bit) version rather than the 32-bit one.

Unofficial list of common software that supports native ARM64:

> https://armrepo.ver.lt/
>
> **Windows ARM software | Home**

Note that emulation only supports user mode code and doesn't support drivers. Any kernel mode components must be compiled as Arm64. For more information, read the Microsoft article:

> https://learn.microsoft.com/en-us/windows/arm/apps-on-arm-x86-emulation
>
> **How emulation works on Arm**
>
> Learn how emulation for x86 and x64 apps makes the rich ecosystem of existing Win32 apps available on Arm devices.

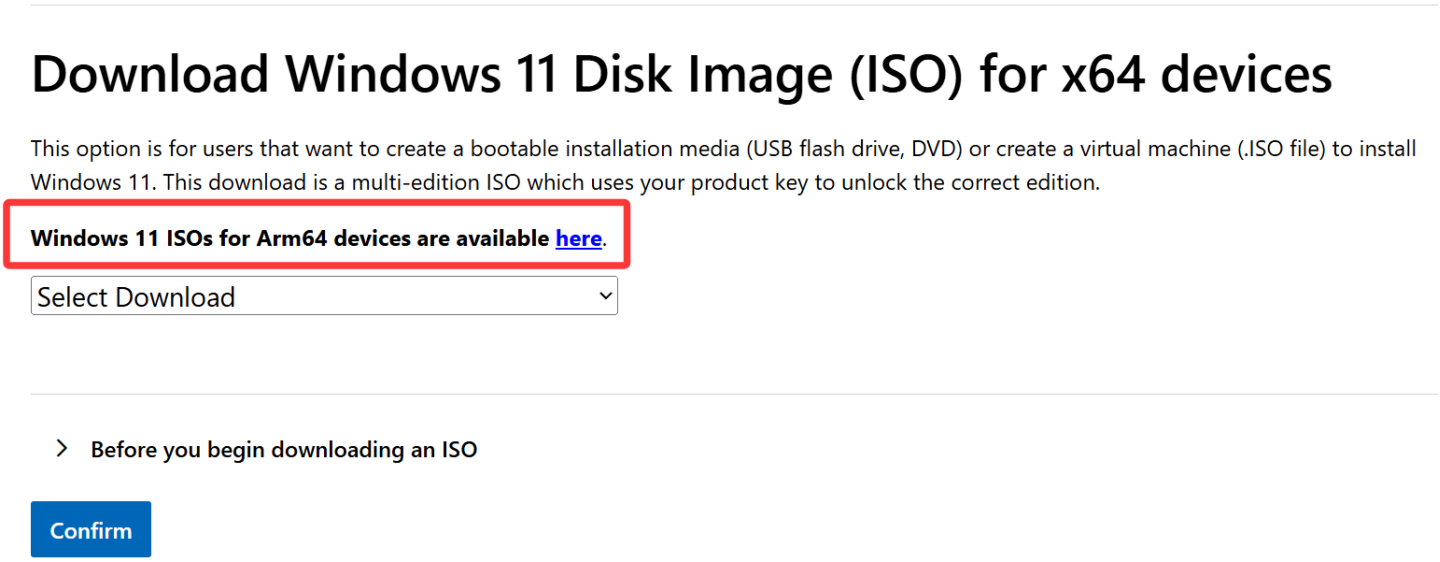
1.2 System installation guide

1.2.1 **Prepare the Installation USB Drive**

First, you need to download the Windows **ARM64** ISO image, which can be obtained from the **official Microsoft website** or **UUP dump**.

1.2.1.1 **Microsoft Official Website**

https://www.microsoft.com/en-us/software-download/windows11

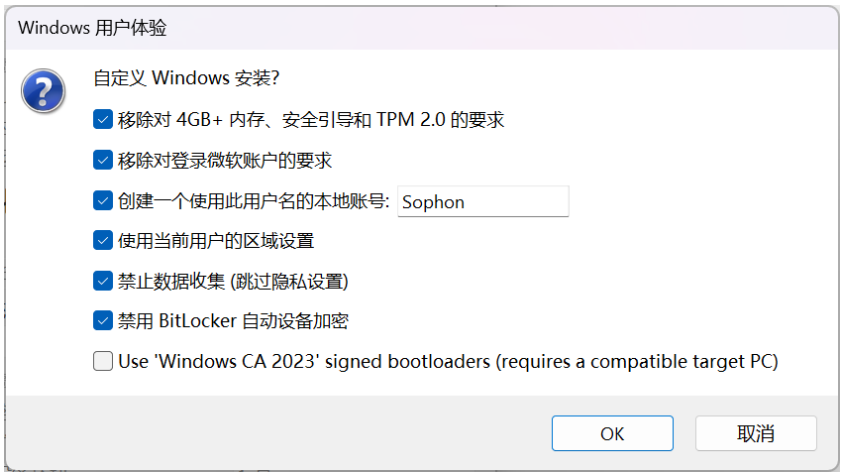


1.2.1.2 UUP dump

https://uupdump.net/

（Omitted）

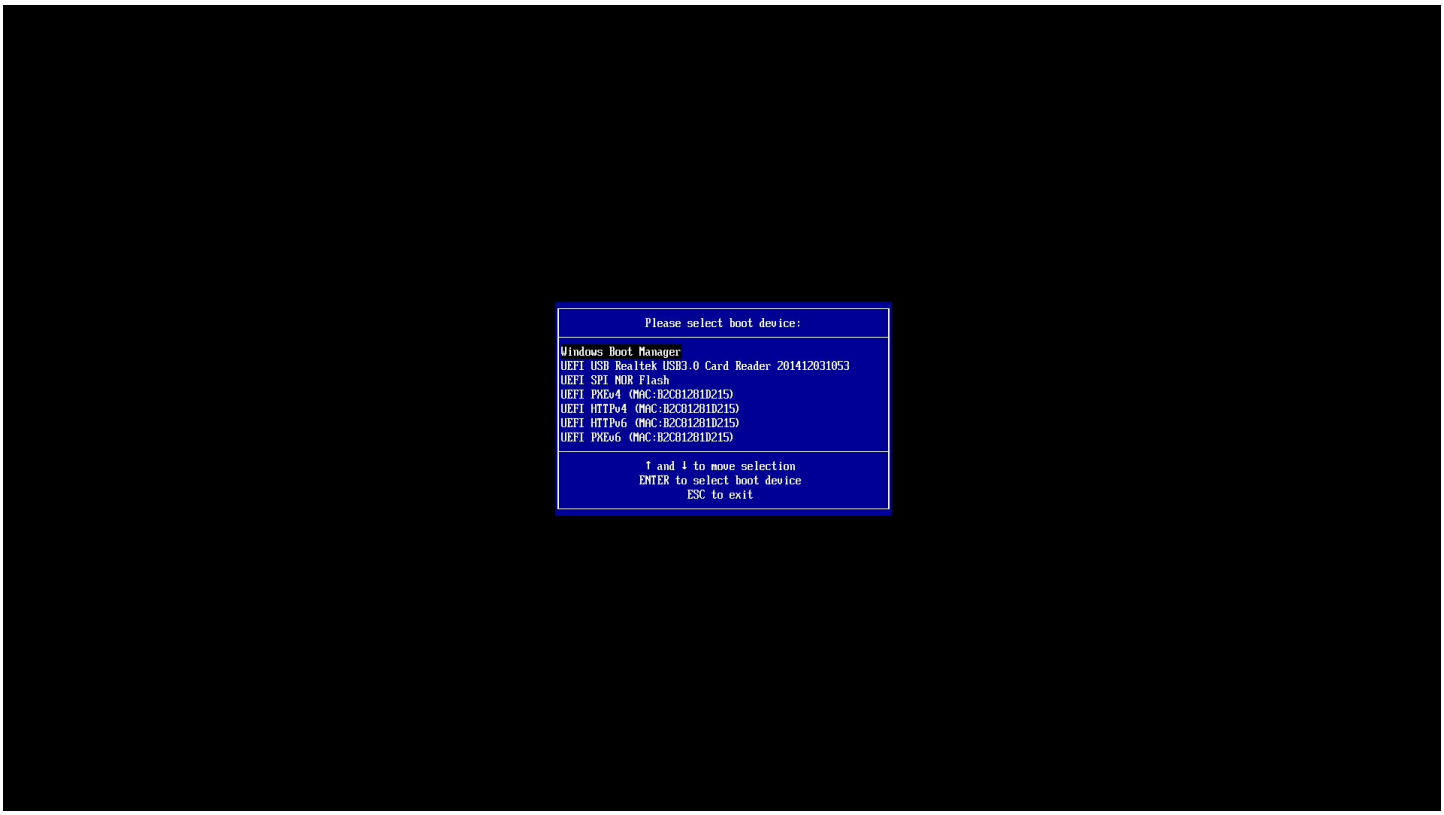
After downloading the ISO, download Rufus from https://rufus.ie/ and write the ISO to the USB drive.



1.2.2 Boot the Installer from the USB Drive

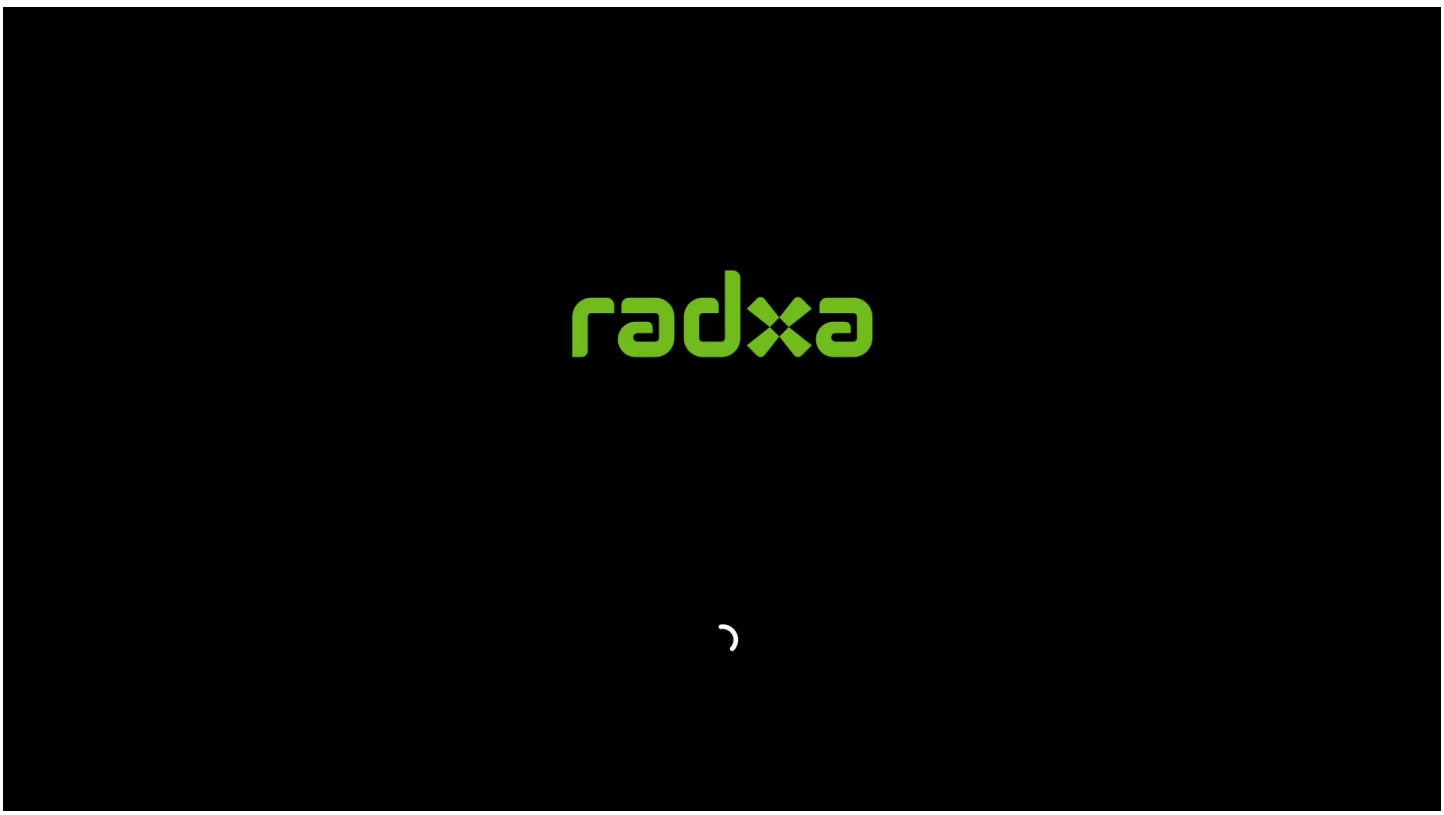
Connect the USB drive to any USB port on the Q6A, then power it on.

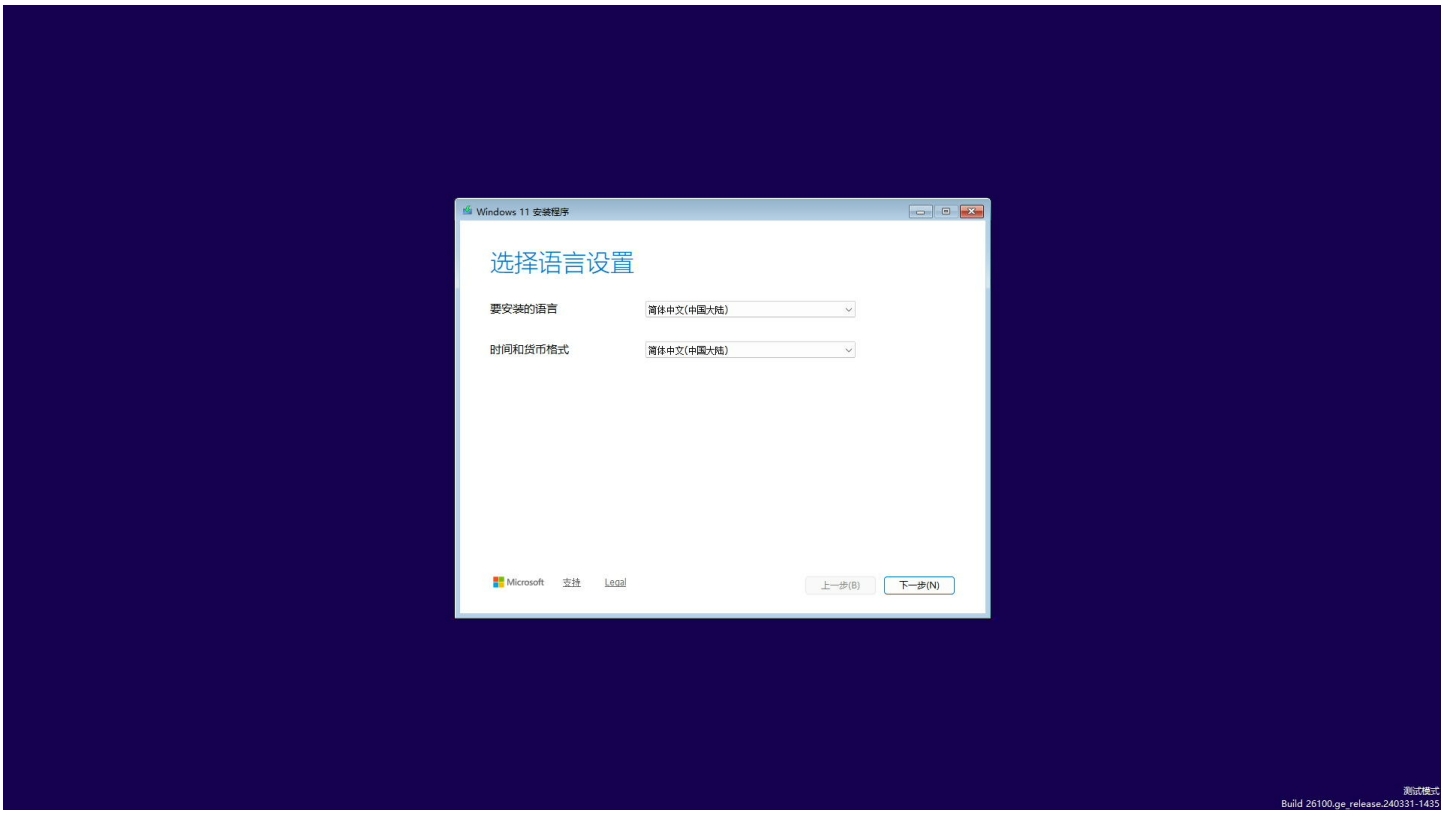
When this screen appears, press F12 to enter the boot menu:



Select USB boot:


UEFI:NTFS v2.5 (aa64)
<https://un.akeo.ie>
[INFO] UEFI v2.70 (Qualcomm Technologies, Inc., 0x60251114)
[INFO] Qualcomm Technologies, Inc. 6.0.251114.BOOT.MXF.1.0.1-00549-KODIAKWP-1
[INFO] Radxa Computer Co., Ltd. Radxa Dragon Q6A
[INFO] Secure Boot status: Setup
[INFO] Disconnecting potentially blocking drivers
[INFO] Searching for target partition on boot disk:
[INFO] Pci(0x80,0x0)/USB(0x1,0x0)
[INFO] Found NTFS target partition:
[INFO] Pci(0x80,0x0)/USB(0x1,0x0)/HD(1,GPT,5E5BA20E-ABC2-463B-91A4-F2F4CEC9B0A1,0x800,0x1D1DF68)
[INFO] Starting NTFS driver service:
[INFO] NTFS Driver 1.7 (ntfs-3g 69d8cbc0)
[INFO] Opening target NTFS partition:
[INFO] Volume label is 'PCHA_A64FRED_ZH-CN_DV9'
[INFO] This system uses 64-bit ARM UEFI => searching for aa64 EFI bootloader
[INFO] Launching 'efi\boot\bootaa64.efi'...
[INFO] Starting Microsoft Windows bootmgr...


radxa



Follow the normal installation process from here. After the installation is complete and you have entered the desktop, it is recommended to first disable the automatic sleep timeout feature in Settings. Without drivers installed, the device may fail to wake up from sleep.

1.2.3 Install Drivers

Unzip the driver package.

名称	修改日期	类型	大小
drivers	2025/12/5 11:49	文件夹	
1-testsigning.bat	2025/11/14 18:17	Windows 批处理文件	1 KB
2-DriverSetInst.bat	2025/12/3 20:23	Windows 批处理文件	1 KB
DriverSetInst.exe	2025/12/3 23:00	应用程序	1,443 KB
radxa_wos_test_cert.reg	2025/12/3 22:52	注册表项	22 KB

Right-click on `1-testsigning.bat` and run as administrator. Double-click `radxa_wos_test_cert.reg` to import the test certificate, then restart the system.

After restarting, right-click on `2-DriverSetInst.bat` and run as administrator, then restart the system again.