Ingenic® USBCloner

The Burning Tool Quick Guide

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Ingenic®

USBCloner The Burn tool Quick Guide

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1 Overview

USBcloner burning tool (hereinafter referred to as burning tool) is a burning tool developed by Ingenic.It is based on a new code framework developed. This document will introduces the driver installation process, burning steps and the precautions of operation. Please read this document before operation to avoid unnecessary issues.

1.1 Operating environment support

USBCloner environment requirements as followd:

1) Windows XP, Win7 and above version（32bit, 64bit)
2) Ubuntu12.04 and above version (32bit, 64bit)

1.2 The burn tool package

There are two kinds of versions for Windows and Ubuntu:

1) cloner-x.x.x(version number)-windows_release.zip
2) cloner-x.x.x(version number)-ubuntu_release.tar.gz

1.3 Burn tool consists of below parts

1) Cloner.exe: Cloner is the user interface of burning tool, users can configure burning parameters through this interface.
2) Core.exe: Core is the burning program of burning tool, which is called by cloner.
3) DDR directory is the memory model and parameter configuration supported by different platforms.
4) The configs directory is the burning configuration file of different platforms.
5) The firmwares directory is used to burn firmware programs for each platform.

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2 Install the driver

USBCloner has Linux and Windows version, users don't have to install the driver of USBCloner on LINUX. Therefore, this section will only introduce installation on Windows 7, and there's maybe a little difference between the first installation and the driver updating.

It's worth mentioning that users should disable Secure Boot under UEFI and disable the driver mandatory signature on Windows 10. Users can easily find the detailed instructions online.

2.1 First installation

Please connect the device to the PC, and make sure it's under USB boot mode (by pressing the USB boot key and the reset key). Then the desktop will pop up a dialog with a wizard of installation, or users check the device manager as shown in the Figure 2-1.

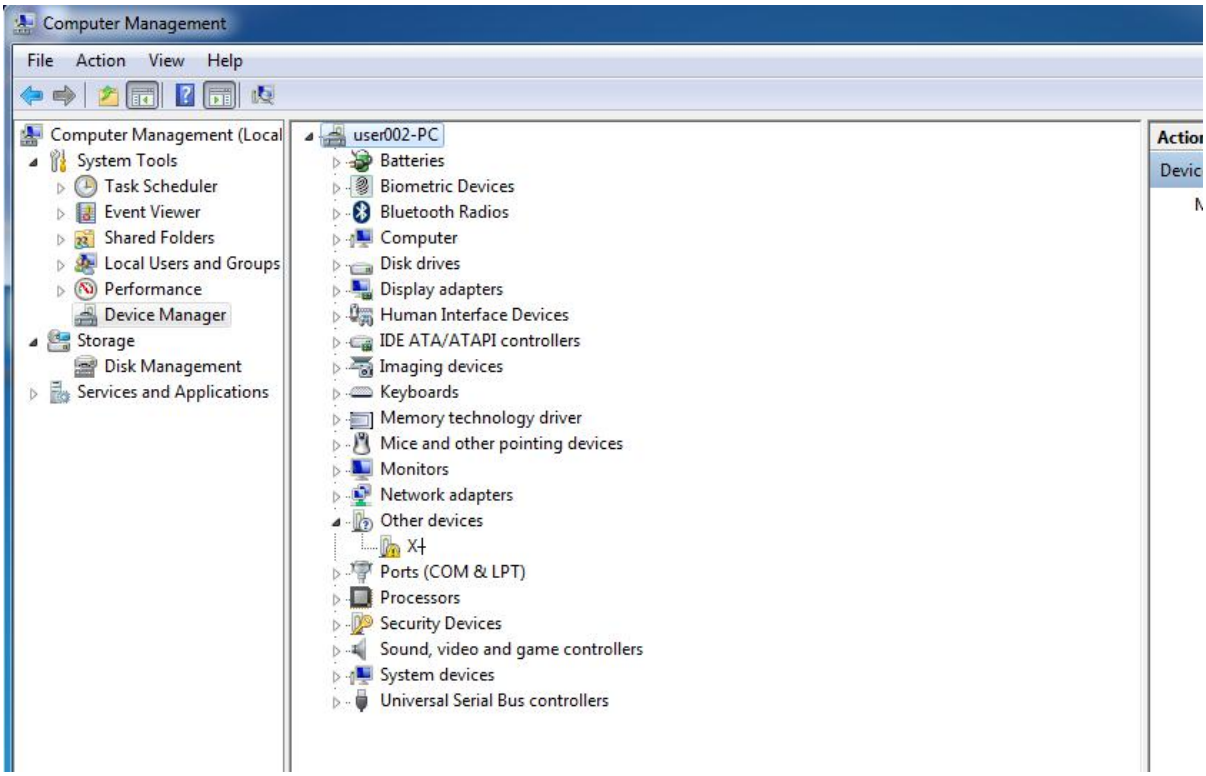

Figure 2-1 device identification

Right click on this unknown device and select "update driver software" as shown in the Figure 2-2.

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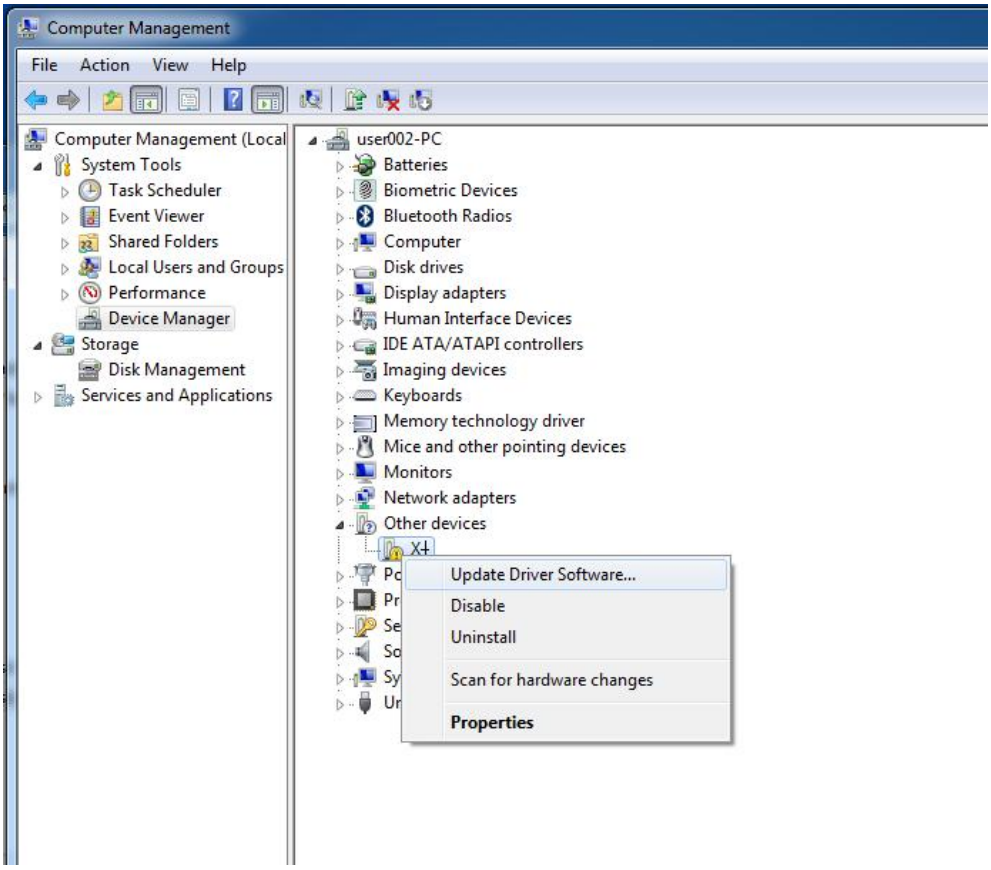

Figure 2-2 driver software update

Select “browse my computer for driver software” as shown in the Figure 2-3.

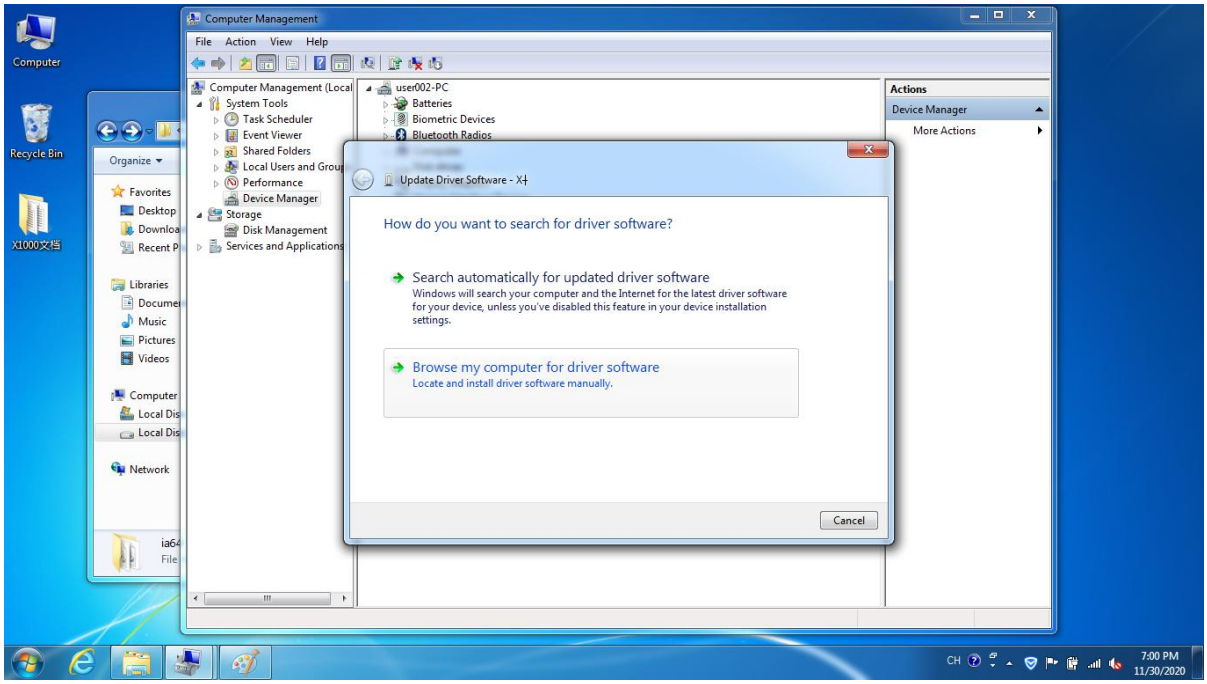

Figure 2-3 driver software selection

Then filling the cloner-win32-driver directory in the path.

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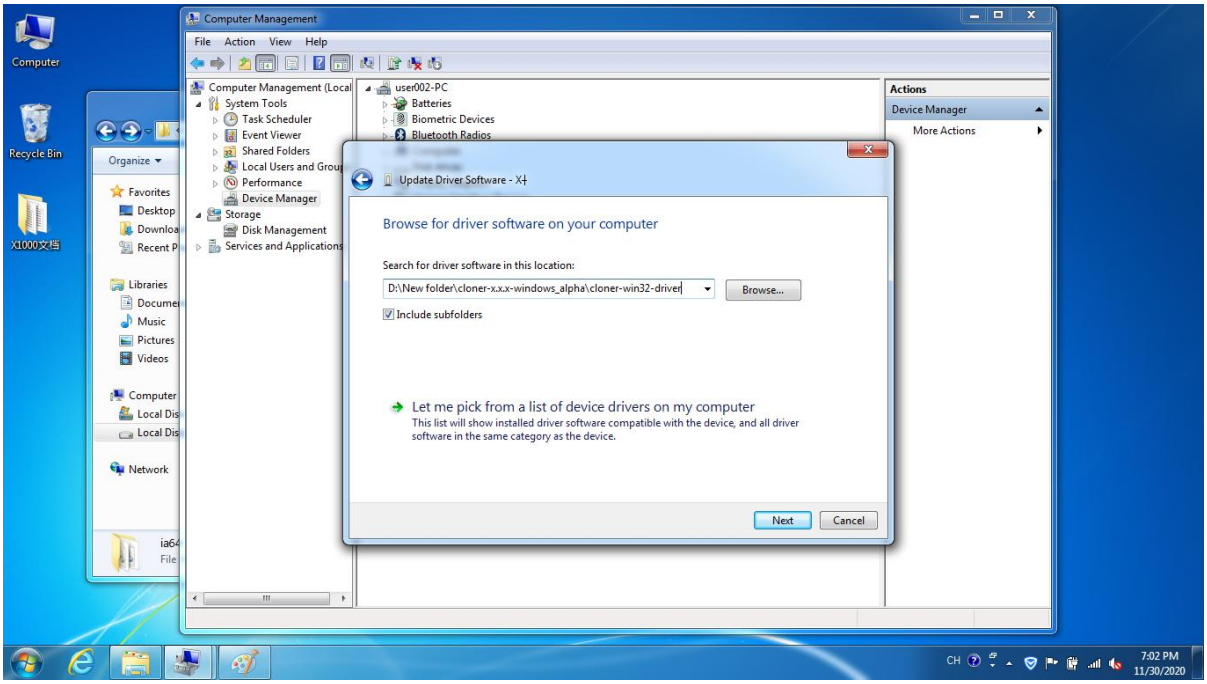

Figure 2-4 filling the driver path

Then click “next” and “yes” to drive the installation successfully, as shown in the Figure 2-5.

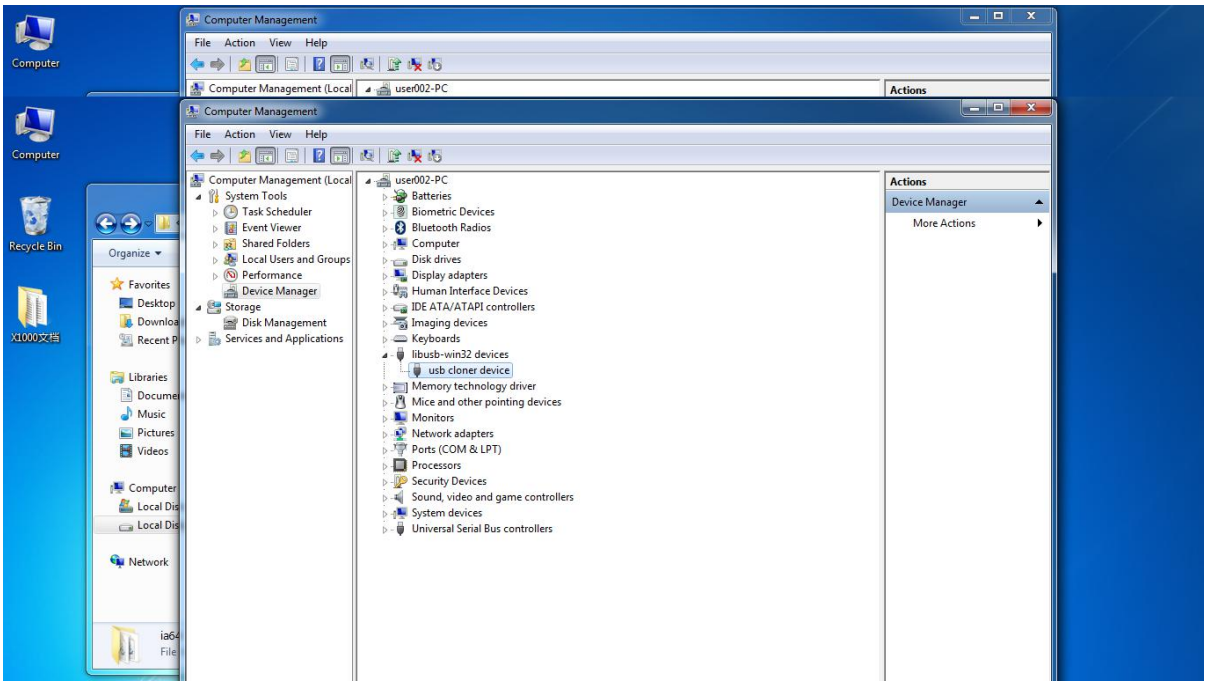

Figure 2-5 drive installation complete

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3 Run the Burning tool

3.1 Start the USBCloner on Ubuntu

If developers use Ubuntu development environment, please go to the directory where the cloner is located in the gnome-terminal window, and then run the command "./cloner"(the command does not include"") to start the burning tool. And the next operations of the burning tool under Ubuntu are same as Windows, please refer to the next sections for the detailed operation.

3.2 Start the USBCloner on Windows

Please go to the directory where the cloner is located, then click twice cloner.exe to start the burning tool, the operating interface will pop up as shown in the Figure 3-1.

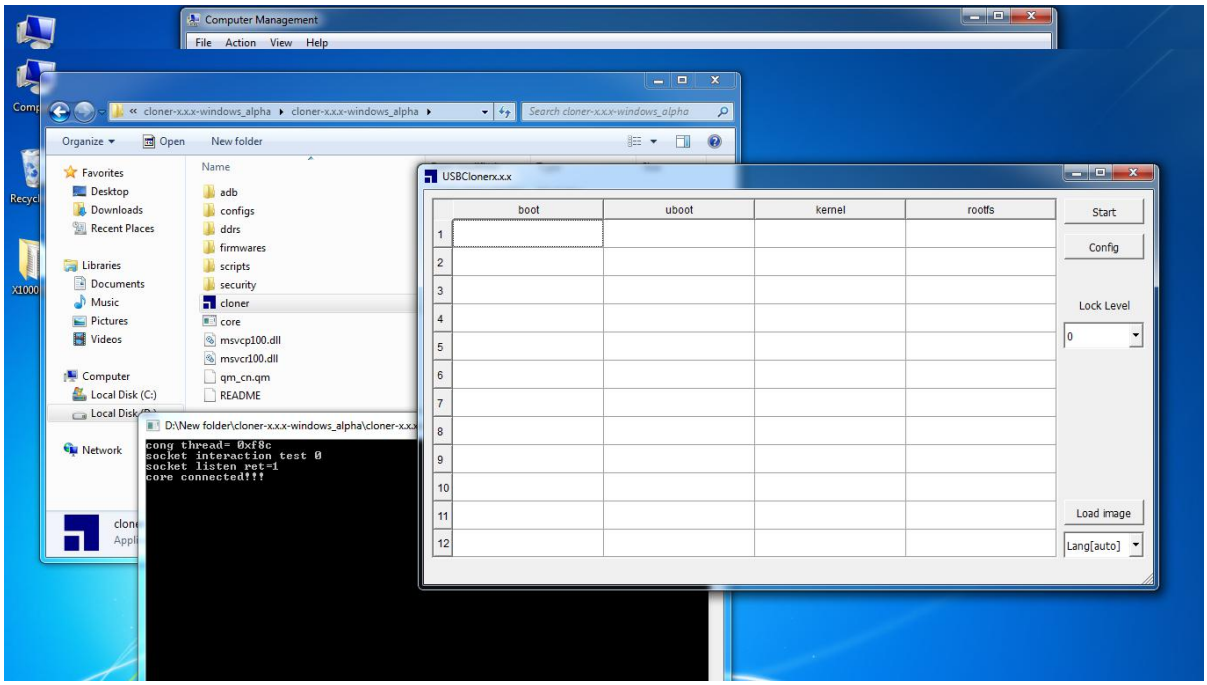

Figure 3-1 Start screen

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4 Burning process

The burning tool has default configuration for all platforms and development boards of Ingenic. Therefore, users can select the platform and board level configuration according to the chip they use, and then select the files users want and set the path of the files in the policy table. Occasionally, users need to adjust the offset of burning files and the partition of the storage memory according the file size.

Please note: the next operation is based on the original default configuration. So the following screenshots shows the necessary instructions during the burning process, not for a specific development board.

4.1 Choose the platform and board configuration

Click on the "Config" button to enter the configuration interface. Then select the **platform** and **board** in the "INFO" table as shown in Figure 4-2.

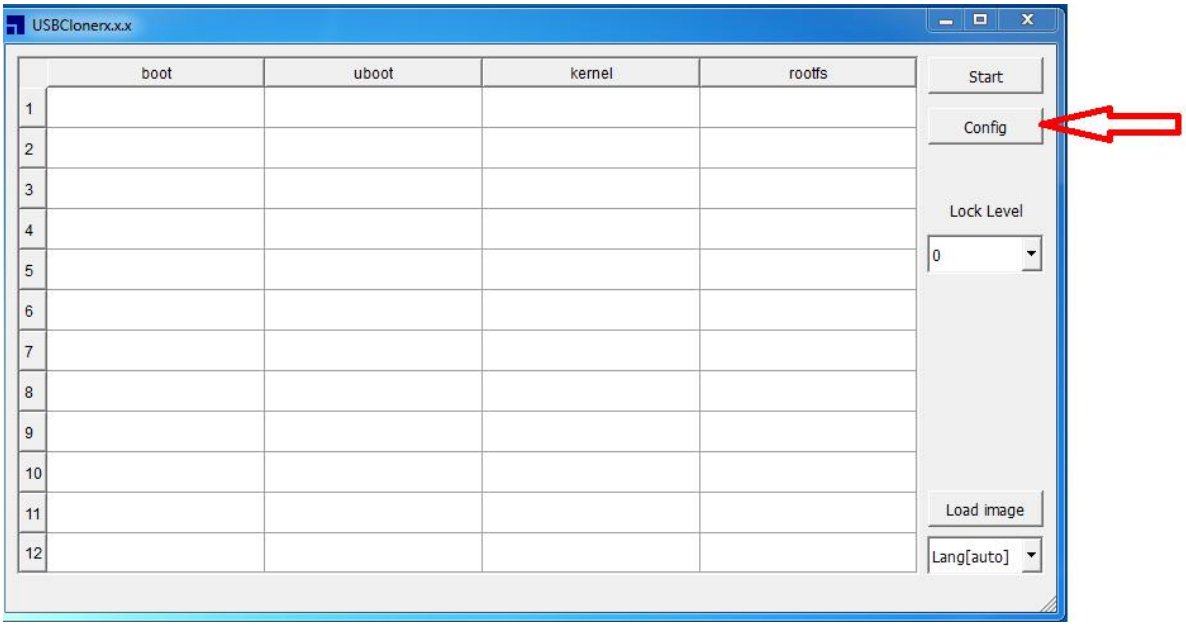

Figure 4-1 burning interface

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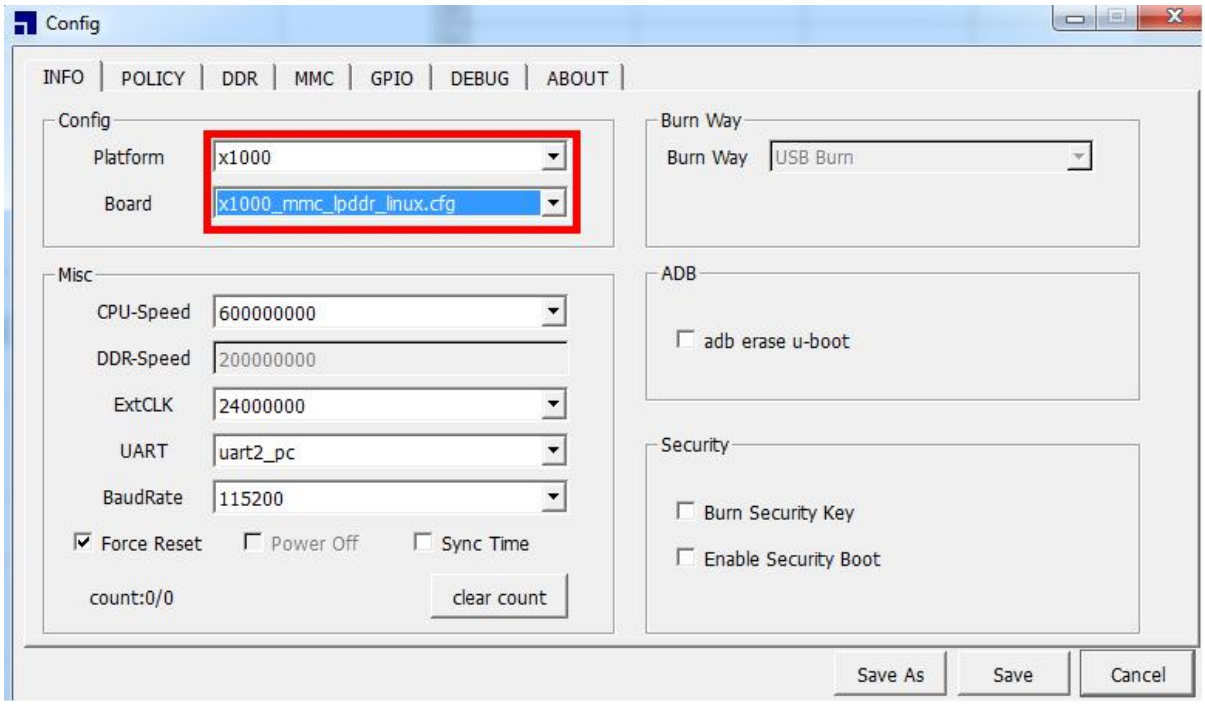

Figure 4-1 INFO configuration interface

Note:

Force Reset ------The system will reboot when the burning is completed

4.2 Modify the policy

After the platform and the board are selected, users need to modify the settings to locate the files, and modify the offset according to the actual needs. The Figure 4-3 shows other list items.

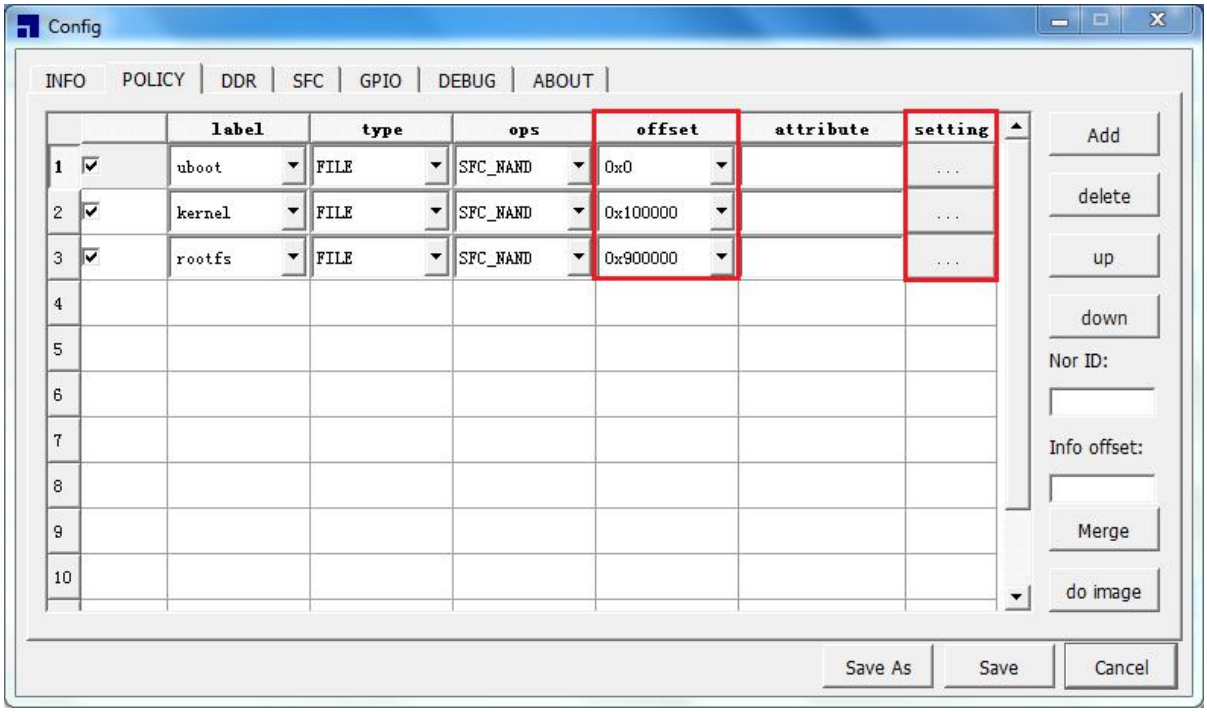

Figure 4-3 modify policy interface

Note:

Modify the offset in policy table same as the partition in SFC table.

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4.3 Save the current configuration

After the policy settings are completed, click "Save" to save the current settings to the configuration file as shown in the Figure 4-4.

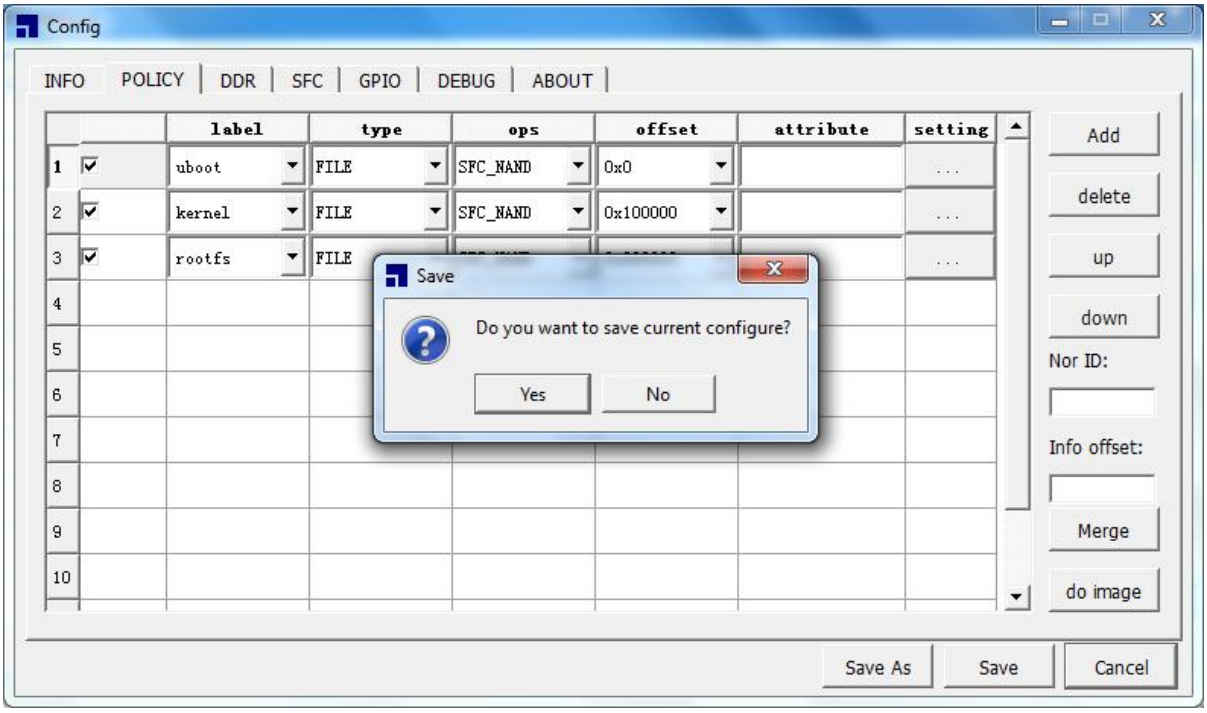

Figure 4-4 save the current configuration

4.4 Add a new configuration file

If users don't want to replace the default configuration file with the new one, please save and rename the current settings as a new configuration file as shown in the Figure 4-5.

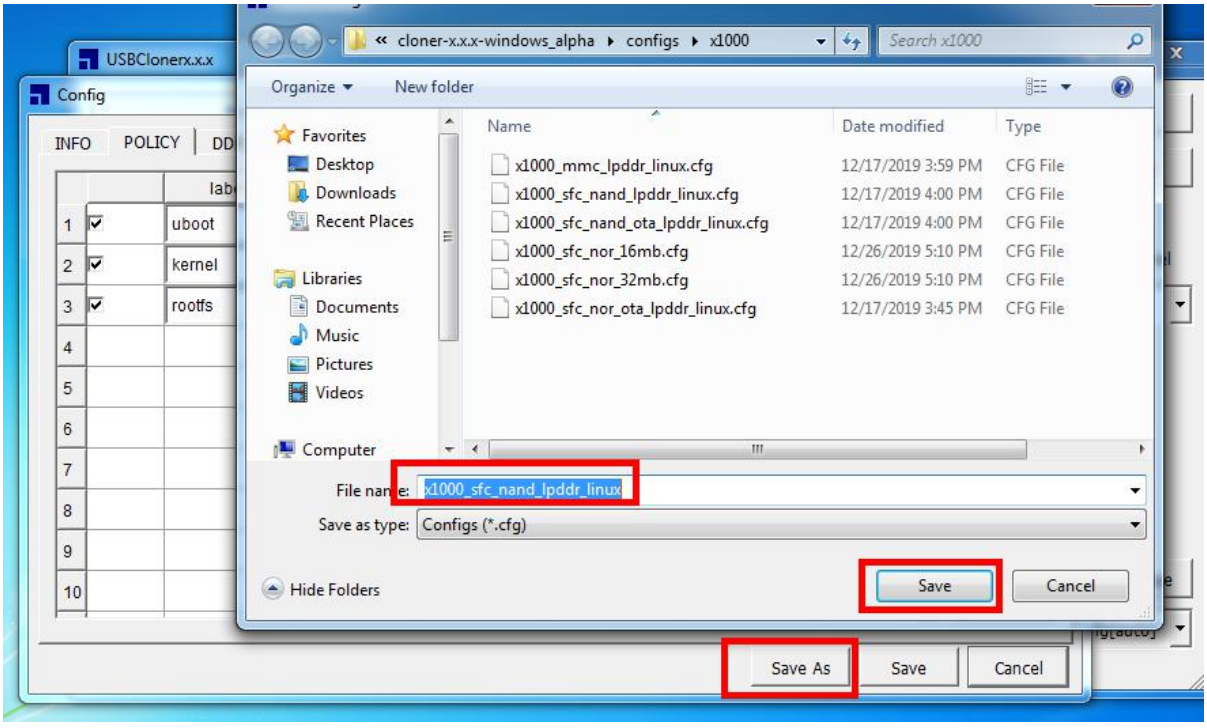

Figure 4-5 save as a new configuration

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5 Burn sample

The general process of burning tools is introduced in the fourth chapter. This chapter we will take the burning of SFC nor flash on X1000 platform as an example to introduce the use of burning tools.

5.1 Choose the platform, board configuration

Select X1000 from the platform, then select the x1000_sfc_nor_32mb.cfg from the board as shown in the Figure 5-1. It's worth mentioning that users should select the right debug port from the UART.

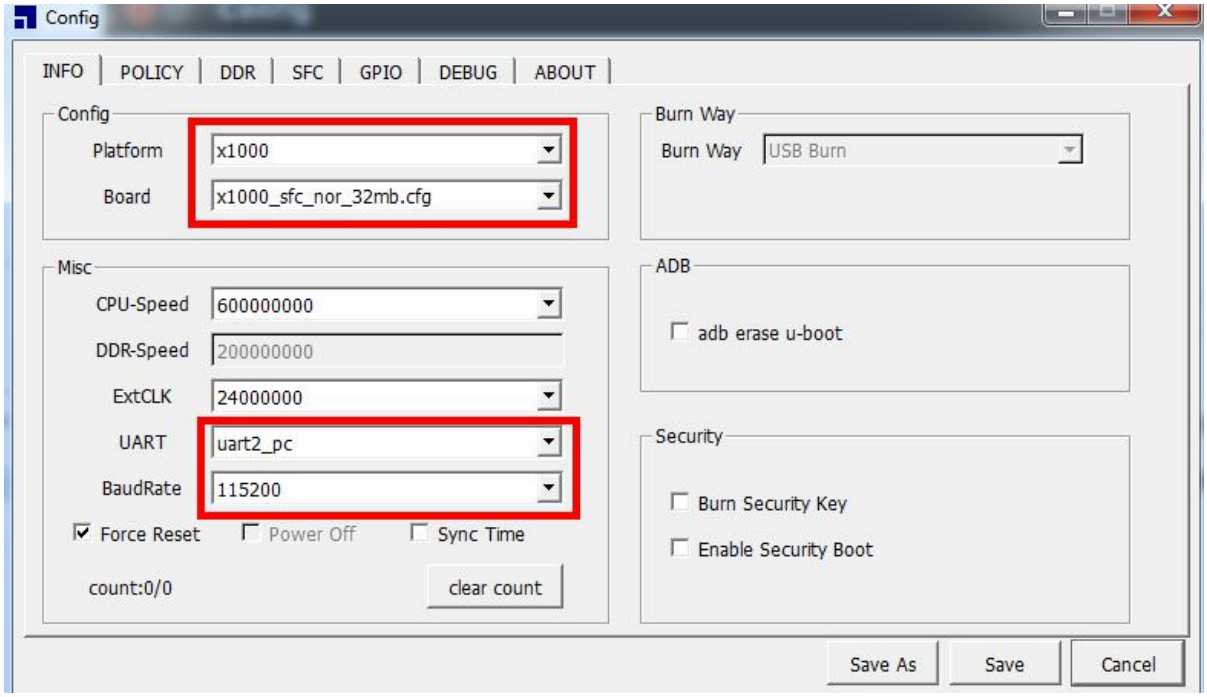

Figure 5-1 X1000 platform configuration interface

5.2 Modify the policy

After the platform and the board are selected, users need to modify the settings to locate the target files as shown in the Figure 5-2.

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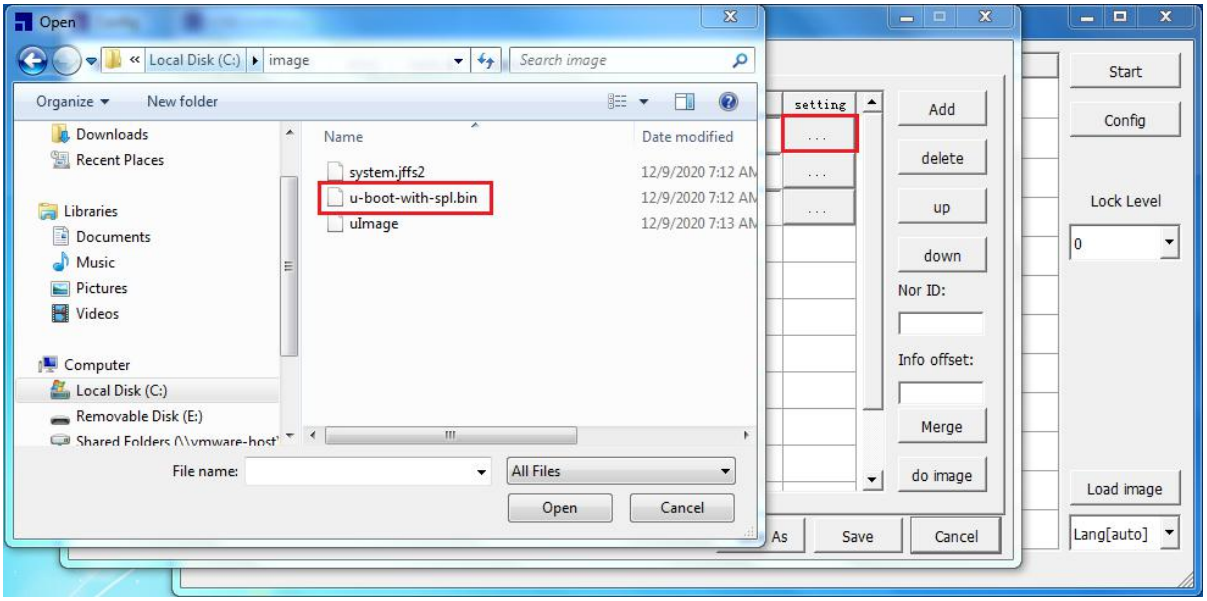

Figure 5-2 X1000 platform policy interface

And check if the offset settings are same as the partition in SFC table, If not, please modify them same and make sure the size settings are enough to cover the each files. The Figure 5-3 shows the SFC partition settings and the Figure 5-4 shows the offset settings.

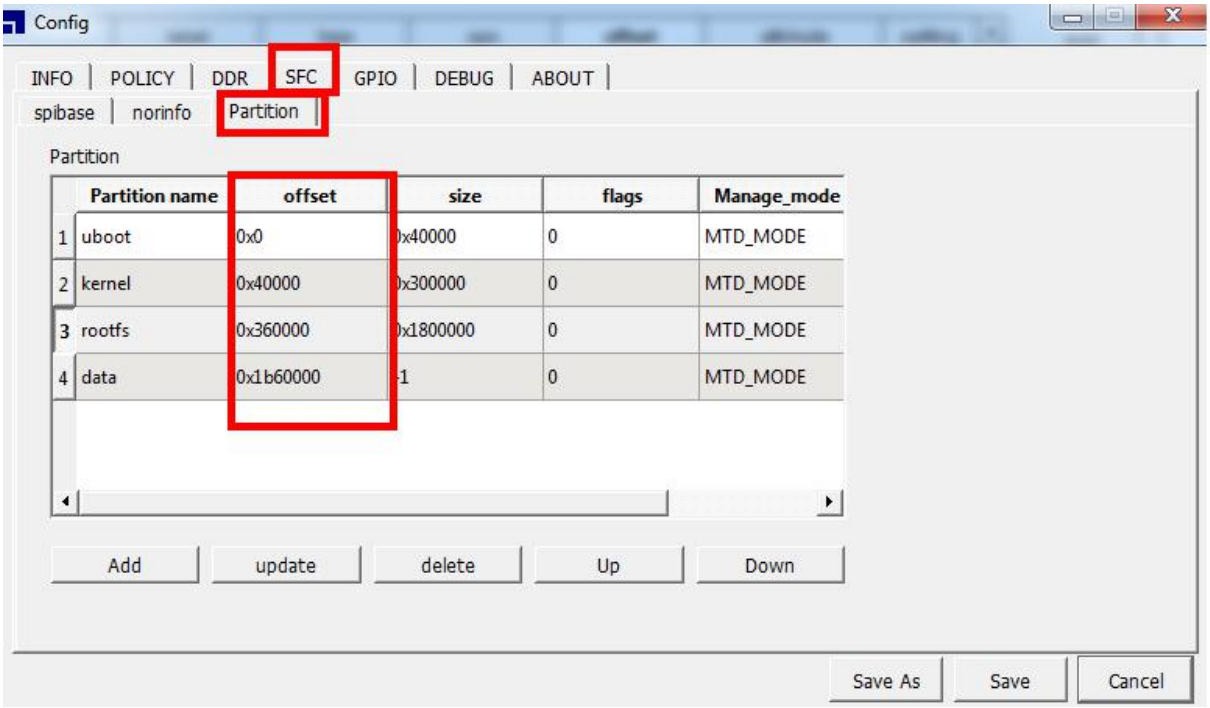

Figure 5-3 SFC partition settings

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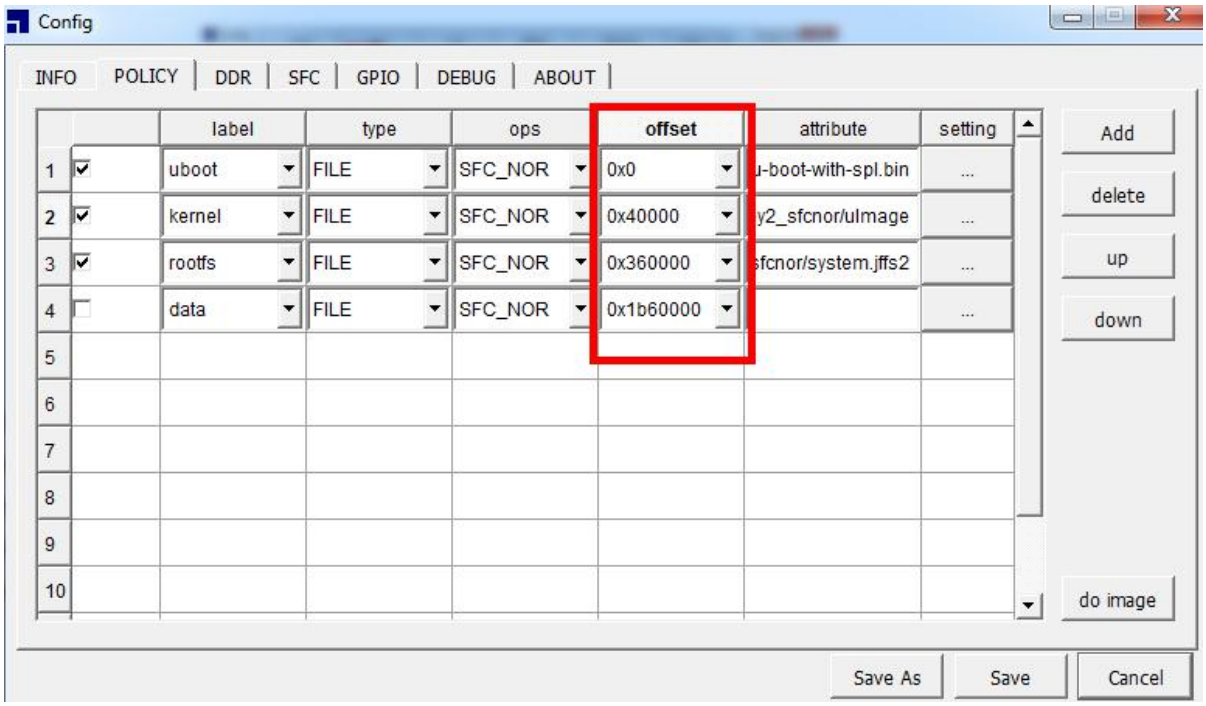

Figure 5-4 SFC partition settings

How to set the offset:

Click on the value directly and modify the values (hexadecimal) if there's necessary.

How to set the image path:

Click on **...** directly and then it will pop-up an interface as shown in the Figure 5-2. Then browse and locate the files to import.

5.3 Save the current configuration

Check the items and click "Save" to save the current configuration as shown in Figure 5-5.

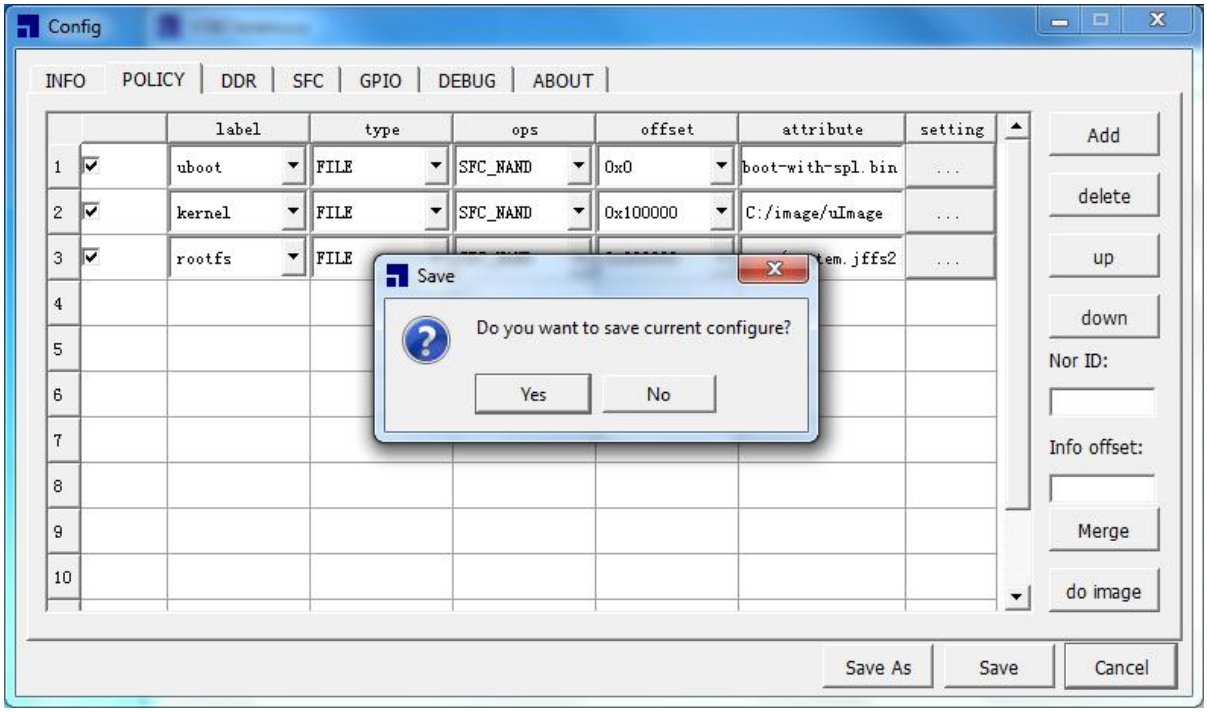

Figure 5-5 save the configuration information

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5.4 Burn

After the configuration is saved, the burning tool will return to the main interface. Users can do the following operations to update the system image.

1. Click on **"start"** to enter the burning status.
2. Connect the device to the PC firstly, and make sure it's under USB boot mode (by pressing the USB boot key and the reset key).

Then wait all the burning tool's progress bars reach 100% and complete as shown in figure 5-6.

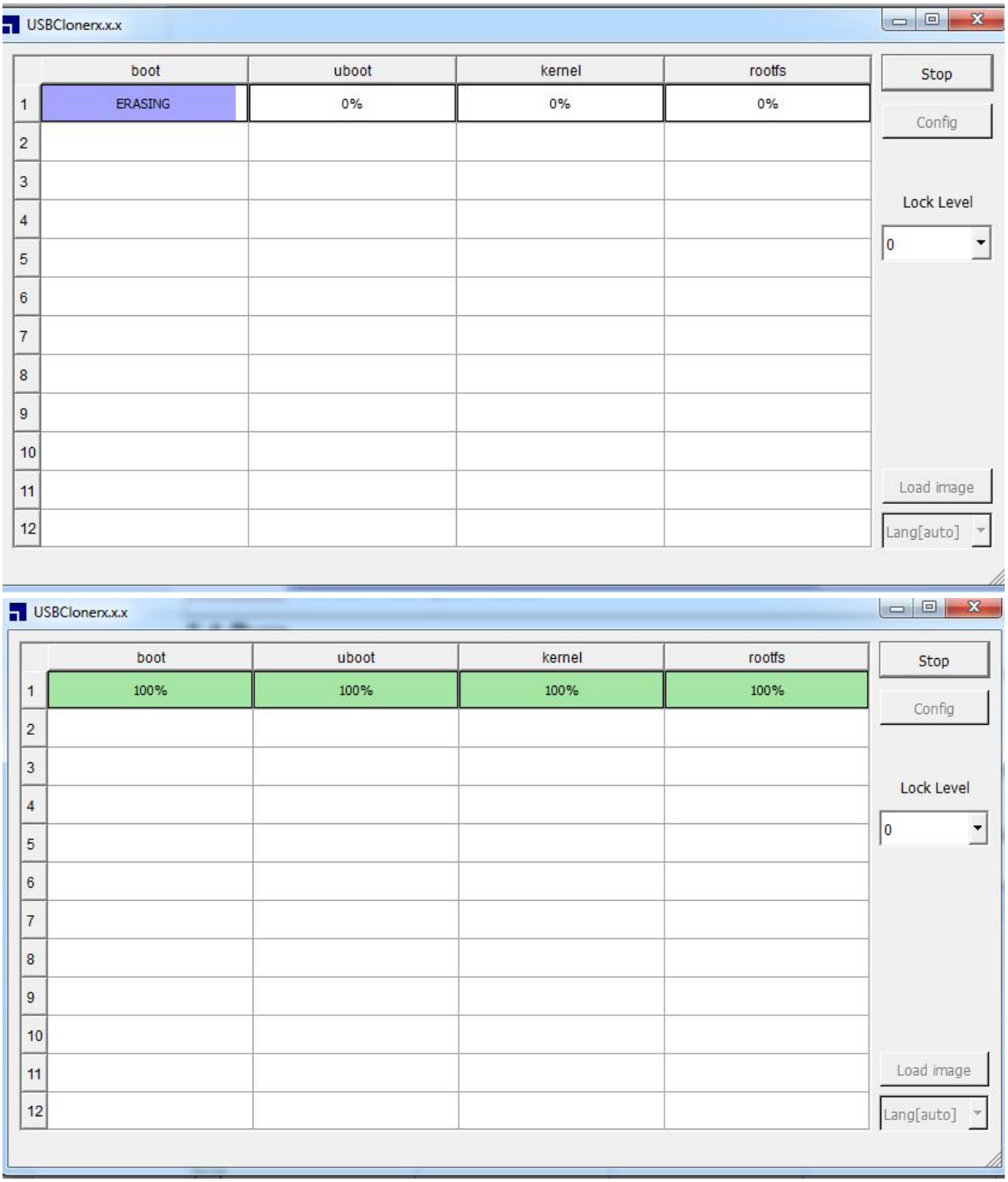

Figure 5-6 Burning renderings

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6 FAQ

Some of common issues and solutions.

6.1 Windows driver installation failures

If your development environment is Windows and fails to install the USBCloner driver, Please refer to Chapter 2 of this document to ensure that there are no errors in this process. If the driver signature authentication error is prompted by Windows 7 system, please contact Ingenic developers to confirm whether the driver signature has expired. But if the error is prompted by Windows 8 or Windows 10 system, you have to do "disable driver signature authentication enforcement" and "disable safe startup". Please find the detailed steps online.

6.2 Startup failure of burning tool interface under Ubuntu

In the Ubuntu environment, if the burning tool fails to start the interface and prints the “connection refused error” in the terminal. Then we can examine it from two aspects:

1. The CPU utilization rate of PC is too high, which leads to the delay of the core program startup, so the USBCloner cannot establish a connection with the core.
2. There is another core process in the current environment. You can use the kill command to terminate it and run it again.

6.3 The boot stage 0% error (under Windows)

If you have confirm the device is under the USB boot mode and start the burning tool, but the user interface shows the boot progress bar stays 0%, please check the Windows system there are not installed or update USBcloner driver indeed.

6.4 The boot stage 10% error

If the user interface shows the progress bar stays at 10% and turns red. Please check whether the platform selected in the configuration is consistent with the chip model of the device or not. Configuration settings can be found in Chapter 3.

6.5 The boot stage 20% error

If the user interface shows the progress bar stays at 20% and turns red, please check the USB cable and the connection with the device

6.6 The boot stage 40% error

If the user interface shows the boot progress bar turns red and stays at 40%, please check if the DDR of the currently burning board is consistent with the DDR type configured in the burning tool.
Then

1. Check whether the DDR model, banks, chip select and bus width of the burning tool are all correct.
2. Check whether row, Col and row1, col1 parameters in DDR parameters of burning tool are all correct.
3. Check whether the CPU and DDR frequencies configured in the burning tool are too high or too low.

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Basic rule: (burning configuration only)

a. The frequency of DDR3 should not be lower than 150MHz

b. The frequency of LPDDR and LPDDR2 should not exceed 200MHz

As for the detailed steps of checking and modifying the DDR configuration, please refer to the Guide for using the Burn tool.

6.7 The boot stage 50% or 75% error

If the user interface shows the progress bar stays at 50% or 75% and turns red, please

1. Check whether DDR configuration is correct or not.
2. Check whether nor flash model is supported or not.
3. Check whether there is an identified USB virtual machine running on the PC.

6.8 The boot stage 85% or 90% error

If the user interface shows the progress bar stays at 85% or 90% and turns red, it was likely NAND flash error. Please check if the platform support this NAND

1. Check whether this NAND flash model is supported.
2. Check whether the flash welding is good.
3. Check whether it is nor burning configuration, and the device is actually NAND flash.
4. Check whether the flash GPIO configuration of the burning device is correct.

The default configuration is correct in most cases as long as the right platform and the right board are select. If users want replace the NAND or nor flash model with a new one not in the support list, please find the specific manuals or contact Ingenic developers.

6.9 The boot stage 100% with Uboot stage 0% error

If the boot stage is 100% and the progress bar stays Uboot stage 0% and display "INIT EER", please check whether the path configuration of the files is correct.

6.10 Other errors

If you meet the above does not mention the error or the error according to the above method is not resolved, please contact us at any time.

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