



Airoha Flash Tool on Windows Users Guide

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Document Revision History

Revision	Date	Description
1.0	16 Nov 2021	Initial release version.
1.1	10 March 2022	Added USB driver installation instructions

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1. Introduction

AIROHA Flash Tool is a flexible device flashing tool for application development on specified HDK. It primarily supports downloading, formatting and reading back the binary data from a target device. The tool provides high speed UART download and it supports the USB 2.0 high-speed serial bus too.

This document guides you through the following.

- For the download operation which is used to download the software and load it on a target device, see section 3.1, "Downloading the firmware".
- For the format operation which is used to erase the flash memory of the target, see section 3.2, "Formatting the flash".
- For the read back operation which is used to read the data from the target device's flash memory, see section 3.3, "Reading back the flash data".

2. Tool preparation

This section provides an installation guide for Airoha Flash Tool which contains the following items:

- Supported environment
- Installing tool

2.1. Environment

Airoha Flash Tool can be used on Microsoft Windows XP (Professional), Windows 7 (32 or 64 bit) and Windows 10 (32 or 64 bit) PC that support USB interface communication.

First, prepare USB to UART connector which the tool needs to use.

Then, install the corresponding driver. Please refer section 2.3, "Installing the USB driver" and section 2.4, "Installing the UART driver".

2.2. Installing tool

To install the Flash Tool, simply copy the package folder to your Windows computer. No further steps are required.

There are 3 main components included in the Flash Tool package, AIROHA_Flash_Tool.exe, btapi.dll and DaCode folder which includes all of DA files.

2.2.1. AIROHA_Flash_Tool.exe

This file launches the graphical user interface (GUI) for the tool. The GUI requires a dynamic-link library (btapi.dll) to run.

2.2.2. btapi.dll

btapi.dll is the kernel library for FlashTool.exe, to perform Boot ROM (BROM) and DA operations.

2.2.3. DaCode folder

The tool needs to download DA which is a binary file to target device's SRAM or TCM and executes on it. DA can perform download, read back and format operations.

2.3. Installing the USB driver

Please install the USB driver first: open MS_USB_ComPort_Driver folder in the tool, double-click InstallDriver.exe to launch the installer, and then follow the prompts to install the driver.

You must use a USB cable to connect your device to the PC. After you reboot the device as part of the installation process, the virtual comport will appear in the Device Manager on the PC, as shown below:

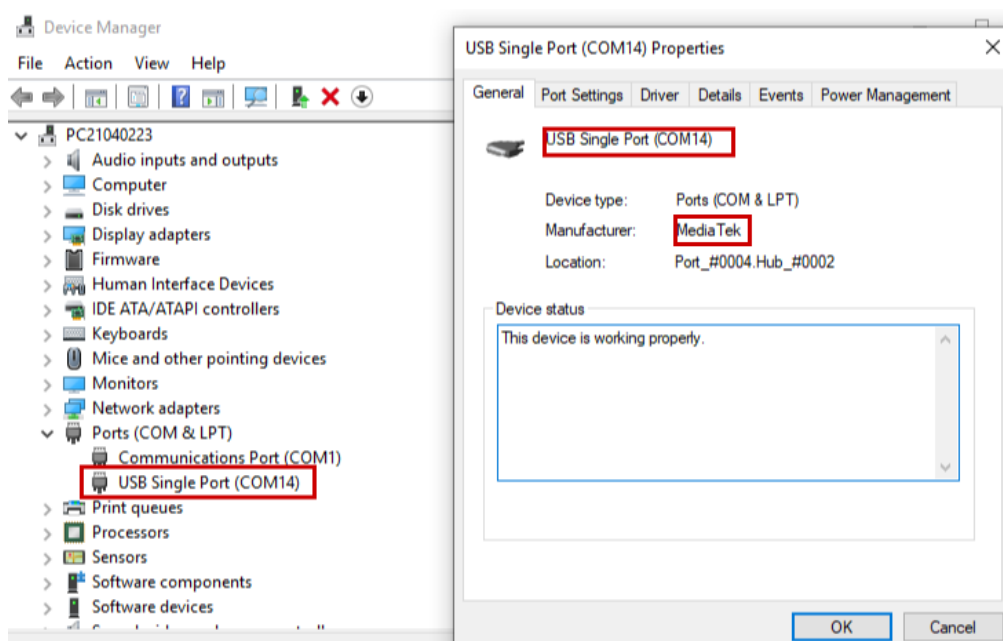


Figure 1. Installing the USB driver

2.4. Installing the UART driver

It is recommended to use FTDI convertor to download. Please access the FTDI official website to download the corresponding driver, then install it.

After installing FTDI driver done, you can open PC device manger, as below:

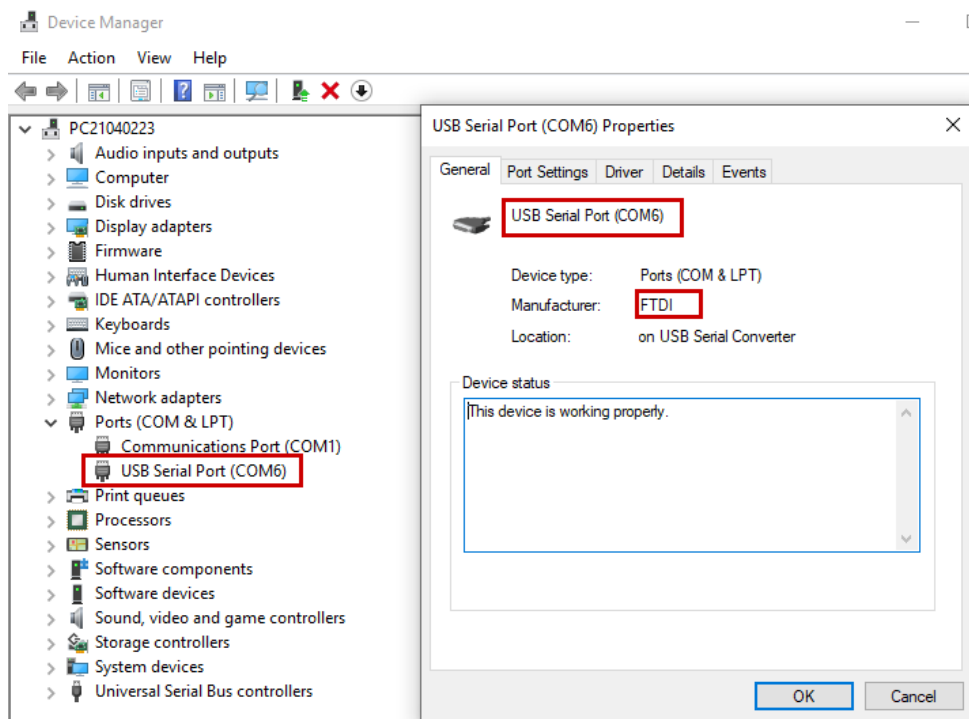


Figure 2. Installing the UART driver

3. Tool usage

Airoha Flash Tool is used to download, format and read back binary data on the flash memory of the target device. The main GUI of the tool is shown in Figure 3. Each item on the main GUI will be described in detail in the following sections.

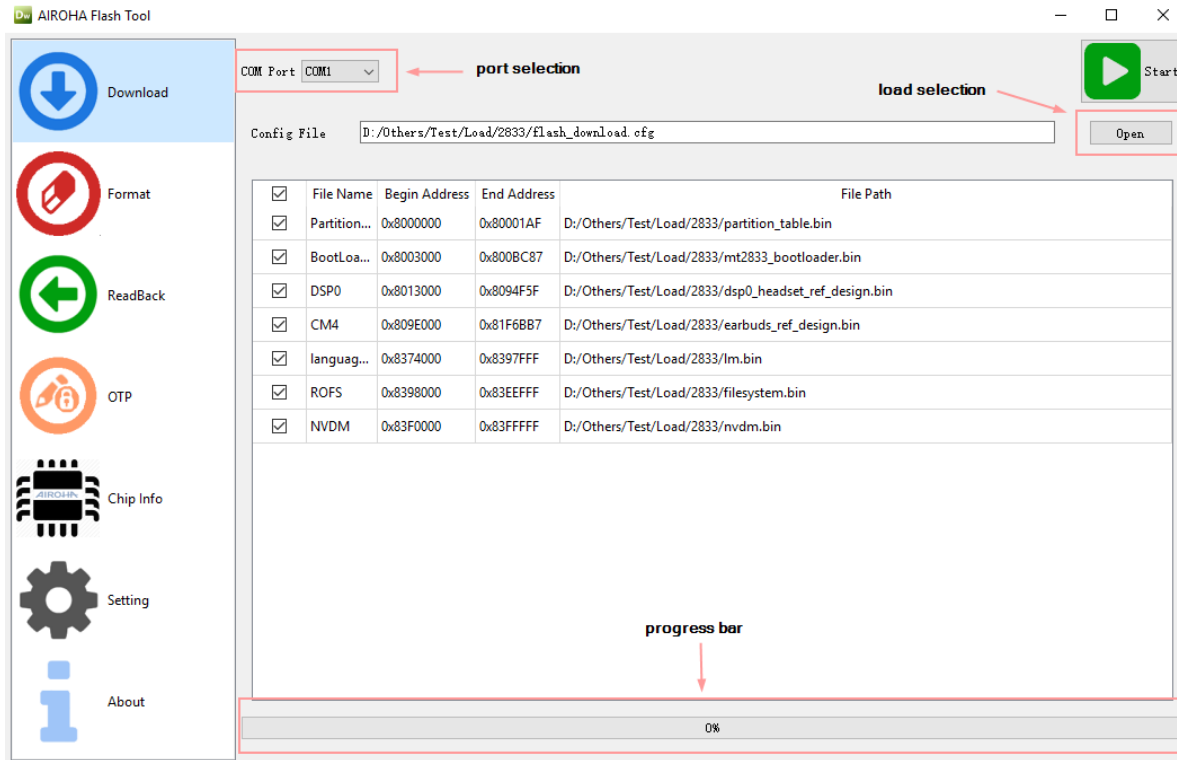


Figure 3. Airoha Flash Tool's main GUI

3.1. Downloading the firmware

Use the **USB** or **UART** interface to download the firmware to the target flash.

3.1.1. Download the firmware with USB

To complete the download operation using USB (see Figure 4):

- 1) Plug in the **USB** cable.
- 2) Click **Download** button on the left panel of the main GUI.
- 3) Select **USB** from the **COM Port** drop down menu list.
- 4) Click **Open** button to select the configuration file.
- 5) Click **Start** button to start downloading.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

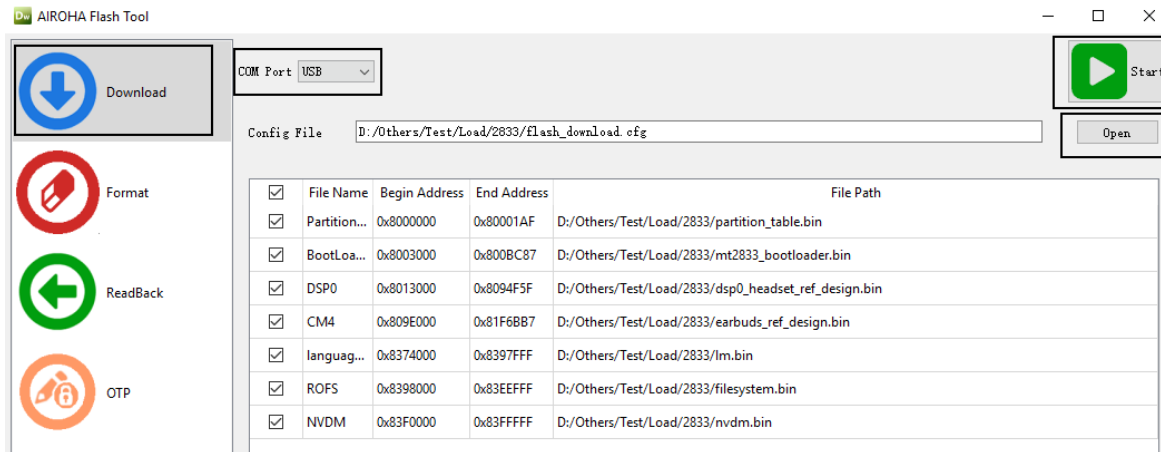


Figure 4. Download the firmware of a target device using USB connection

3.1.2. Download the firmware with UART

To complete the download operation using UART (see Figure 5):

- 1) Plug in the **UART** cable.
- 2) Click **Download** button on the left panel of the main GUI.
- 3) Select right **UART** from the **COM Port** drop down menu list.
- 4) Click **Open** button to provide the configuration file.
- 5) Click **Start** button to start downloading.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

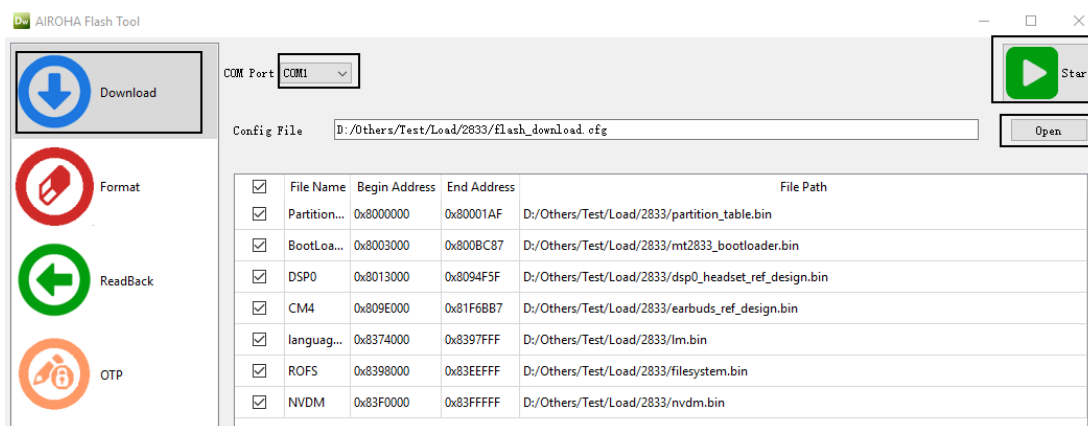


Figure 5. Download the firmware to a target device using UART connection

3.2. Formatting the flash

Similar to download operation, the formatting also can be done through UART as well as USB connection.

Open the format configuration window by clicking **Format** on the main GUI of the tool seeing **Format Information** section contains total format region and manual format region.

3.2.1. Format the flash with USB connection

To complete the format operation using USB connection (see Figure 6):

- 1) Plug in the **USB** cable.
- 2) Click **Format** button on the left panel of the main GUI.
- 3) Select **USB** from the **COM Port** drop down menu list.
- 4) Select total format item or manual format item, if manual format item is chosen, please input valid flash begin address and format length.
- 5) Click **Start** button to start formatting.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

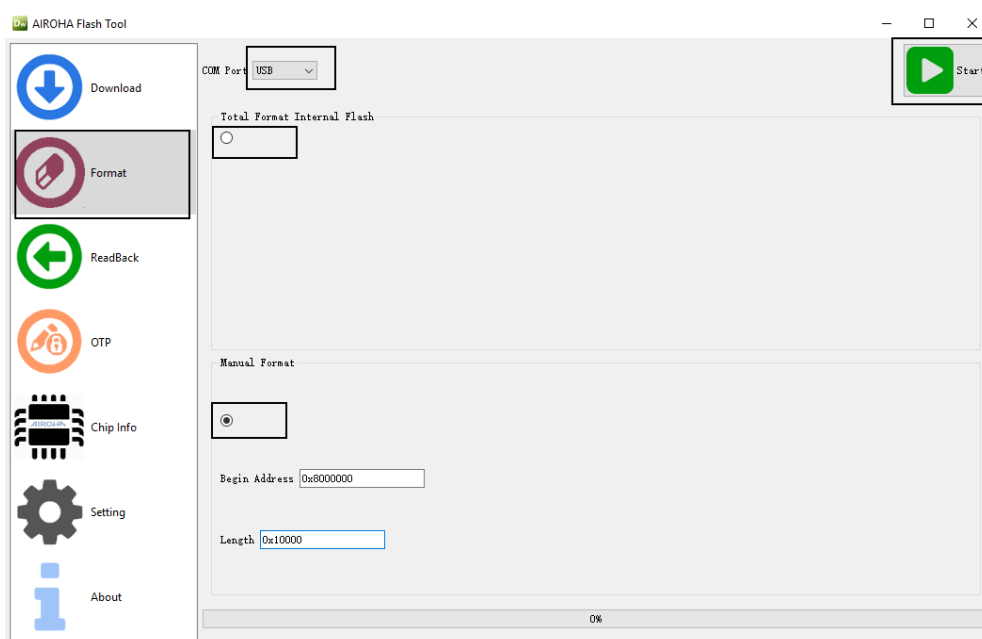


Figure 6. Formatting the flash of a target device using USB connection

3.2.2. Format the flash with UART connection

To complete the format operation using UART connection (see Figure 7):

- 1) Plug in the **UART** cable.
- 2) Click **Format** button on the left panel of the main GUI.
- 3) Select **UART** from the **COM Port** drop down menu list.
- 4) Select total format item or manual format item, if manual format item is chosen, please input valid flash begin address and format length.
- 5) Click **Start** button to start formatting.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

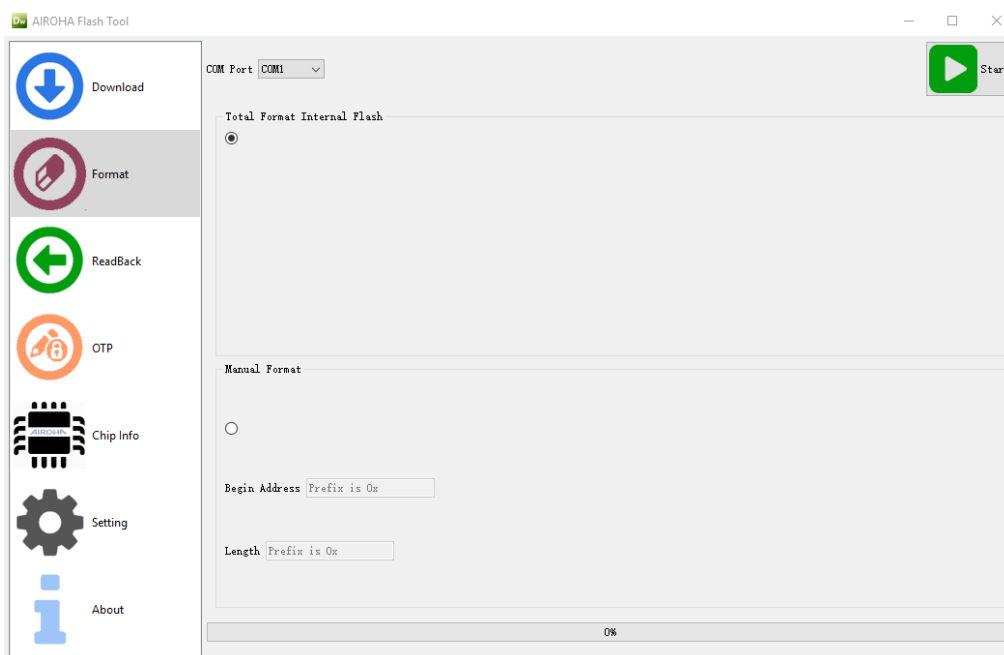


Figure 7. Formatting the flash of a target device using UART connection

3.3. Reading back the flash

To read back the flash, click **ReadBack** on the main GUI to open the configuration settings. The **ReadBack Information** section contains total readback region and manual readback region.

3.3.1. Manual readback operation

The manual readback list info is based on the list in **Download** page, you can use it to readback all bin files directly.

Besides, user can add or delete a readback file too, just click **Add** button, as shown in Figure 8.

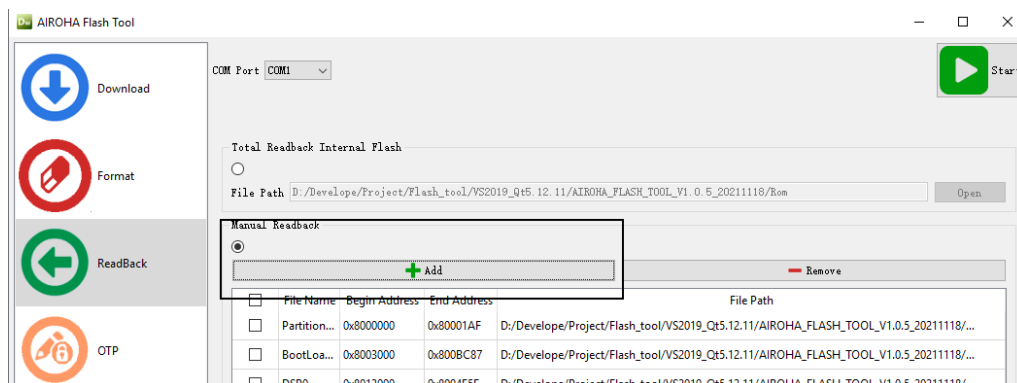


Figure 8. Adding a readback file

Then the readback item edit page popup, as shown in Figure 9.

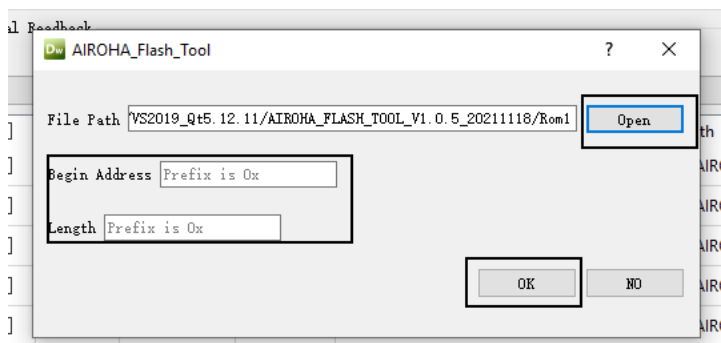


Figure 9. Opening the readback file

Click **Open** button choose the readback file path, input valid readback flash begin address and length.

To delete an existing readback file, select the item and click **Remove** button, as shown in Figure 10.

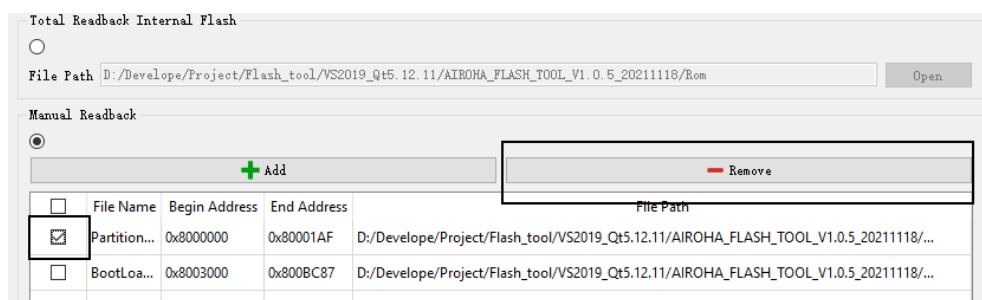


Figure 10. Deleting an existing readback file

3.3.2. Readback a file with USB connection

To complete the readback operation using USB (see Figure 11):

- 1) Plug in the **USB** cable.
- 2) Click **Readback** button on the left panel of the main GUI.
- 3) Select **USB** from the **COM Port** drop down menu list.
- 4) Select total or manual readback item, if total readback is chosen, click Open button to select file path, if manual readback is chosen, please refer 3.3.1.
- 5) Click **Start** button to start the readback operation.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

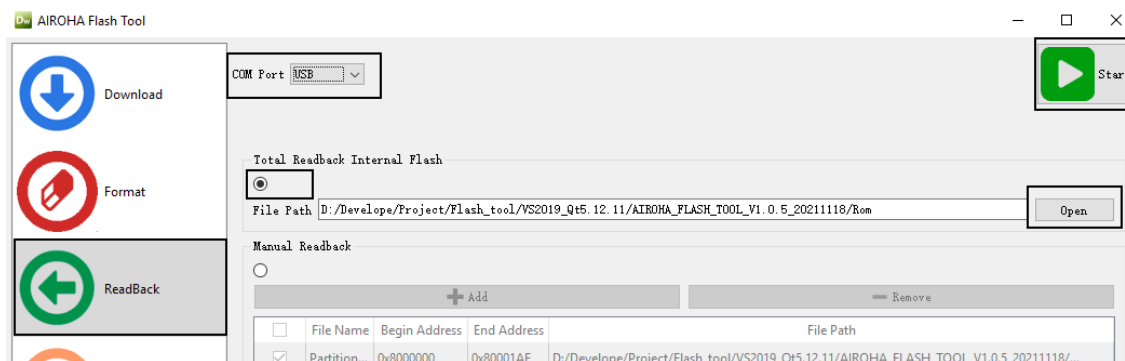


Figure 11. Reading back a file using USB

3.3.3. Readback a file with UART connection

To complete the readback operation using UART:

- 1) Plug in the **UART** cable.
- 2) Click **Readback** button on the left panel of the main GUI.
- 3) Select **UART** port from the **COM Port** drop down menu list
- 4) Select total or manual readback item, if total readback is chosen, click Open button to select file path, if manual readback is chosen, please refer 3.3.1.
- 5) Click **Start** button to start the readback operation.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

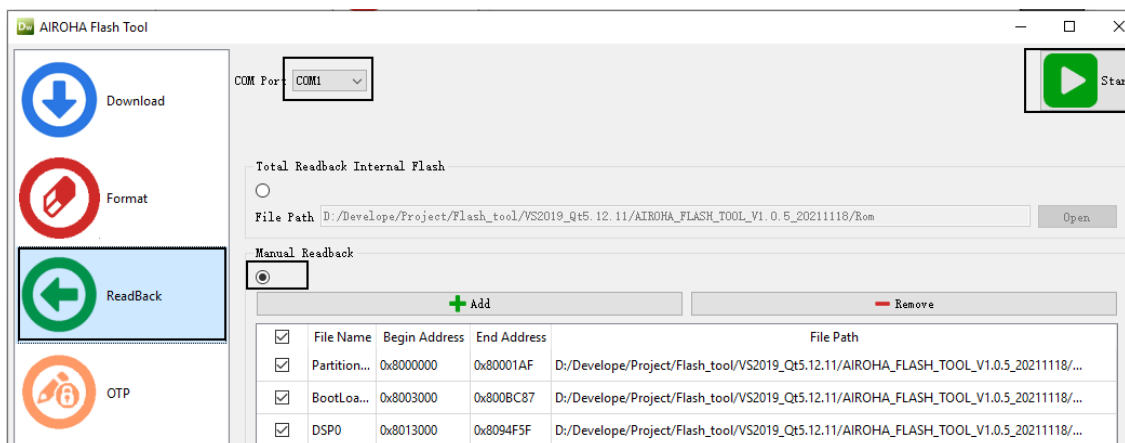


Figure 12. Reading back a file using UART

3.4. One-time programmable memory

One-time programmable (OTP) memory cannot be changed once the application is loaded into the device. The OTP enables to read/write operations with to/from a file with a specific begin address and length. It also enables to lock the OTP area.

To read the OTP flash to a file:

- 1) Select **Read** option under **OTP Information** to configure the settings for **Begin Address** and **Length** of the read area.
- 2) Click **Save** to provide the file path to store the settings.

Then to write a particular OTP flash to a file.

If you select **Write**, you are allowed to write the particular OTP flash.

If you select **Lock**, the particular OTP flash will be read-only.

3.4.1. One time program a file with USB connection

To complete the OTP flashing operation using USB connection (see Figure 13):

- 1) Plug in the **USB** cable.
- 2) Click **OTP** on the left panel of the main GUI.
- 3) Select **USB** from the **COM Port** drop down menu.
- 4) Select OTP sub region (Read/Write/Lock) and input corresponding parameters.
- 5) Click **Start** to start.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

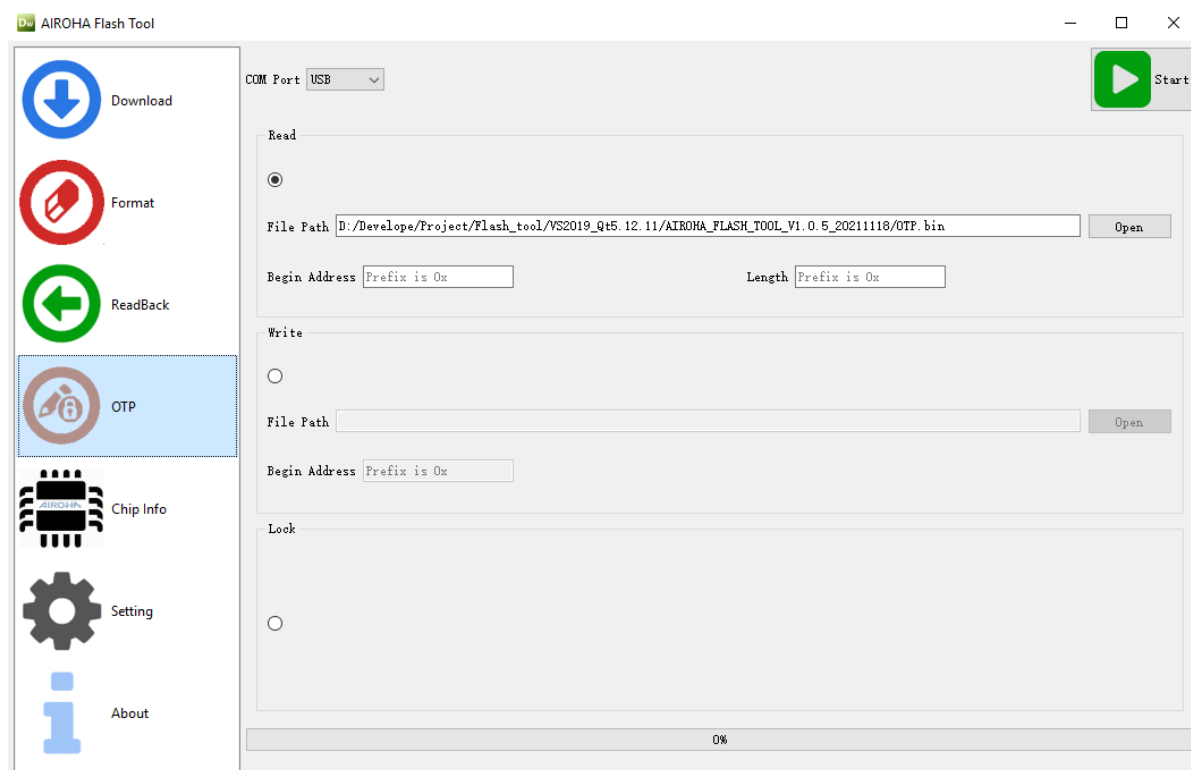


Figure 13. OTP configuration with USB connection

3.4.2. One time program a file with UART connection

To complete the OTP flashing operation using UART connection:

- 1) Plug in the **UART** cable.
- 2) Click **OTP** on the left panel of the main GUI.
- 3) Select **UART** port from the **COM Port** drop down menu.
- 4) Select OTP sub region (Read/Write/Lock) and input corresponding parameters.
- 5) Click **Start** to start.
- 6) Power off then power on the target or press reboot button within target, if reboot ok, then the process will start automatically.

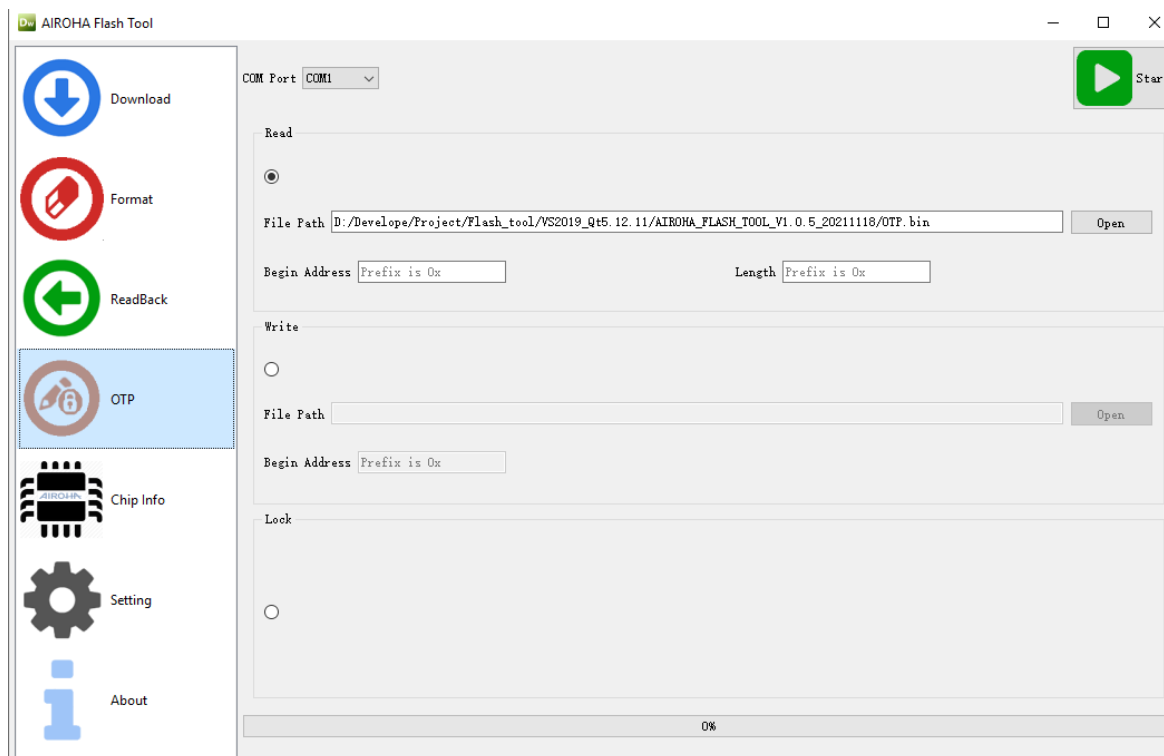


Figure 14. OTP configuration with UART connection

3.5. Log file

Log files are stored in log folder, and the log file name contains runtime as shown in Figure 15.

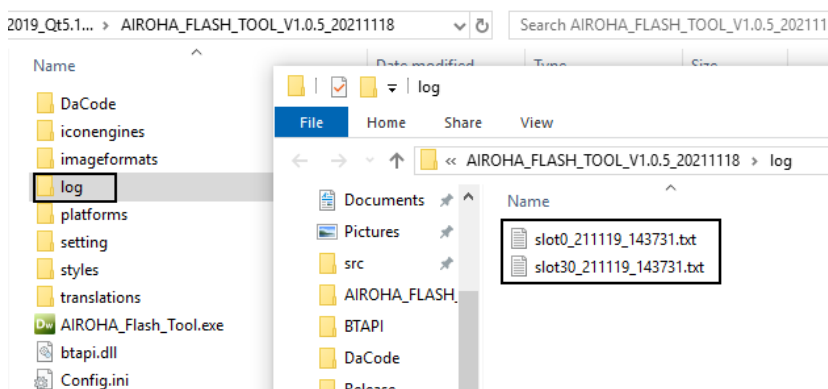


Figure 15. Log file

3.6. Settings

3.7. Chip Information

Click **Chip Information** on the main GUI of the tool to find out more about the target chipset including details on the **Chip ID**, **PSRAM** and **Serial Flash**, as shown in Figure 16.




 ReadBack  OTP  Chip Info	HW VER:	0xCA00
	HW CODE:	0x1588
	HW SUB CODE:	0x8000
	SW VER:	0x1000
	UID:	00000000000000000000000000000000
	Internal Flash ID:	C80060
	Internal Flash Base Address:	0x08000000
	Internal Flash Size:	0x1000000
	OTP Size:	0x400

Figure 16. Chip info

3.8. About

Click **About** on the main GUI of the Tool to find more details about the Flash Tool, include UI version, library version and DA version, as shown in Figure 17.




 ReadBack  OTP  Chip Info	UI Version:	1.0.5
	Dll Version:	0.118.0
	Da Version:	1.0.0

Figure 17. About version