

Flash Programming Tool

User Guide

SUMMARY: This document describes the functionality and instructions on how to use the Atmosic Flash Programming Tool.



Atmosic™

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Acronyms and Abbreviations

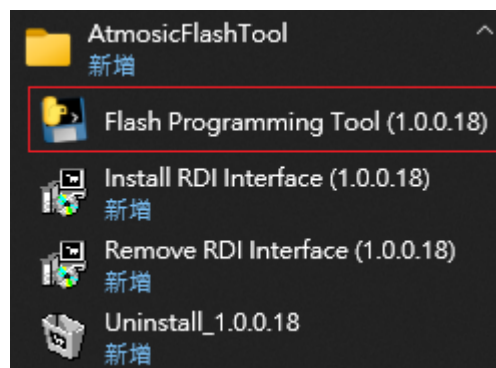
Acronyms	Definition
BD	Bluetooth Device
EVK	Evaluation Kit
NA	Not available
NVDS	Non-volatile Device Storage
RDI	Remote Debug Interface
SWD	Serial Wire Debug
SWDIF	Serial Wire Debug Interface

1. Overview

The Atmosic Flash Programming Tool supports different hardware interfaces (such as FTDI/RDI/J-Link) of various platforms using the same set of tools, without the need to switch between multiple toolsets. The Tool integrates two programming methods, OpenOCD and J-Link script, and automatically determines which method to use based on the hardware and driver used.

2. Install Flash Programming Tool

You can find the executable file at `<tool path>\<OS>\AtmFlashTool.exe`. Therefore, you can invoke the Flash Programming Tool from Start Menu/AtmosicFlashTool.



Note: `<OS>` means your operating system you are using. e.g., enter `Windows_NT` for Windows, `Linux` for Linux, `Linux and Mac OS is currently not supported`.

3. Features

The Flash Programming Tool can be divided by features:

- SWD Interface
- SWD Interface Information
- ATM File
- Clear Log
- Program
- Log Information

- Export Log
- Setup Environment

3.1 SWD Interface

The Flash Programming Tool detects connected devices and retrieves their device IDs to add to the list. Currently supported hardware interfaces are **RDI**, **FTDI**, and **J-LINK**. Devices without installed drivers will not be included in the list.

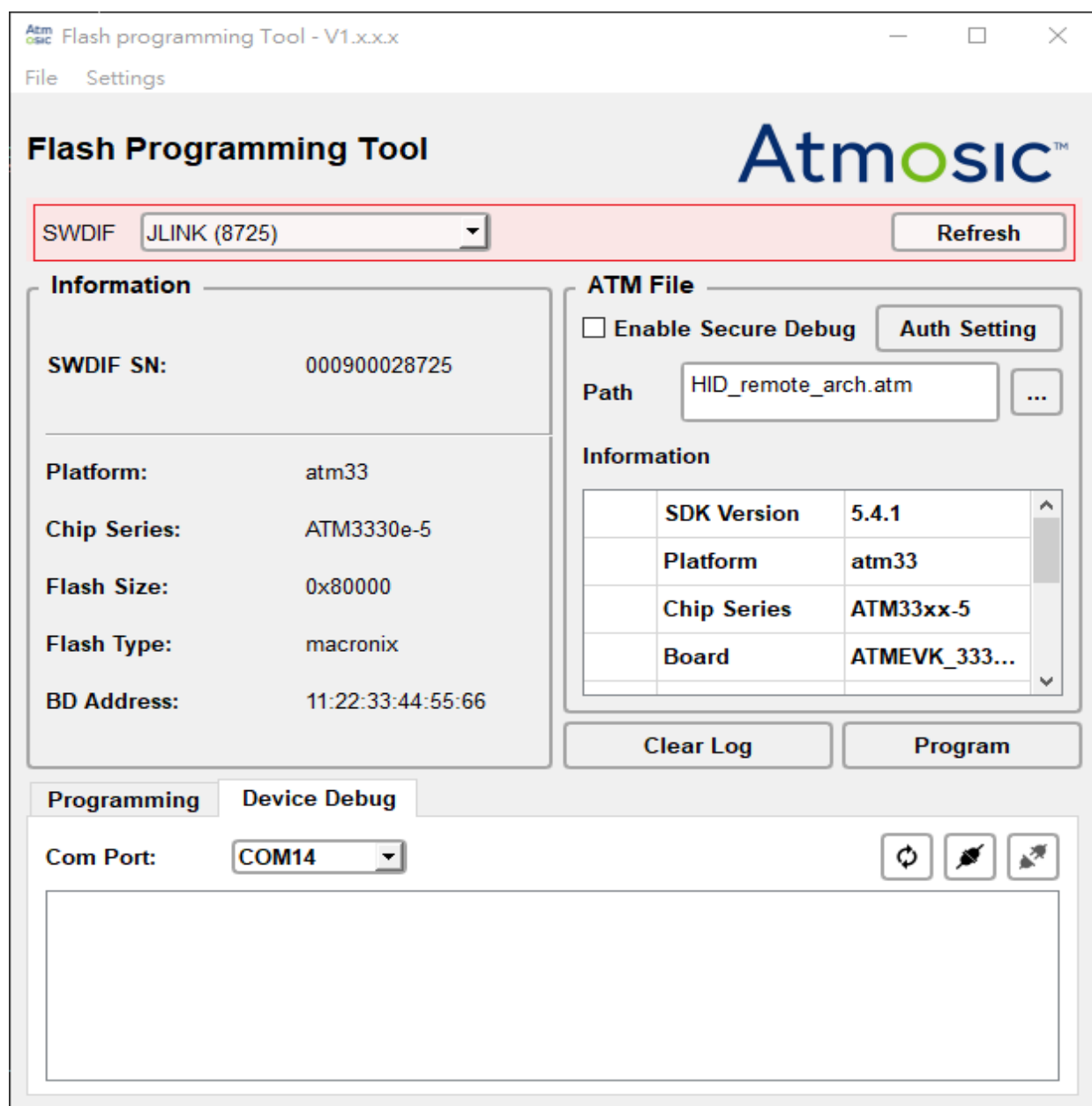


Figure 3-1 SWD Interface in Main GUI

- **SWDIF Combobox**

List all the device IDs supported (including the device name, such as FTDI/RDI/JLINK) for which drivers must be installed first.

- **Refresh**

Click this button to refresh the device list.

3.2 SWDIF Interface Information

When the Tool is activated, it will read relevant Device information based on the detected devices. If multiple devices are connected at the same time, the Tool will wait until all information is acquired before allowing the user to proceed. Fields with unavailable information will be displayed as 'NA'.

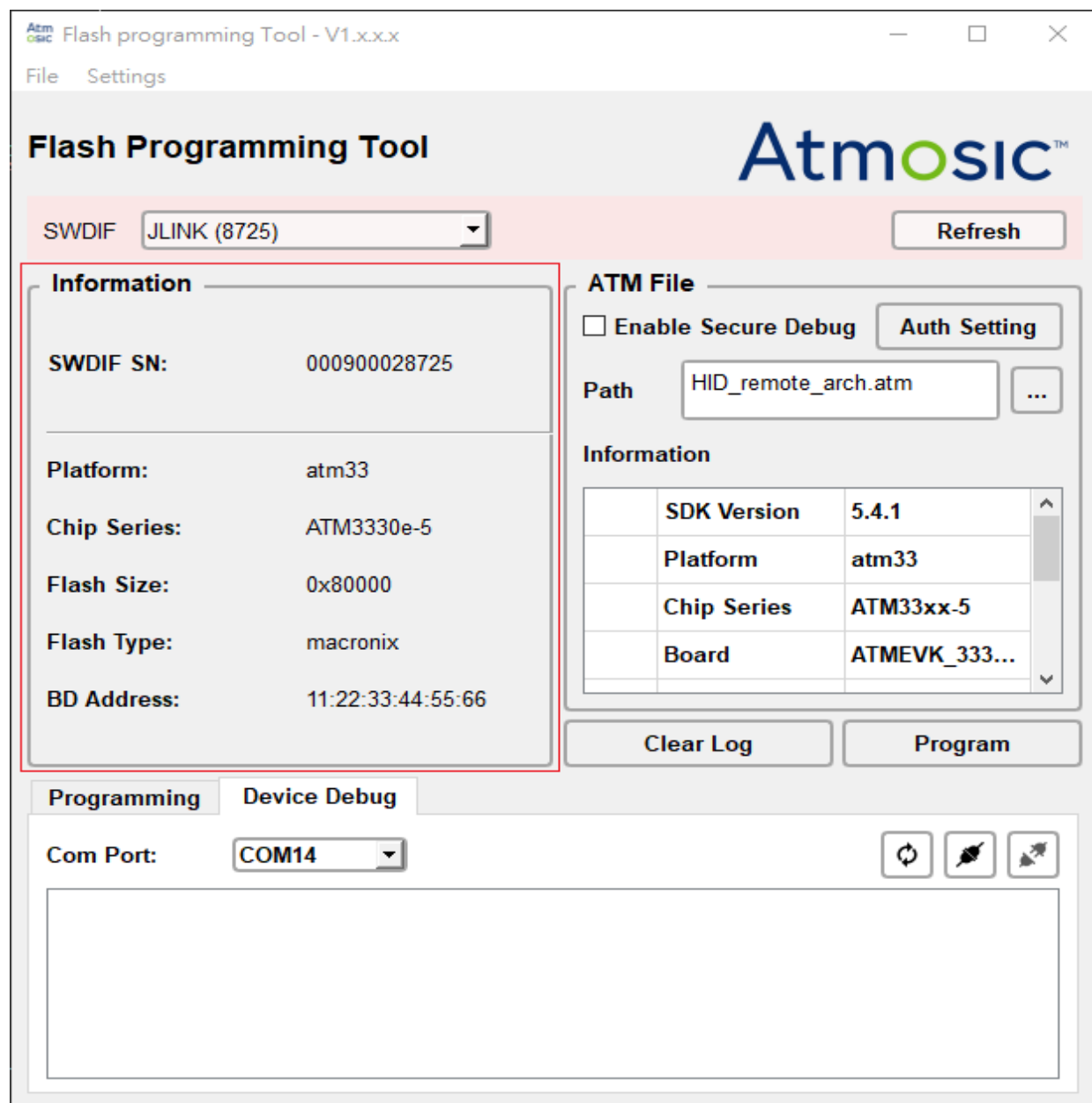


Figure 3-2 SWDIF Information in Main GUI

- **SWDIF SN**

The full device ID of the device.

- **Platform**

The platform information for device

- **Chip Series**

The chip series information for the device.

- **Flash Size**

The flash size for the device (This message will be displayed if the device has previously written flash data).

- **Flash Type**

The flash type for device (This message will be displayed if the device has previously written flash data).

- **BD Address**

The BD address for the device.

Note: *The BD address will be read based on the following rules:*

- *There is chip series information, but the ATM file has not been selected yet. ⇒ **Use default NVDS address to get information***
- *There is chip series information, and the ATM file has been selected as well. ⇒ **Use NVDS address from within the ATM file to get information***
- *There is no chip series information, and the ATM file has not been selected. ⇒ **Once the ATM file is selected, the information will be retrieved using the NVDS address from within the ATM file.***
- *If the BD address cannot be read, the default value will be 'NA'.*

3.3 ATM File

The Tool currently only supports flashing Firmware in *.atm format. After the user selects the desired *.atm file for flashing, the Tool will list the included Partition information in the Information text area below.

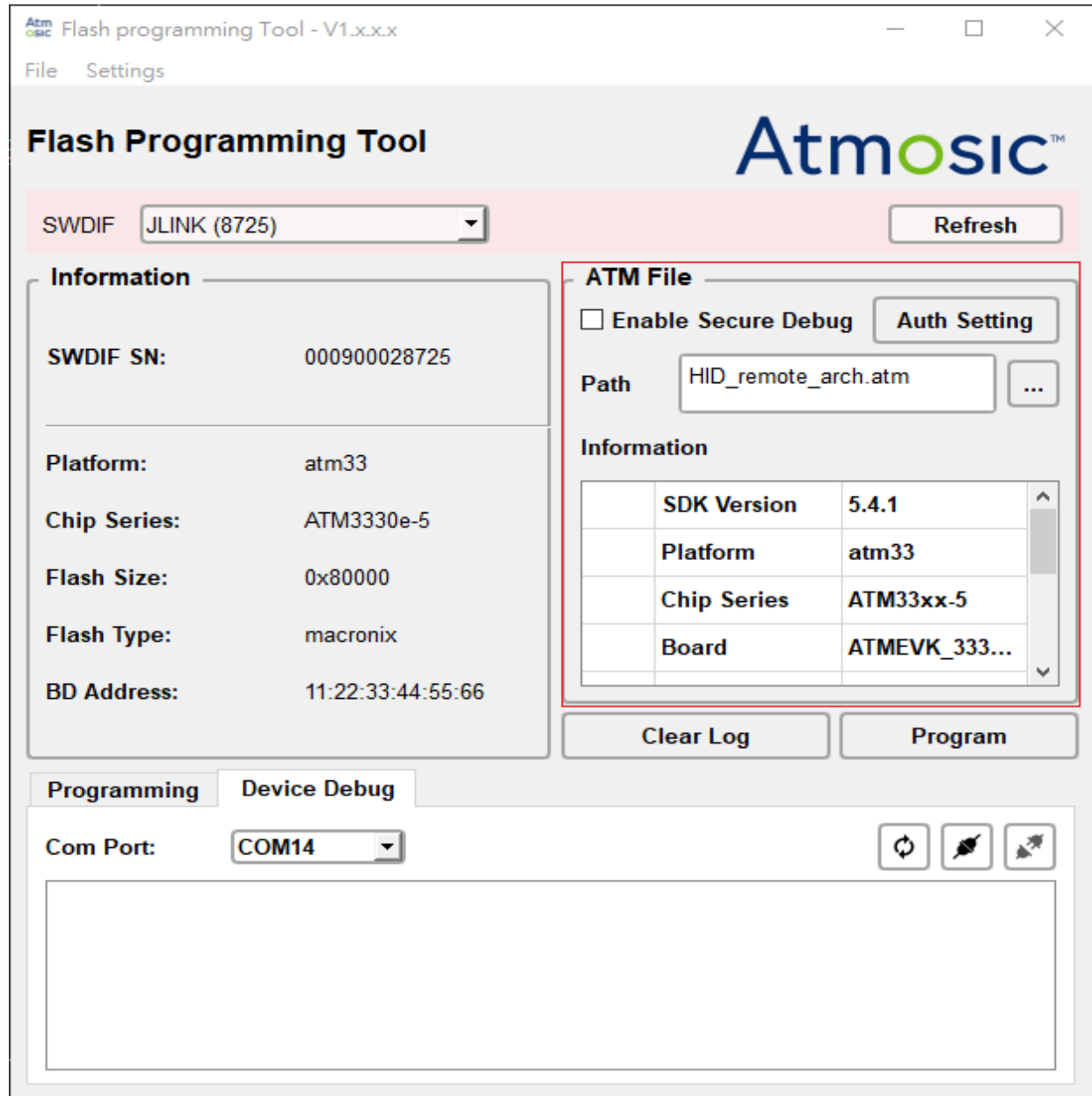


Figure 3-3 ATM File in Main GUI

- **Enable Secure Debug**

When selected, the Authentication unlock process will be performed before flashing the EVK. Relevant parameter settings can be configured in the 'Auth Setting' feature (currently only available for ATM33/e series EVKs).

- **Auth Setting**

Used to configure the Secure Debug Key path and authentication port.

- **ATM Path**

Users can select an ATM file here.

- **ATM Information**

After the user selects the atm file, the relevant information of the atm file will be displayed here.

- The BD Address will be pre-selected as unchecked when the device already has a BD Address. However, if the device does not have a BD Address previously, it will require the user to program it forcibly.
- The BD Address format is xx:xx:xx:xx:xx:xx. If the format is incorrect, writing will not be possible.

3.4 Clear Log

Simultaneously clear log data for both Programming and Device Debug.

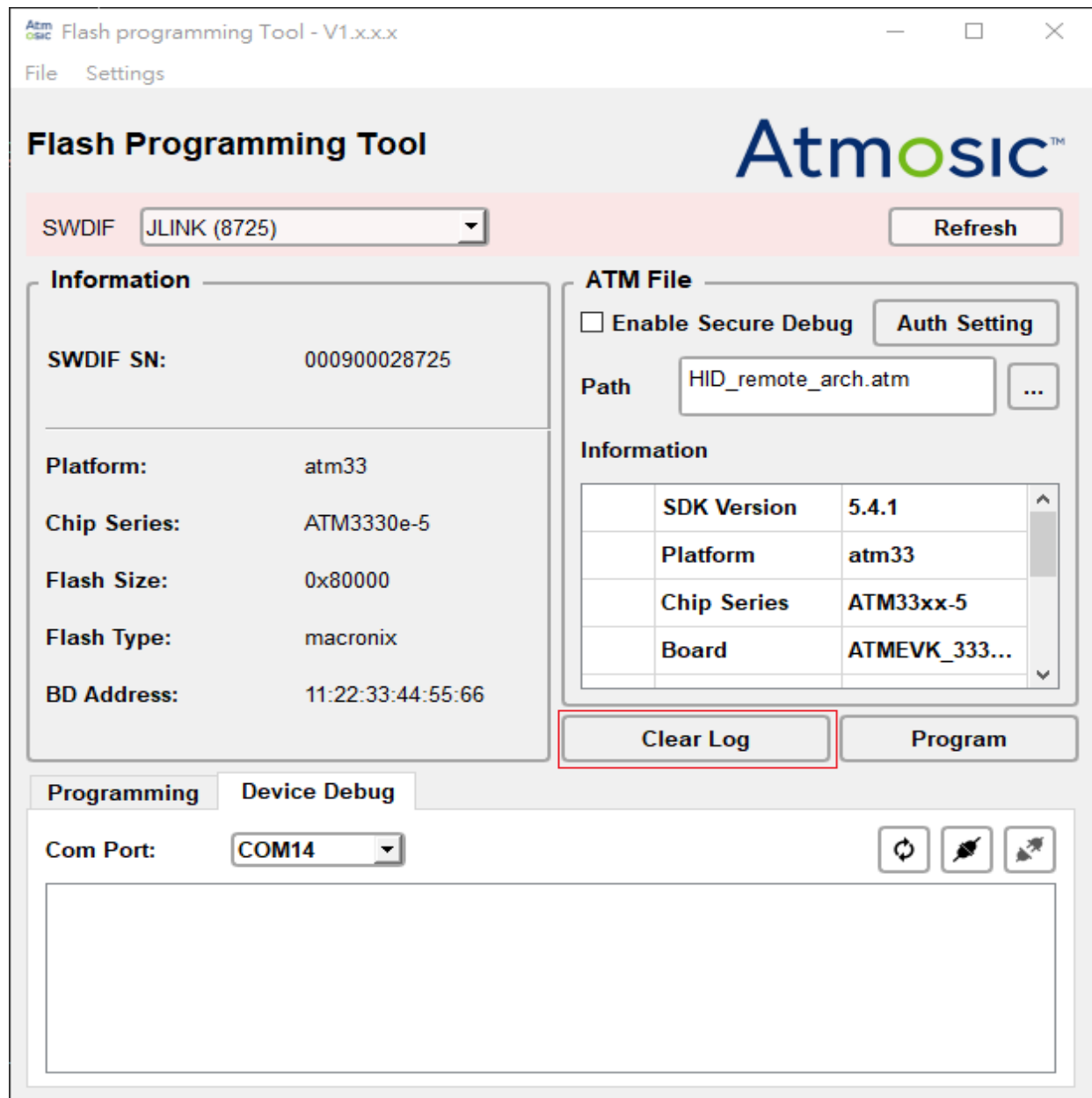


Figure 3-4 Clear Log in Main GUI

3.5 Program

Write the ATM file (*.atm) to flash. By checking/unchecking the checkboxes in the information text area, you can modify the partitions to be programmed into the flash memory.

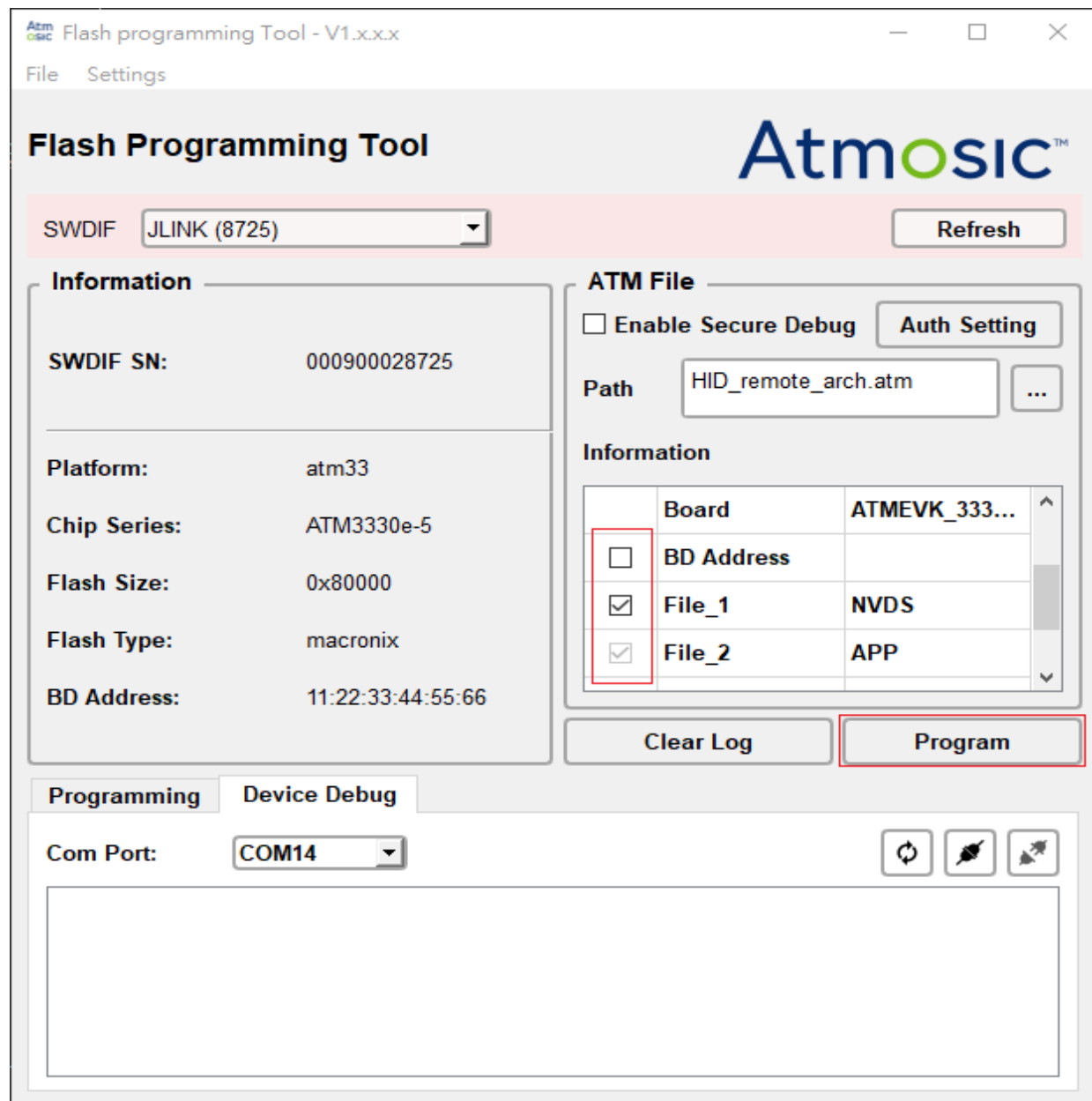


Figure 3-5 Program in Main GUI

3.6 Log Information

The Tool provides two types of log content for users to analyze. Users can switch tabs to view different log content

3.6.1 Programming Log

Displaying Tool log and the execution results obtained after running commands.

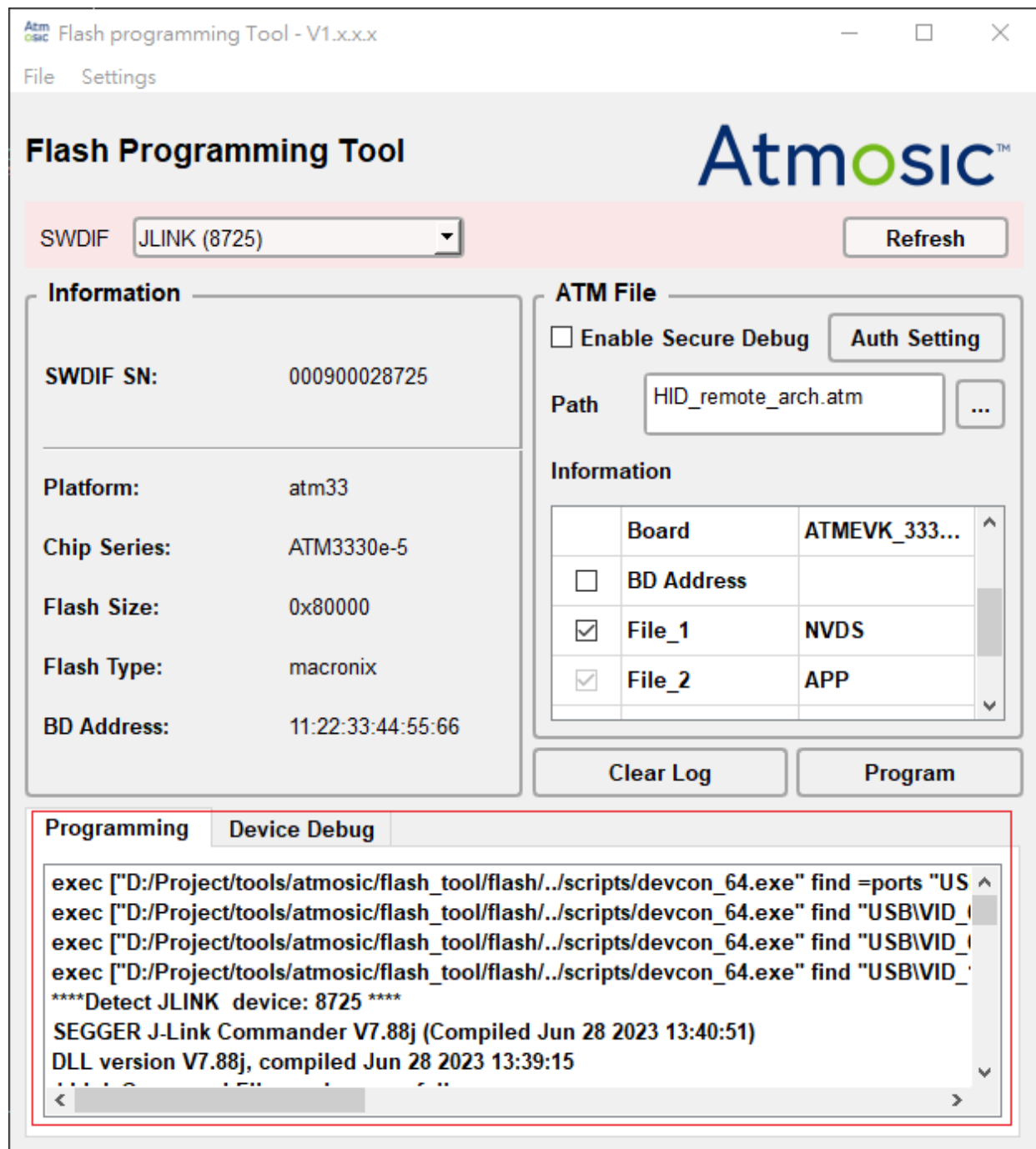


Figure 3-6 Programming Log in Main GUI

3.6.2 Device Debug Log

Boot-up logs obtained after connecting to EVK via UART COM Port.

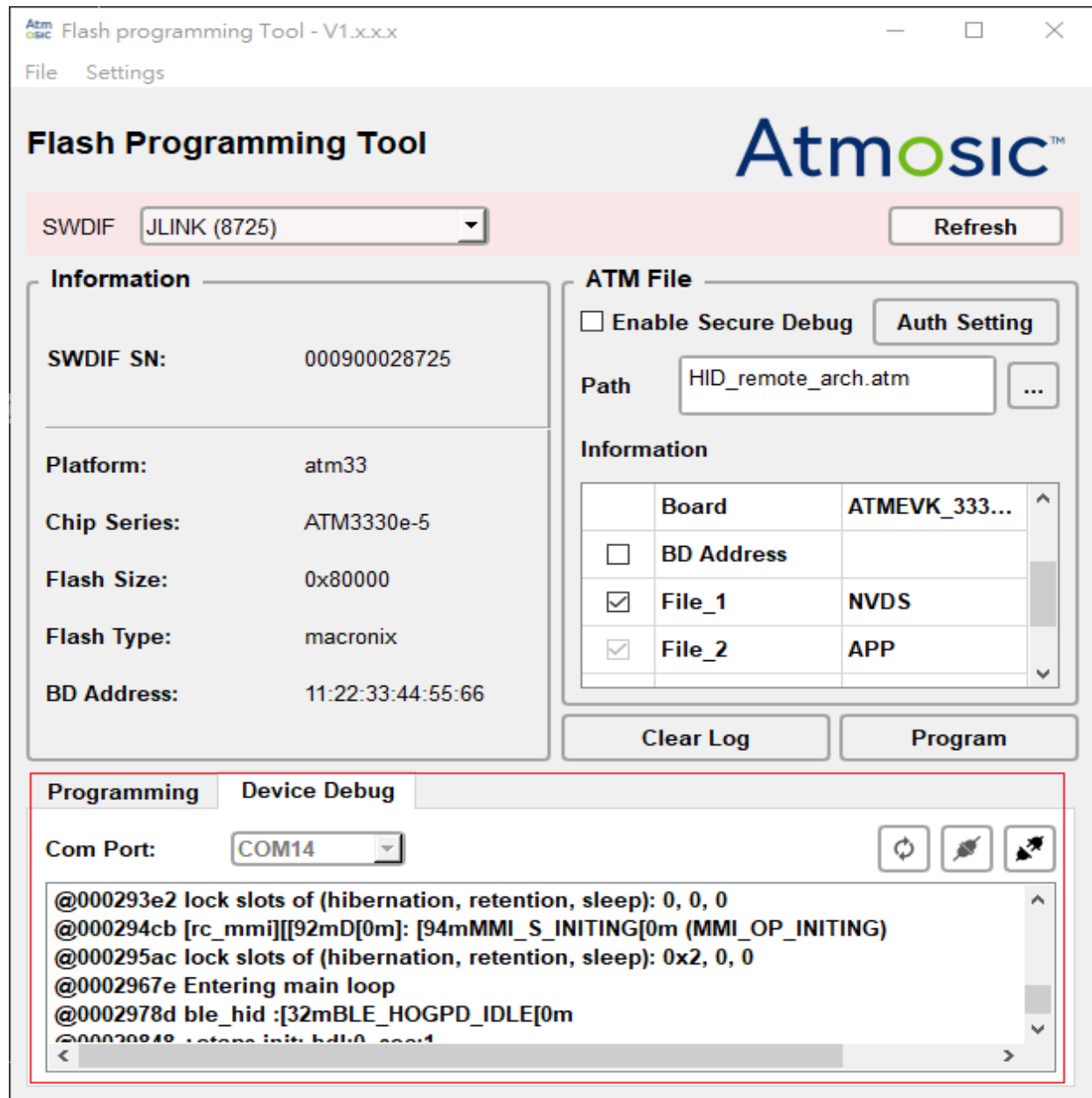




Figure 3-7 Device Debug Log in Main GUI

- **Com Port**

The UART COM port to connect to.

- **Connect** 

Connect to the specified UART COM port.

- **Disconnect** 
Disconnect UART COM port.
- **Refresh** 
Update UART COM port list.

3.7 Export Log

Store Programming Log and Device Debug Log in the specified paths respectively.

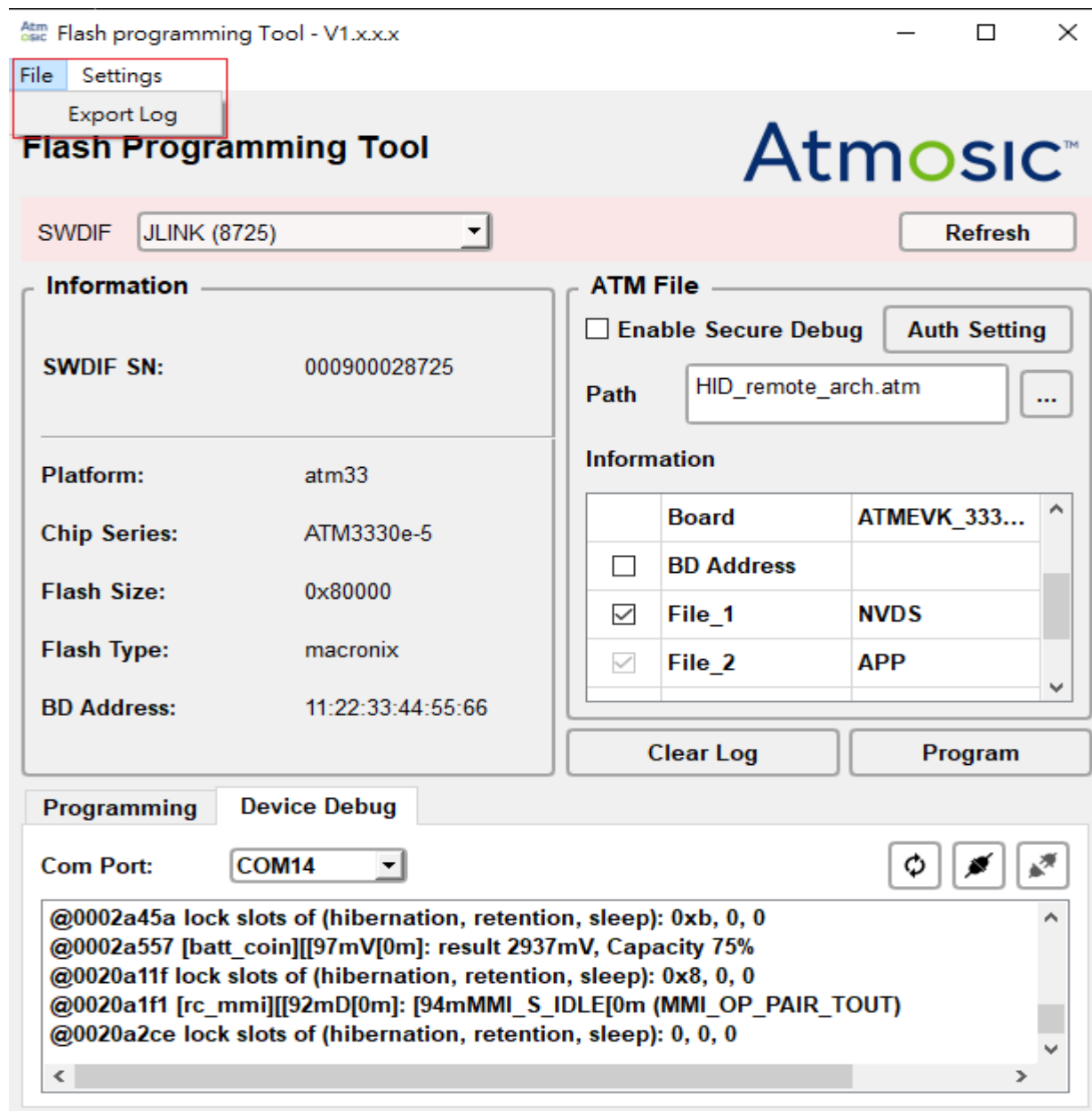


Figure 3-8 Export Log in Main GUI

3.8 Setup Environment

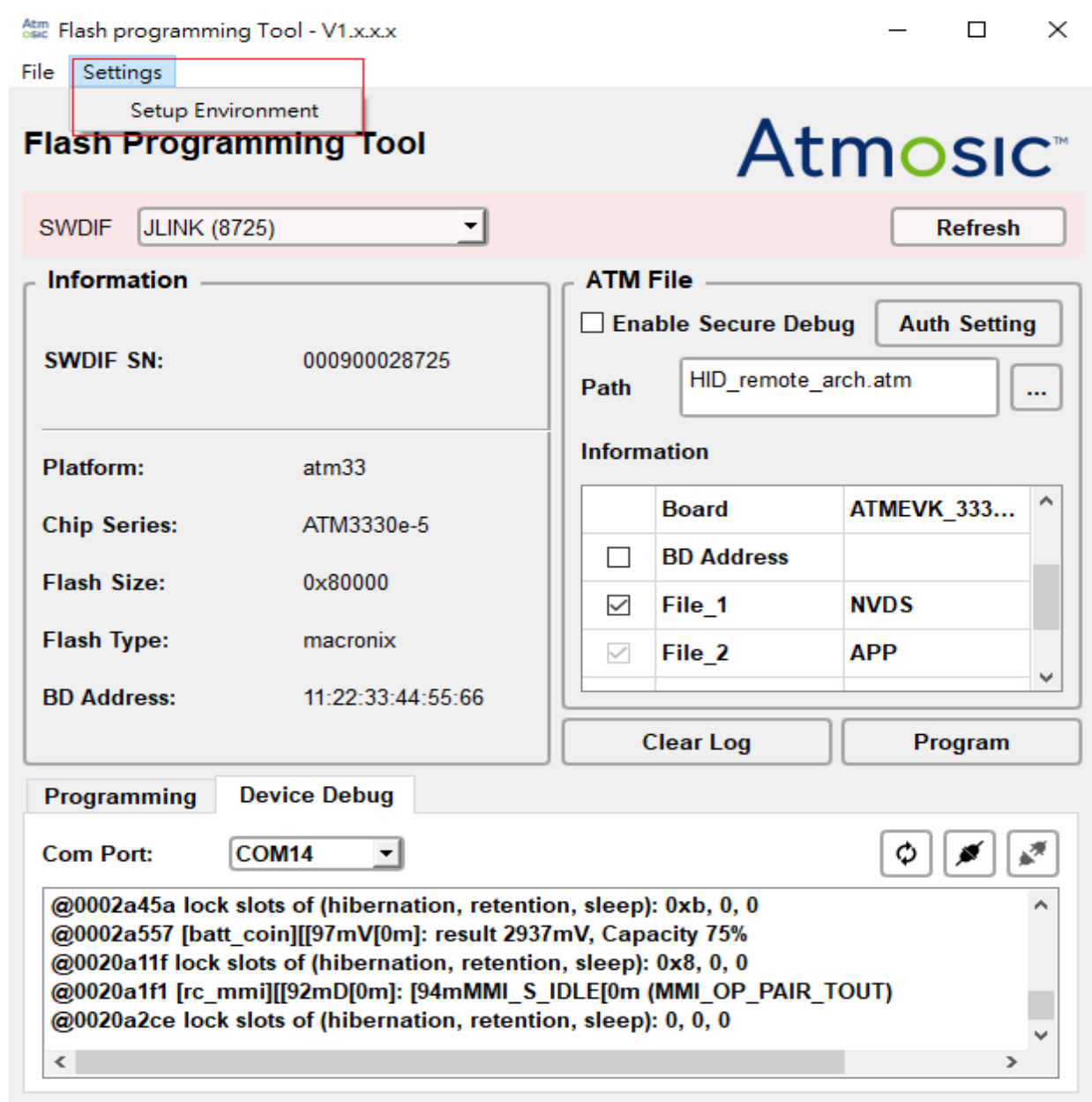


Figure 3-9 Setup Environment in Main GUI

To add a J-Link device and flash loader automatically or manually add them by the following steps:

- J-Link Version V7.88m (2023-07-19):

For Windows:

- a) Create Atmosic folder under
C:\Users\

- b) Create ATMx2 and ATMx3 folder under
C:\Users\- c) Copy ATMx2.xml and ATMx2.FLM from <flash tool path>\jlink\flash_loader into the above new created ATMx2 folder
- d) Copy the following files from <flash tool path>\jlink\flash_loader into the above newly created ATM33 folder
 - ATM33.xml
 - ATM33_RRAM.FLM
 - ATM3330_EXTFLASH.FLM
 - ATM3325_EXTFLASH.FLM
 - ATM3325_STACKFLASH.FLM

Note: <USER> means the account name you use when logging into the computer.

4. How to Switch the Flash Programming Mode in ATM Information

Due to the possibility that users may need to exclude the action of programming Flash NVDS, the Tool provides three programming modes for switching (users can switch between the three modes by clicking the checkbox before NVDS item).

1) Program all image files in atm

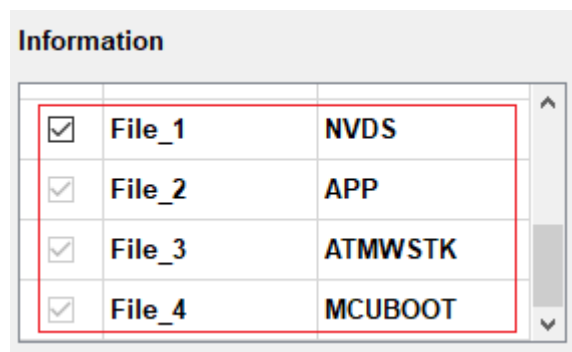


Figure 4-1 Program All Image Files in atm

2) Program all image files except for NVDS

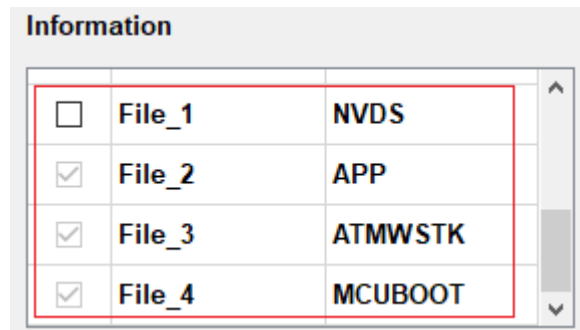


Figure 4-2 Program All Image Files Except for NVDS

3) Program NVDS file only

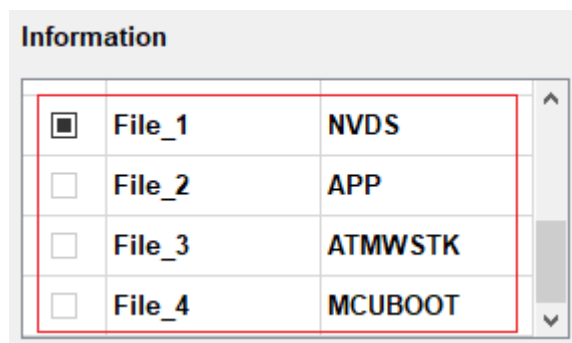


Figure 4-3 Program NVDS File Only

5. Write the ATM File to EVK

Step 1 - Select the SWDIF option.

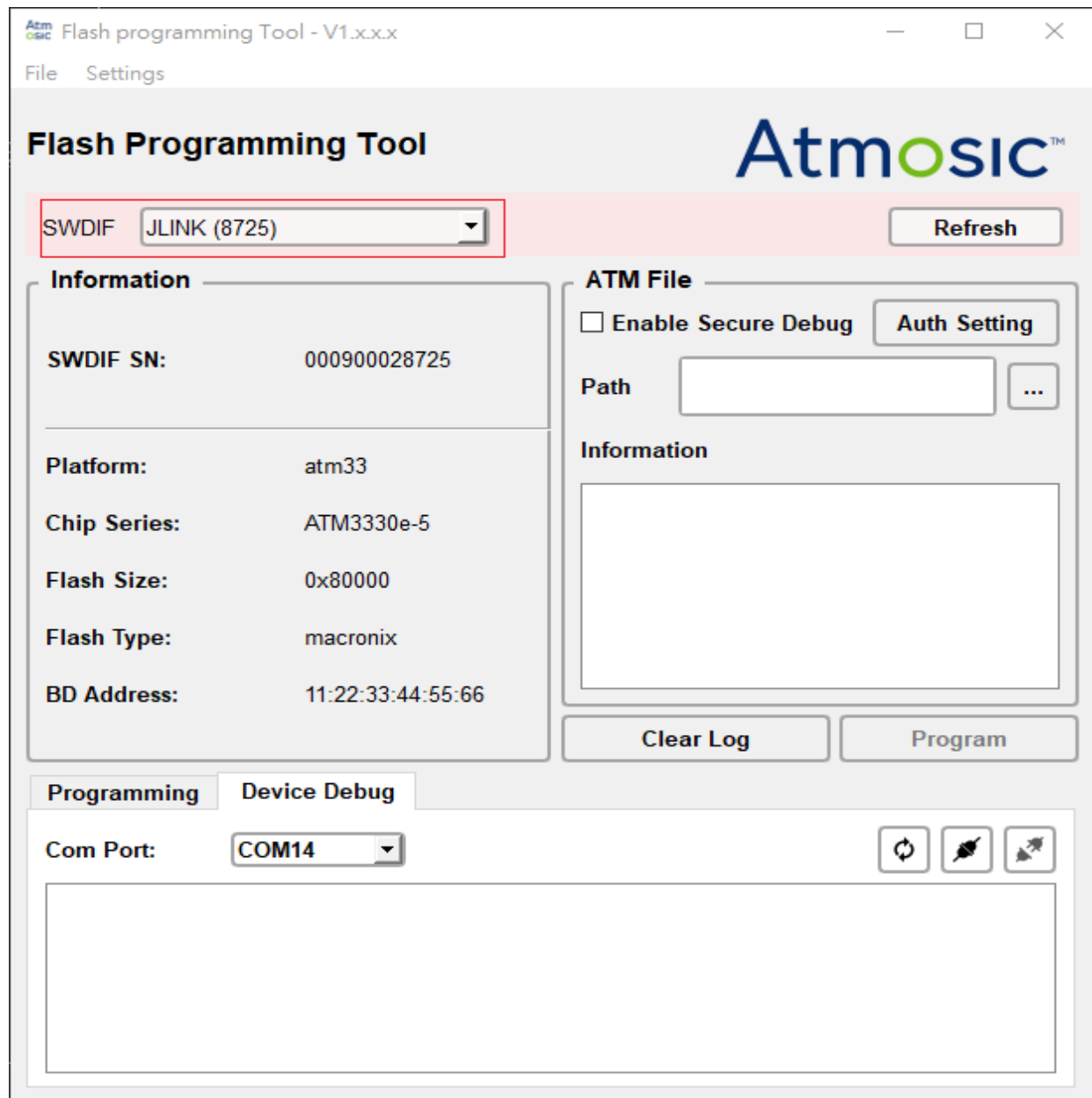


Figure 5-1 Select SWDIF Option

Step 2 - Click the . . . button to select the ATM image file.

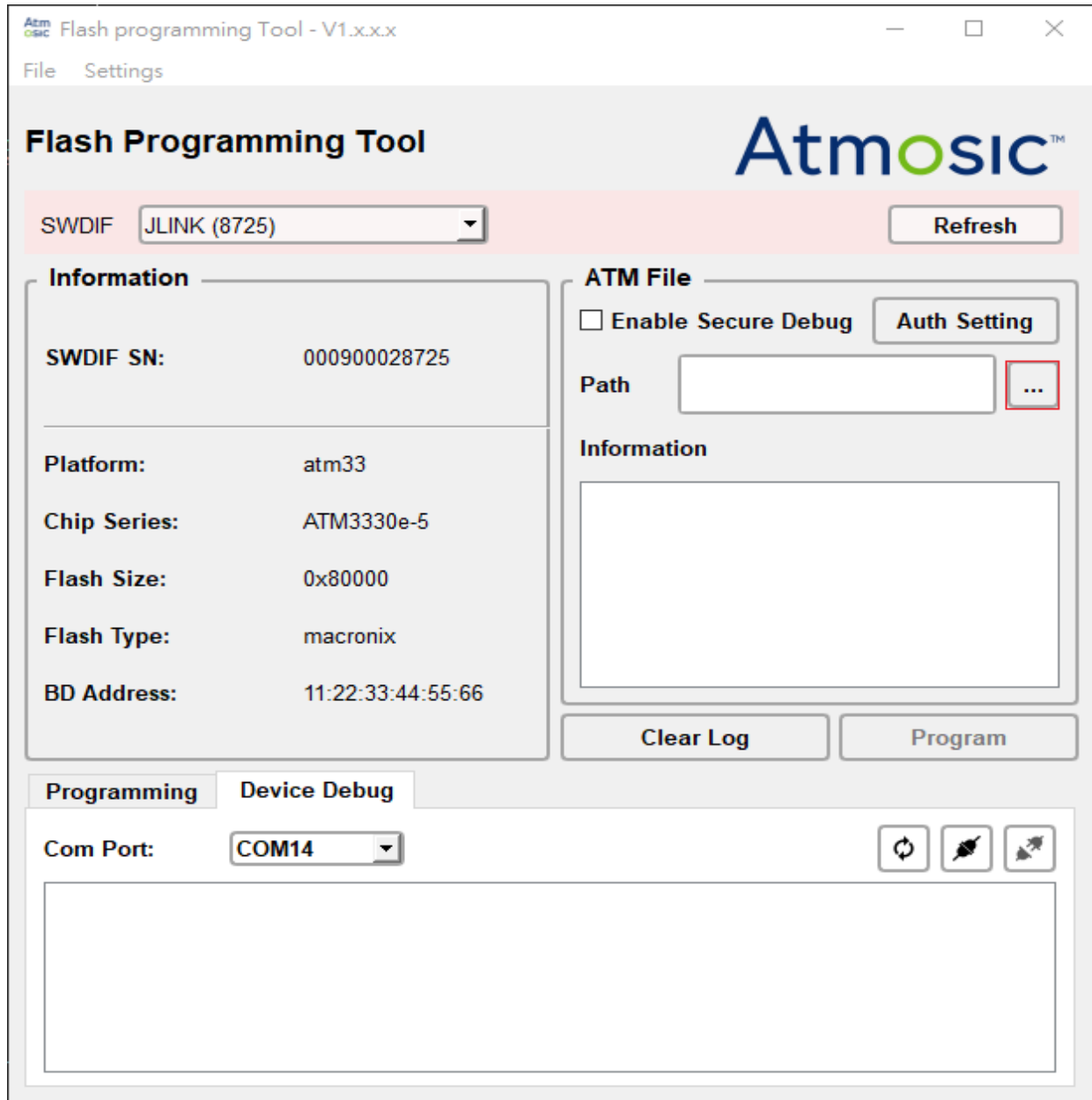


Figure 5-2 Select ATM Image File

Step 3 - If you want to modify the content of the partition to be flashed, you can change the checkbox of the NVDS item.

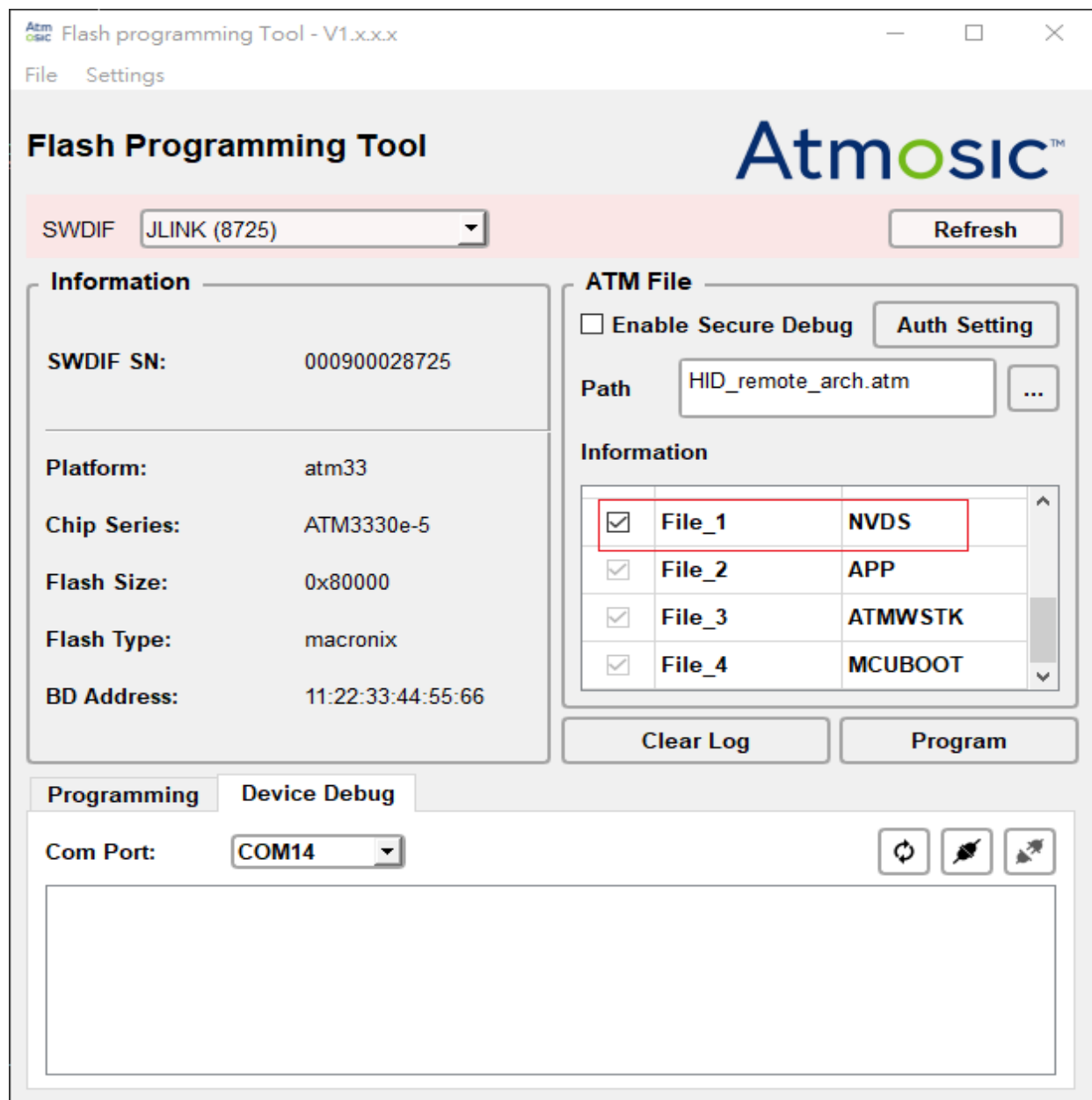


Figure 5-3 Change the Checkbox of the NVDS Item if Needed

Step 4 - Click the Program button to write image files to EVK. A pop-up screen will indicate successful recording when the write operation is successful.

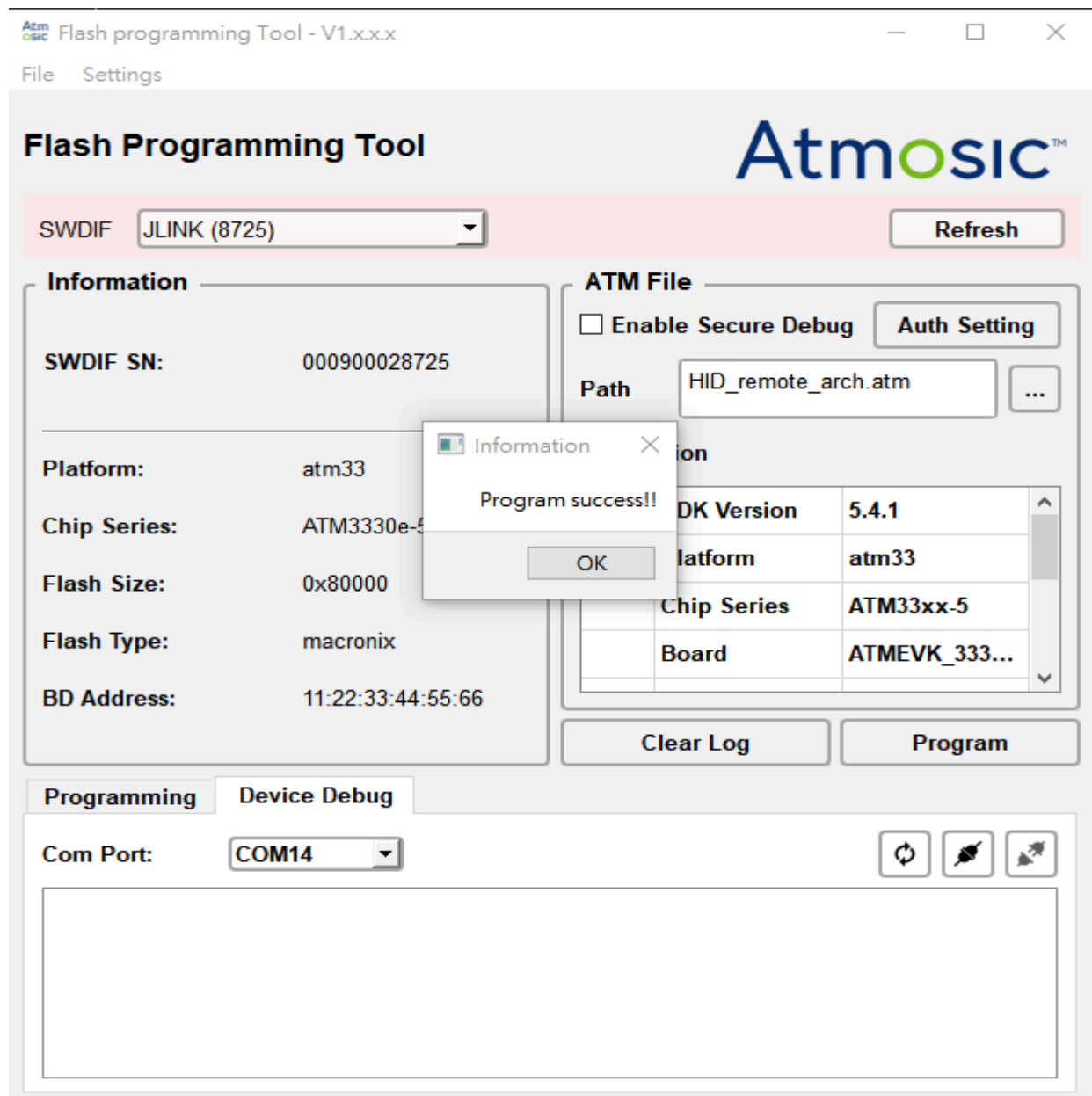


Figure 5-4 Write Flash Data Success Dialog

6. Write the ATM File to EVK with Secure Debug Enabled

Step 1 - Select the SWDIF option.

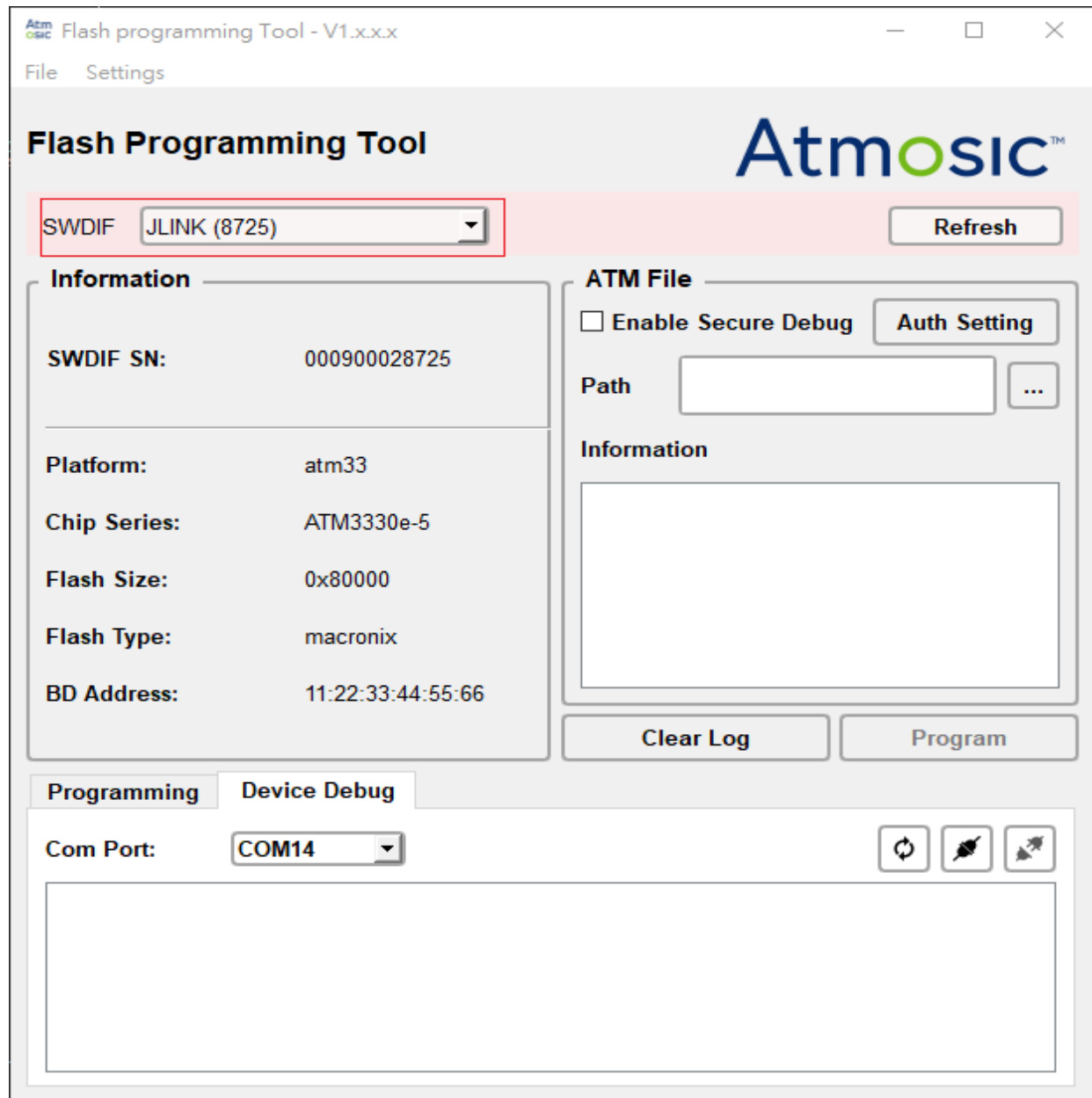


Figure 6-1 Select SWDIF Option

Step 2 - Click the . . . button to select the ATM image file.

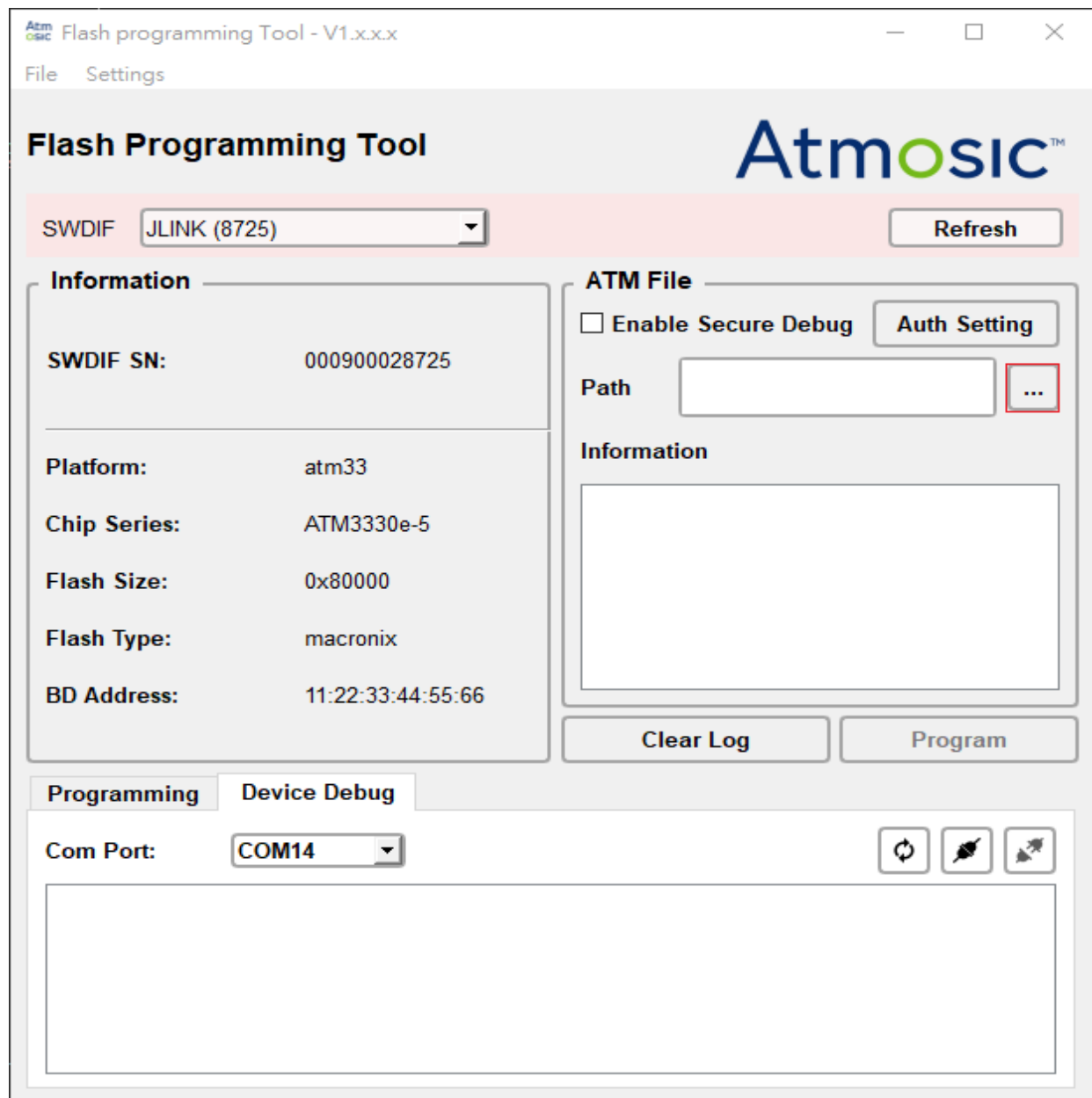


Figure 6-2 Select ATM Image File

Step 3 - Clicking the Auth Setting button, a window will pop up for the user to select the Secure Debug Key and Auth Port.

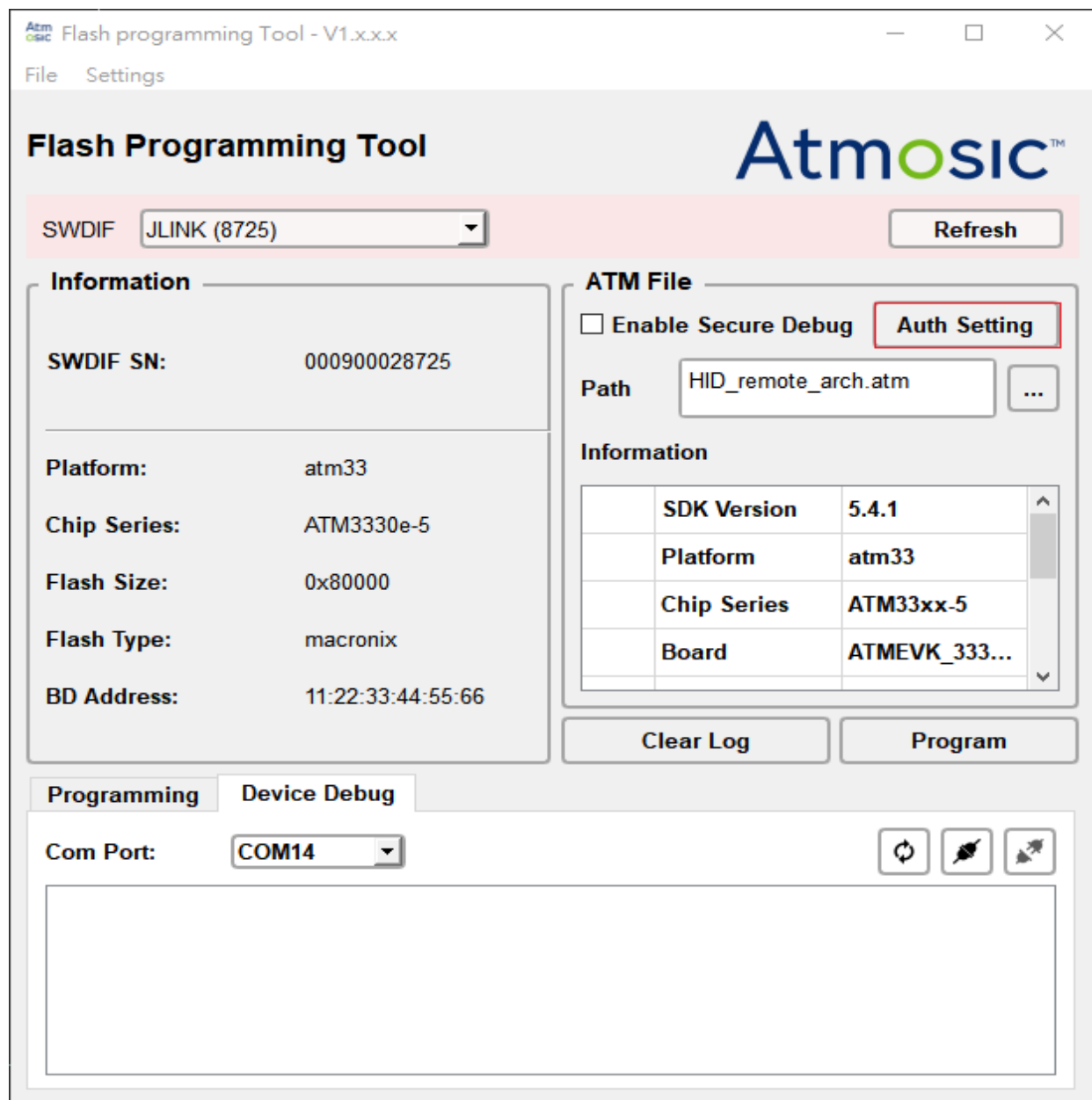


Figure 6-3 Click Auth Setting Button to Show the Authentication Setting Dialog

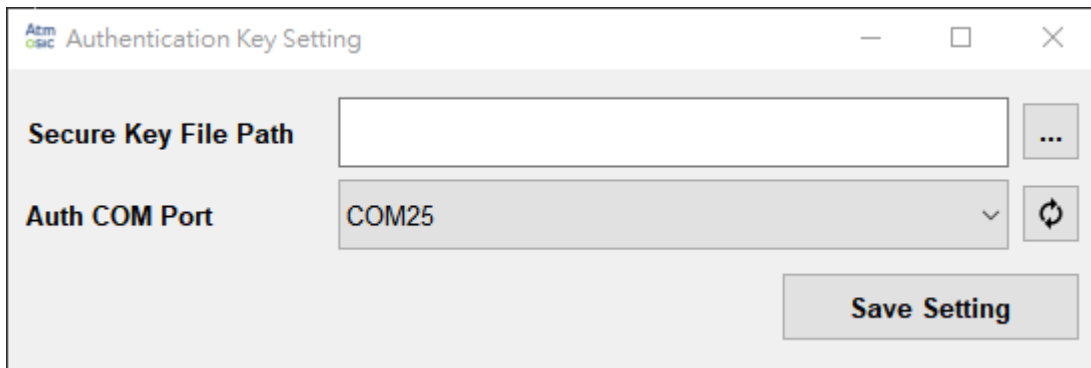


Figure 6-4 Authentication Setting Dialog

Step 4 - Click the . . . button to select the secure debug key file. Additionally, select the COM Port for the Authentication. After changes are completed, Click the Save button to save the settings and close the window.

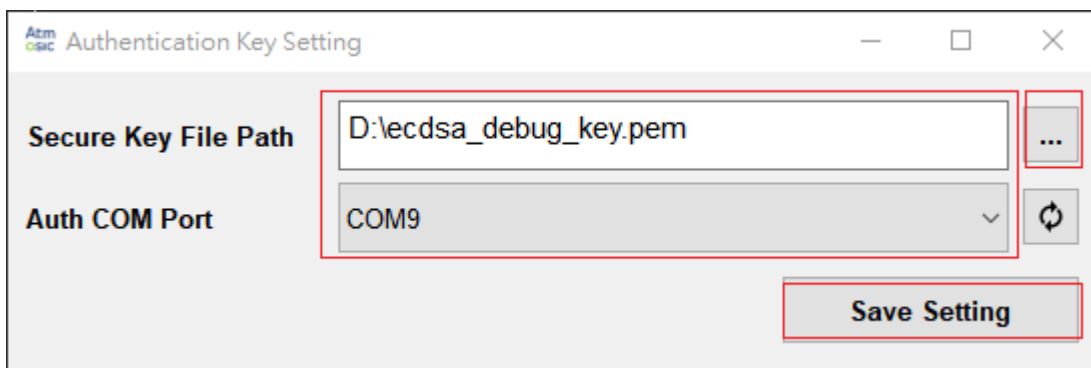


Figure 6-5 Set Authentication Setting

Step 5 - Set Enable Secure Debug checkbox.

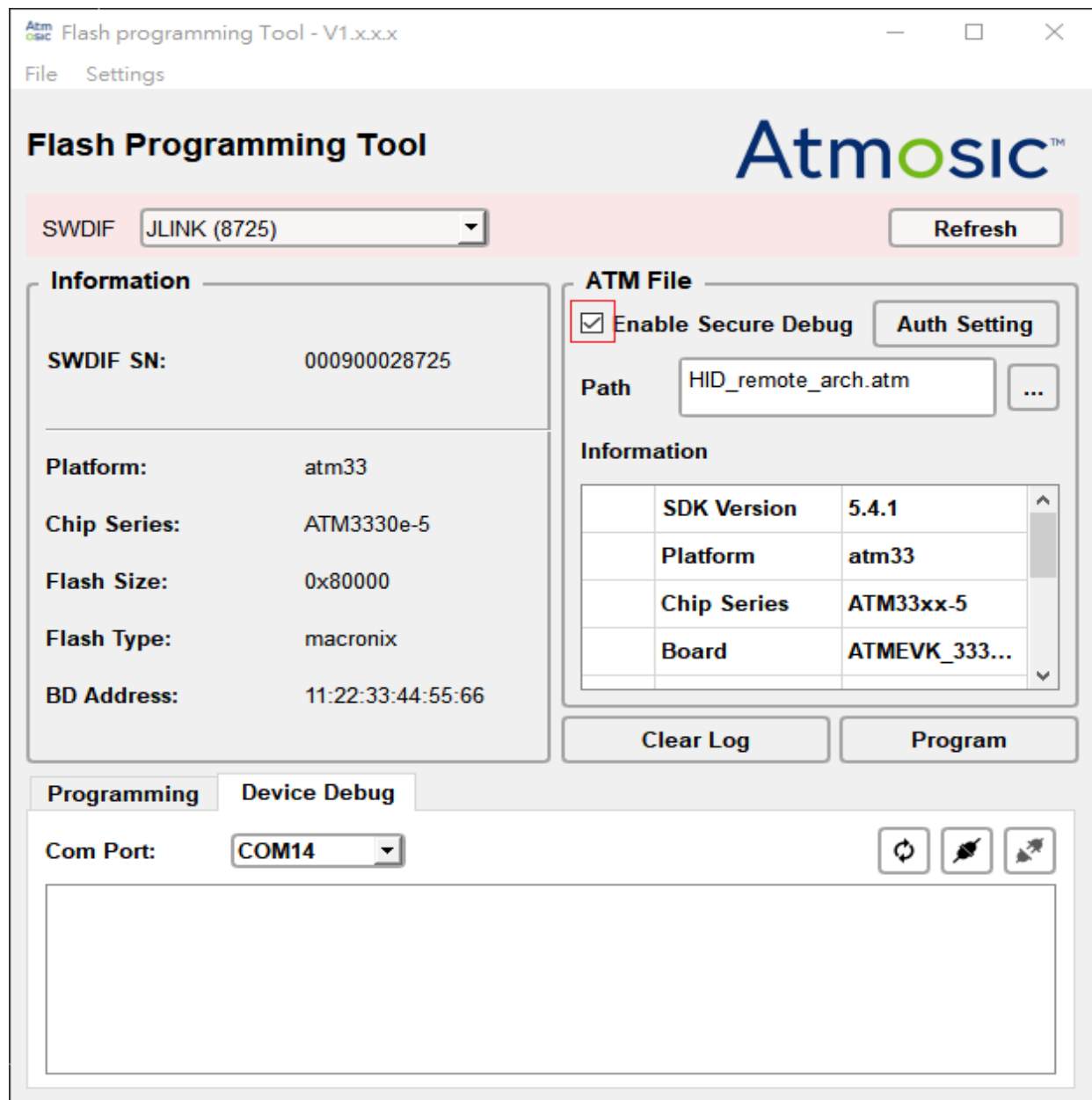


Figure 6-6 Set Enable Secure Debug Checkbox

Step 6 - If you want to modify the content of the partition to be flashed, you can change the checkbox of the NVDS item.

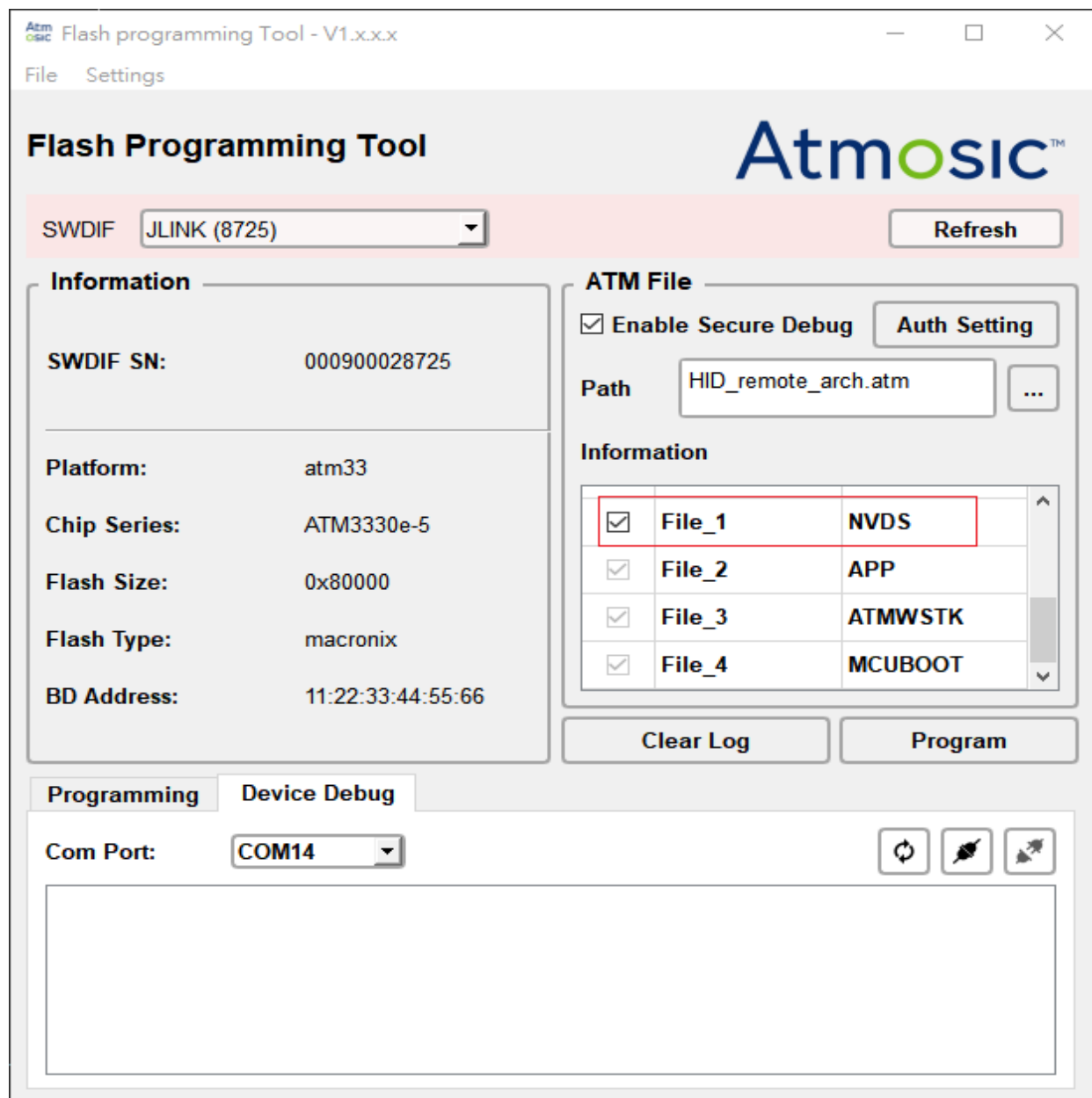


Figure 6-7 Change the Checkbox of the NVDS Item if Needed

Step 7 - Click the Program button, the Tool will pop-up After pressing the OK button, please reset the device within three seconds.

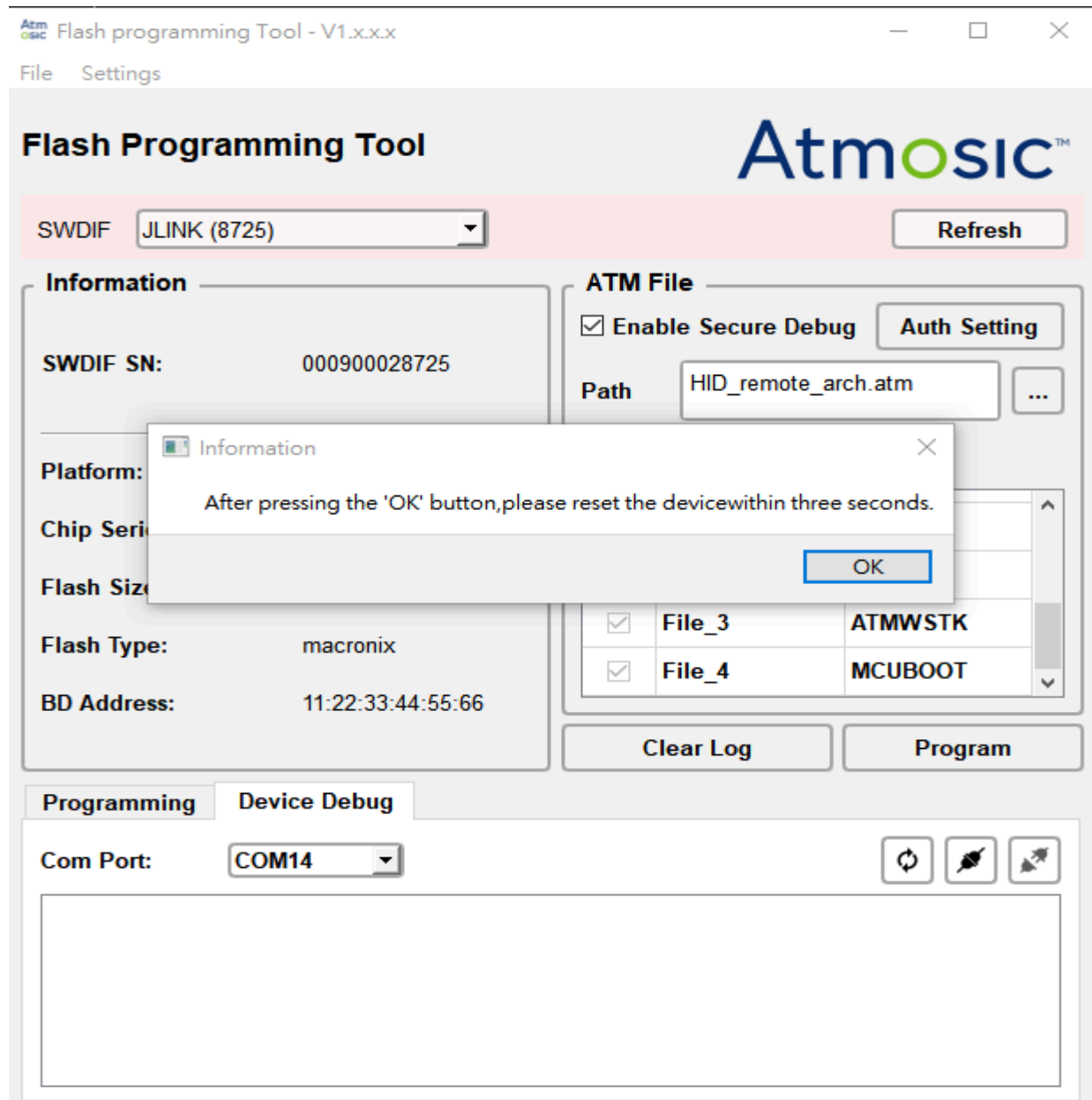


Figure 6-8 Pop-up Reset The Device Within Three Seconds Dialog

Step 8 - A Pop-up countdown screen will appear and wait for the user to reset the device.

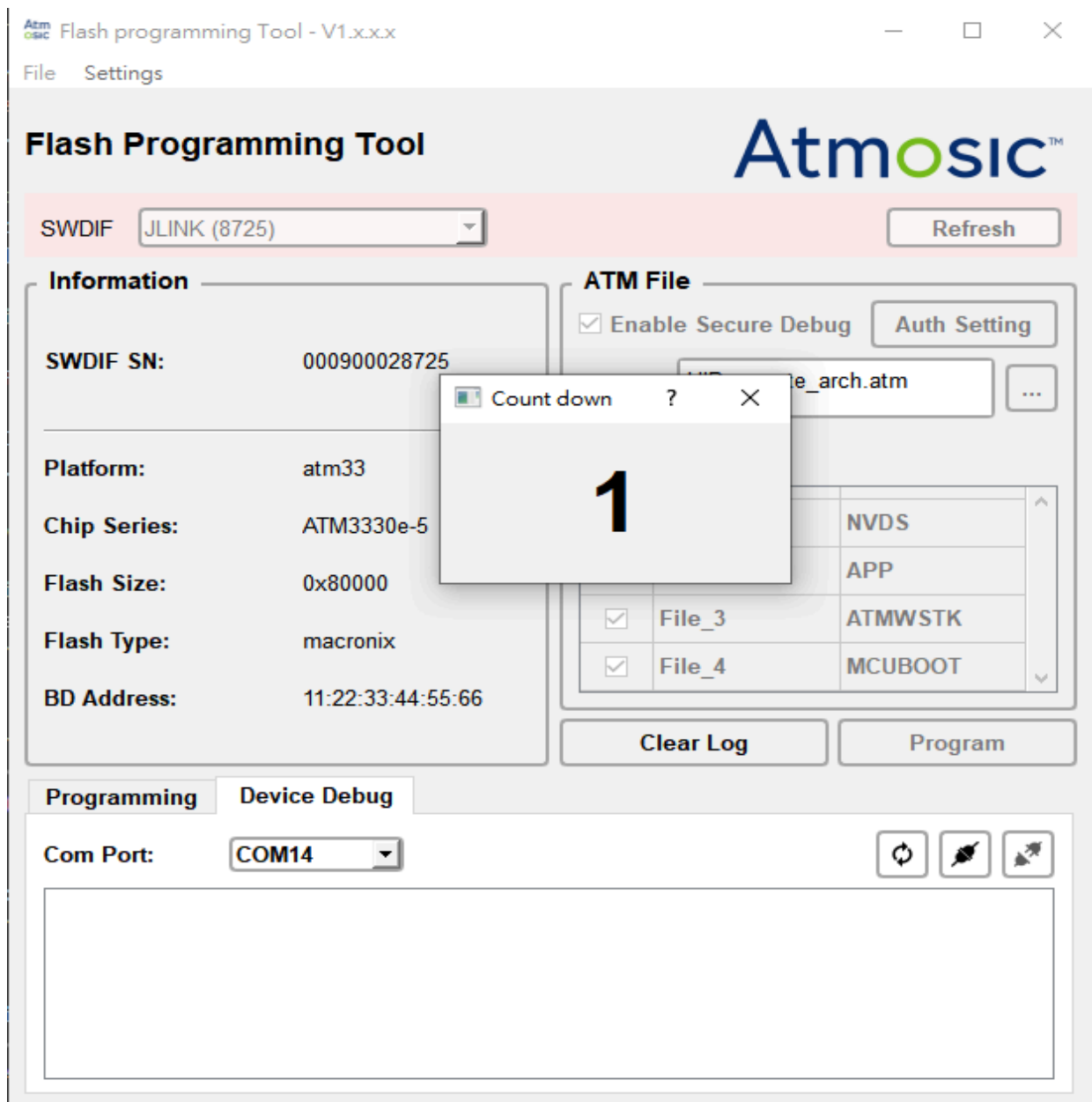


Figure 6-9 Pop-up Countdown Dialog

Step 9 - A pop-up screen will indicate successful recording when the write operation is successful.

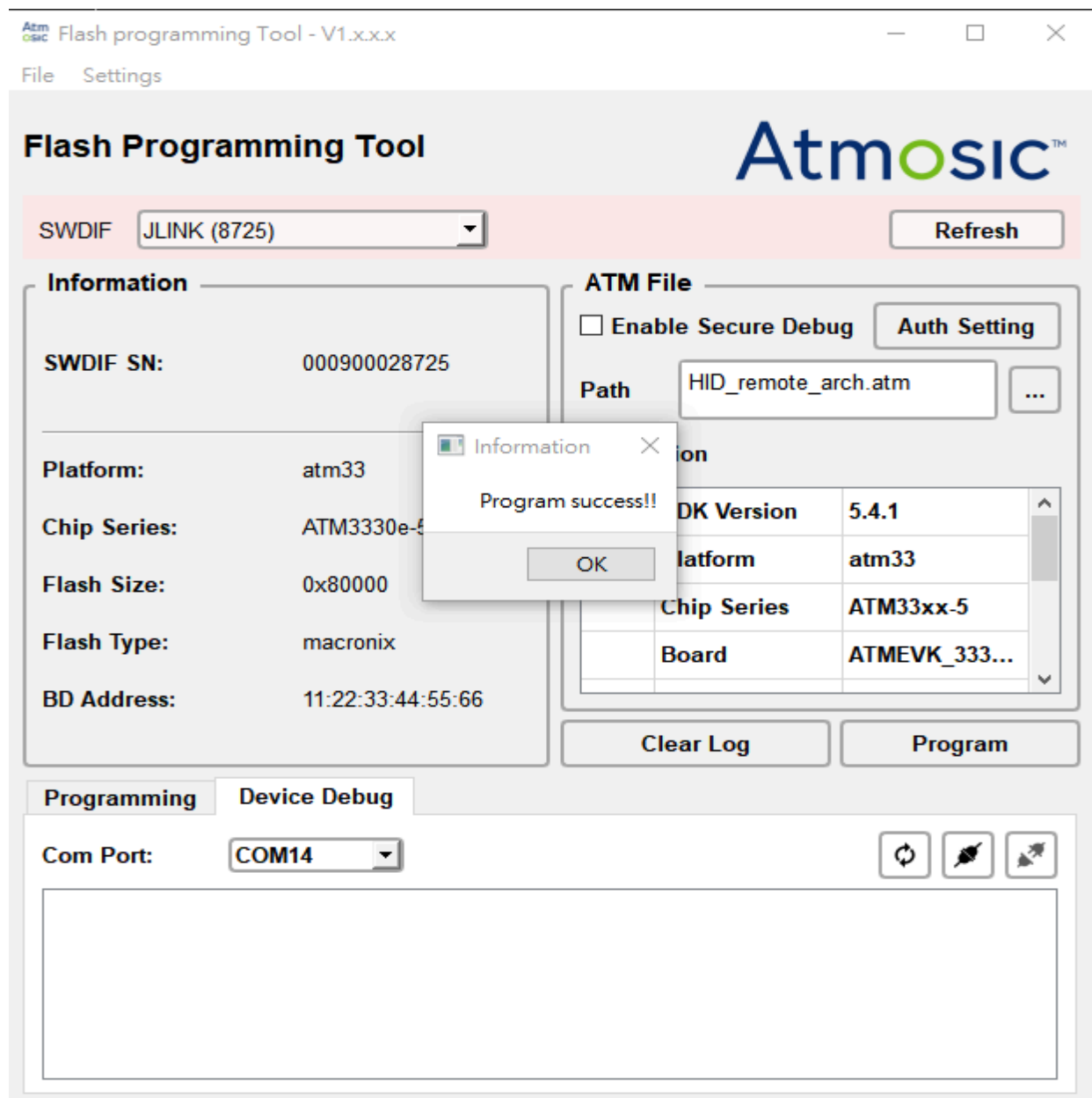


Figure 6-10 Write Flash Data Success Dialog

7. Troubleshooting

If there is a popup error message during execution, the user can troubleshoot the problem by referring to the error messages in [Table 7-1](#).

Index	Error message	Troubleshoot
1	Setting.xml not found	The setting.xml in the executable file root directory doesn't exist.
2	SdkValues.xml not found	The SdkValues.xml in the executable file root directory doesn't exist.
3	ATM file can't be empty	The ATM file path cannot be empty.
4	If the BD address does not exist, programing cannot be canceled.	If there is no BD Address inside the EVK, then the user is required to program a BD Address.
5	BD address format error, please check again	The BD Address format is xx:xx:xx:xx:xx:xx. If the format is incorrect, writing will not be possible.
6	Chip information not match	The EVK and the chip version information of the ATM file to be flashed must be consistent.
7	Authentication information can't be empty	If the 'Enable secure debug' checkbox is selected, the Authentication information cannot be empty.
8	Failed to generate J-Link file	Unable to generate the J-Link script file required for J-Link scripting.
9	Failed to dump NVDS file	Dump NVDS file EVK fails.
10	At least one file needs to be selected for programing	At least one checkbox for the ATM file must be selected.
11	ATM file does not include a partition map file, please use another atm file	The 'Partition_info.map' does not exist in the ATM file. Please use a different ATM file for flashing.
12	Unable to find corresponding J-Link Device settings	Board information not found in the ATM file.
13	Failed to copy J-Link script	Failed to copy J-Link script file in jlink/ide_prj_gen directory.
14	Please install J-Link to your system	Not installed J-Link driver.

Index	Error message	Troubleshoot
15	J-Link version can't be lower than v7.80	Please upgrade Jlink to version 7.80 or higher.

Table 7-1 Error Message Description

Reference Documents

Tool	Description	Link
J-Link	Software and Documentation pack	https://www.segger.com/downloads/jlink

Revision History

Date	Version	Description
August 31, 2023	0.50	Initial version created.



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