

WF88 FW Update Guide

Amp'ed RF Technology, Inc.

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1. USBcloner burning tool

USBcloner burning tool is a burning tool for WF88 module. This document will introduce the driver installation process, burning steps. Please read this document before operation to avoid unnecessary issues.

1.1. Operating environment support

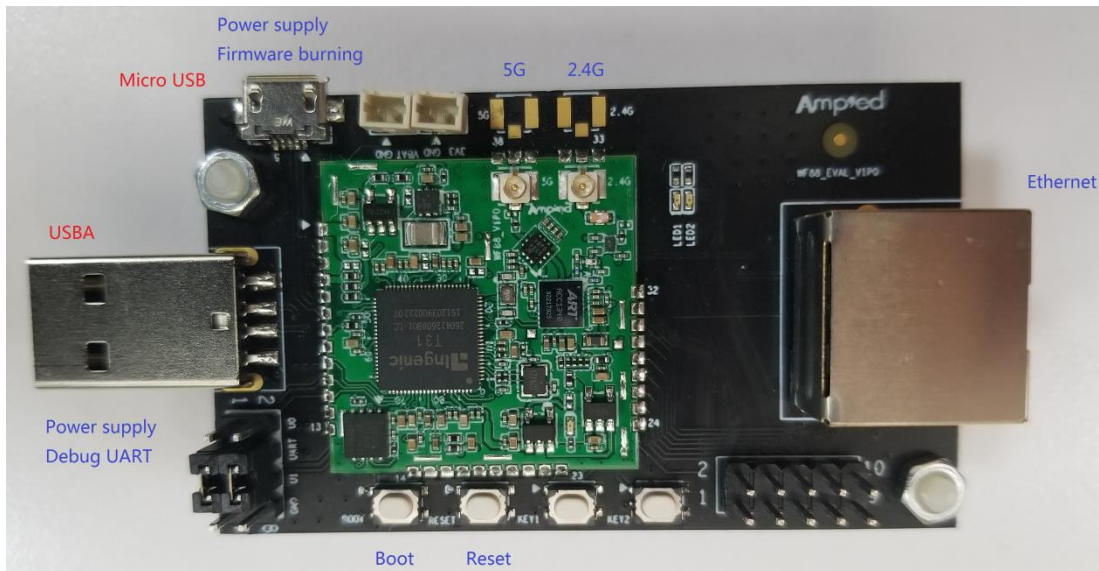
USBcloner environment requirements as follows:

Windows XP, Win7 and above (32bit, 64bit)

1.2. Burn tool package

The version for Windows is found in WF88_Firmware_xxx.rar. Unzip this compressed package.

1.3. Evaluation board



The WF288 is the evaluation board for the WF88 module, and contains the following features:

- Micro USB: firmware update interface and power supply.
- USB A: debugging and serial comm port interface and alternative power supply.
- Boot: boot button for firmware update.
- Reset: system reset button.
- Ethernet interface.

Note: either the Micro USB or USB A can supply power to the board. Both may be used at the same time.

1.4. Prepare download cable

Prepare a download cable from USB A to micro USB, which is a four core cable that includes power, ground, and USB_DP, and USB_DM.

2. Install driver

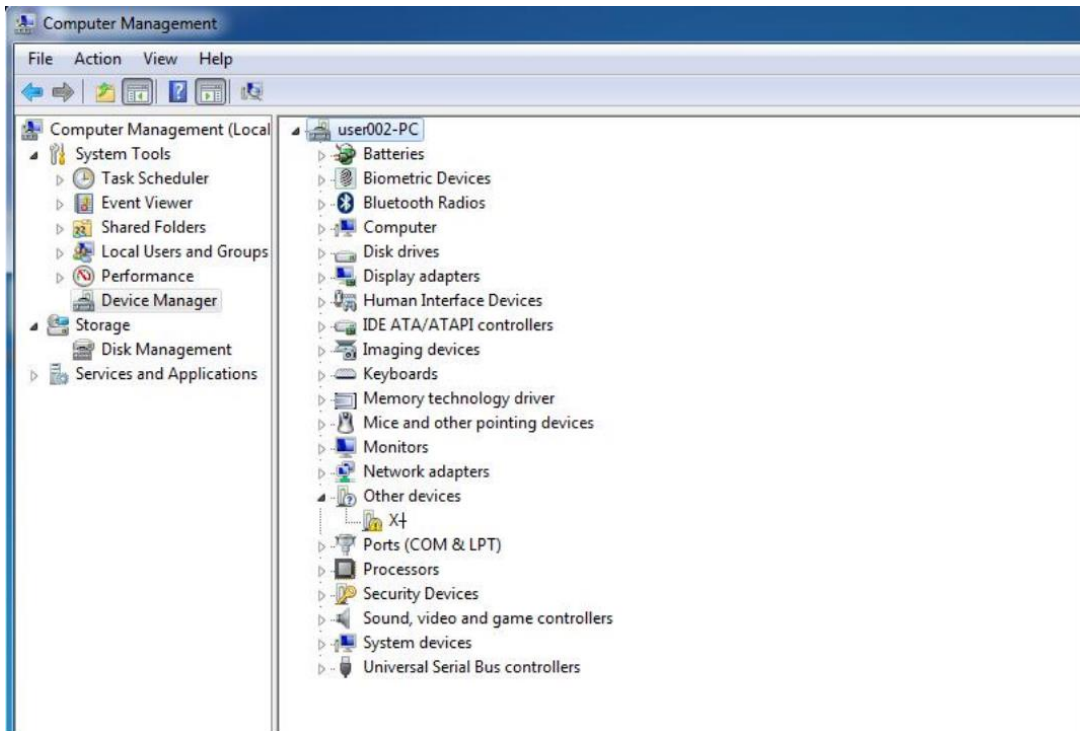
This section will discuss introduce installation on Windows 7, and there maybe differences when using other windows versions. Users should disable Secure Boot under UEFI and disable the driver mandatory signature on Windows 10. Users can easily find the detailed instructions online.

2.1. Download mode

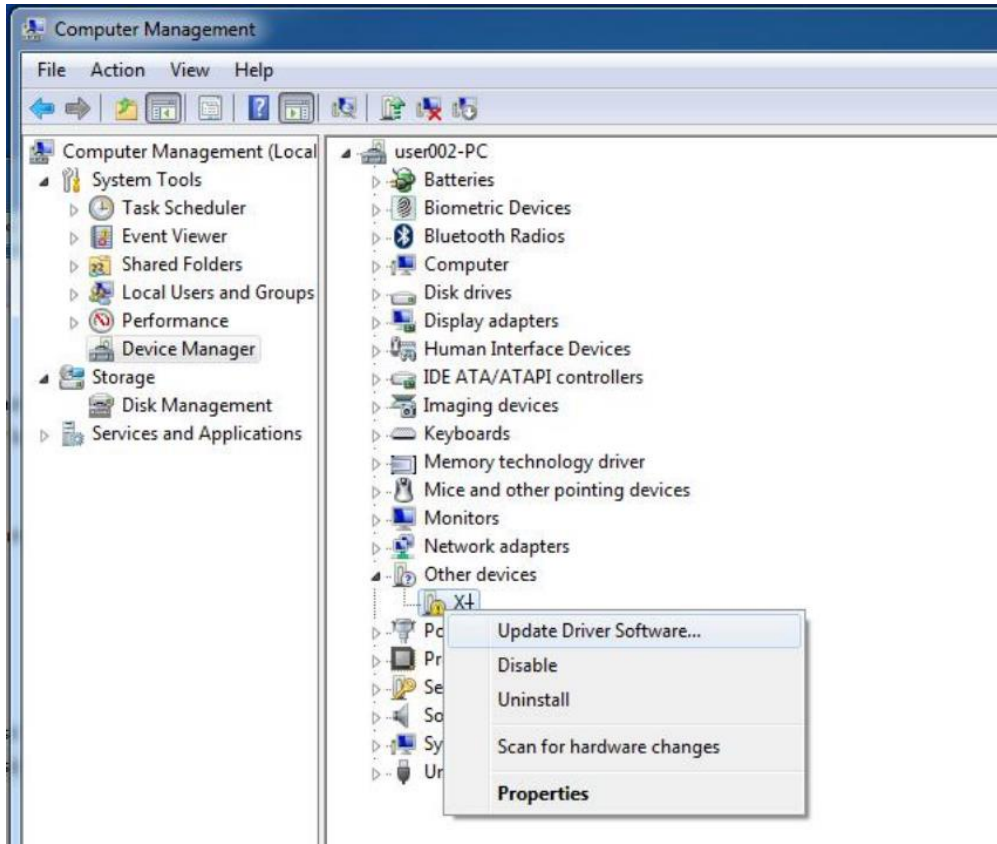
Insert the USBA of the download cable into the USB interface of the PC, press the "Boot" button on the evaluation board and do not release it. At the same time, insert the micro USB interface of the download cable into the "Micro USB" interface of the evaluation board, and then release the "Boot" button to enter the download mode.

2.2. Installation

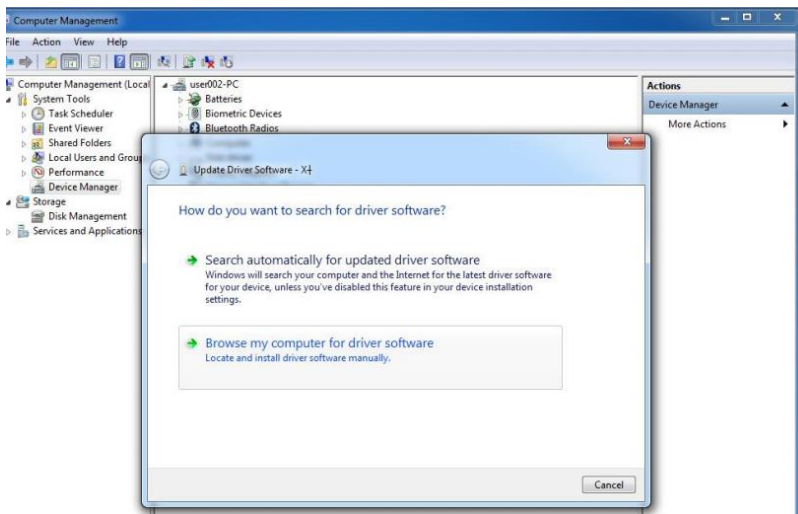
Make sure WF88 module enters the download mode. Then the desktop will pop up a dialog with an installation wizard, or users can also check the device manager as shown in the figure below:



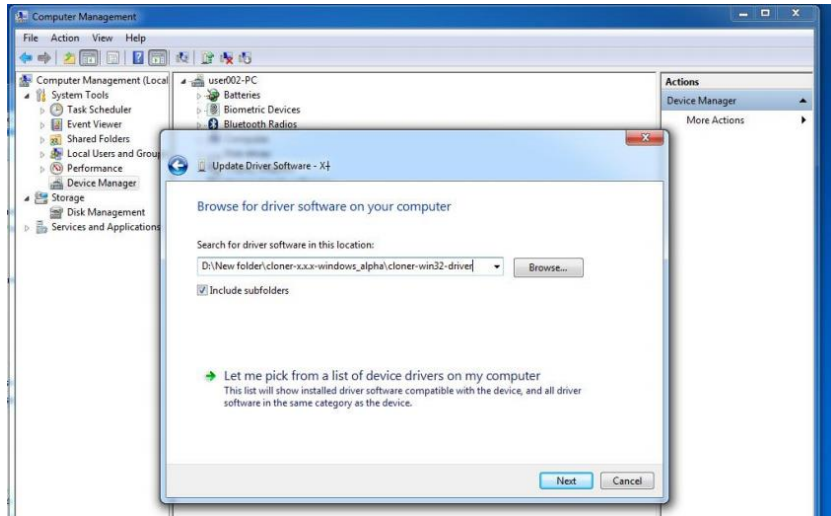
Right click on this unknown device and select “update driver software” as shown below:



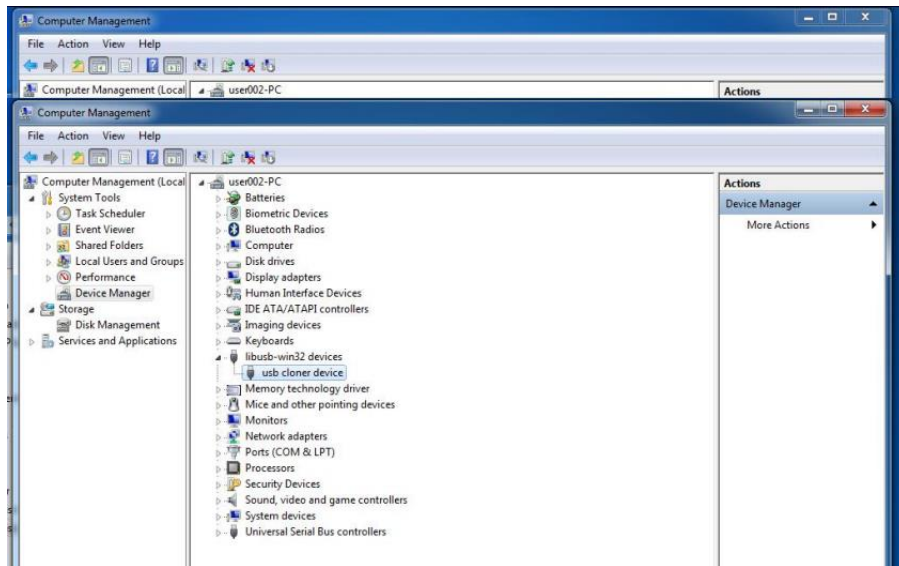
Select “browse my computer for driver software”.



Then enter the cloner-win32-driver directory in the path (under the directory “clone win32 driver”).



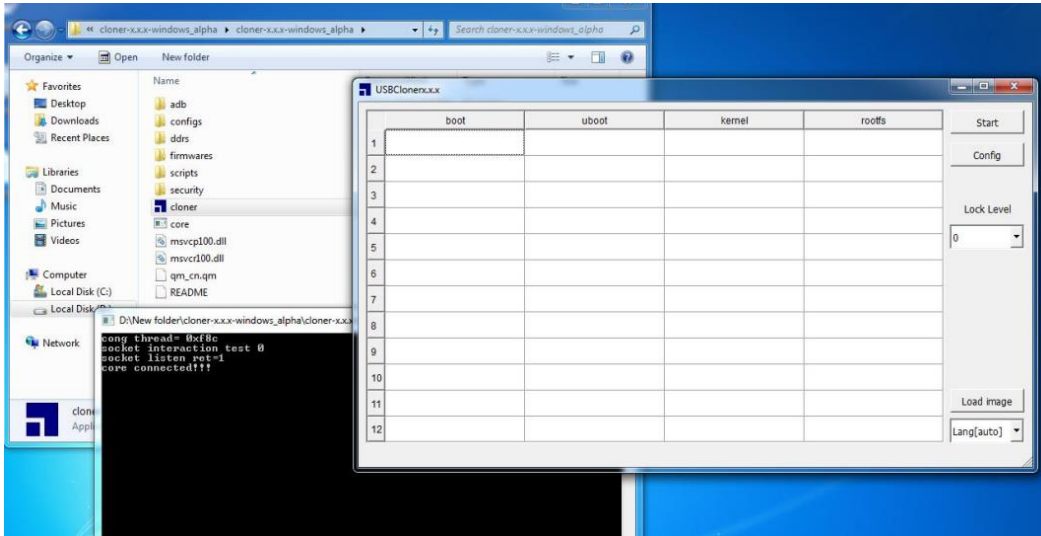
Then click “next” and “yes” to start the installation:



3. Run the burn tool

3.1. Start the USBCloner on Windows

Go to the directory, cloner-2.5.26-windows, where the cloner is located, then double click cloner.exe to start the burn tool. The operating interface will pop up as shown below:



4. Burning process

4.1. Start the USBCloner tool.

```

I:\Ingenic\T31LC\USB-cloner\2.5.26\USB-cloner-2.5.26-20230105\cloner-2.5.26-20230104\...
cong thread= 0x89f4
socket interaction test 0
socket listen ret=1
core connected!!!
  
```

USBCloner2.5.26

	boot	uboot	kernel	rootfs	appfs
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

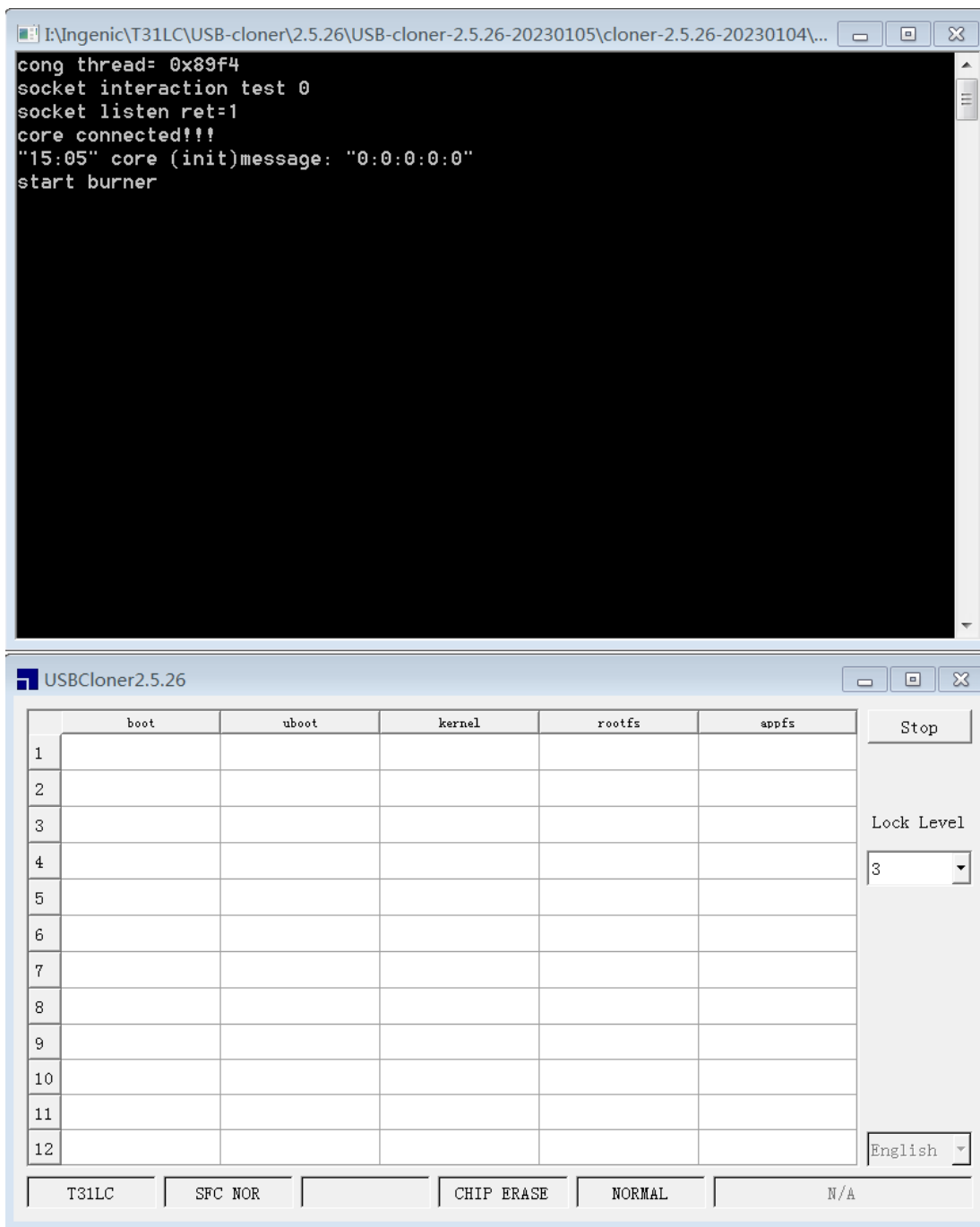
Start

Lock Level: 3

English

T31LC SFC NOR CHIP ERASE NORMAL N/A

4.2. Click on the "Start" button.



The screenshot shows two windows from the USBCloner2.5.26 application. The top window is a command prompt with the following text:

```

I:\Ingenic\T31LC\USB-cloner\2.5.26\USB-cloner-2.5.26-20230105\cloner-2.5.26-20230104\...
cong thread= 0x89F4
socket interaction test 0
socket listen ret=1
core connected!!!
"15:05" core (init)message: "0:0:0:0:0"
start burner
  
```

The bottom window is the main USBCloner2.5.26 interface, which includes a table for file selection, a "Stop" button, a "Lock Level" dropdown menu set to 3, a language dropdown menu set to English, and a row of buttons for device selection.

	boot	uboot	kernel	rootfs	apps
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Buttons at the bottom of the interface: T31LC, SFC NOR, CHIP ERASE, NORMAL, N/A.

4.3. Follow the instructions in "2.1 Enter the download mode" above. Make sure WF88 module is in download mode. After entering the download mode, start downloading the firmware:

The screenshot shows the USBCloner2.5.26 application interface. The top window displays a terminal log with the following content:

```

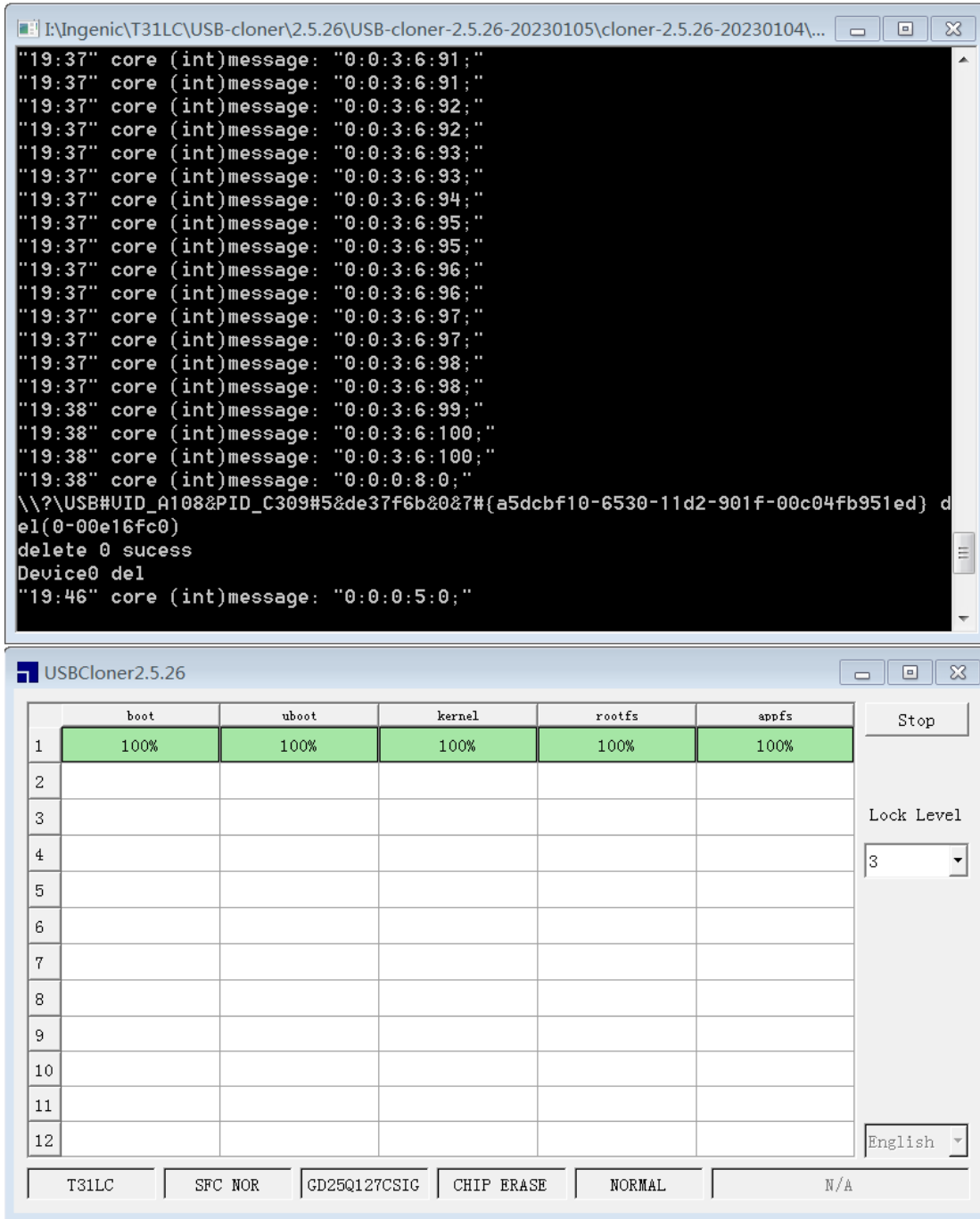
start burner
"t31lc_sfc_nor_ddr2_linux-2023-05-15.log"
Device0 add
"18:49" core (int)message: "0:0:0:4:0;"
&&&&&&&&&&burn_security_key: 0
\\?\USB#UID_A108&PID_C309#5&de37f6b&0&7#{a5dcbf10-6530-11d2-901f-00c04fb951ed} a
dd(0-00e16fc0)
"18:49" core (int)message: "0:0:-1:6:10;"
"18:49" core (int)message: "0:0:-1:6:20;"
(0)libusb_legacy_protocol::run_stage1_firmware:253 data=00e35888 len=0000259c of
fset=80001800 sec_en=0
"18:49" core (int)message: "0:0:-1:6:40;"
"18:50" core (int)message: "0:0:-1:6:50;"
(0)libusb_legacy_protocol::run_stage2_firmware:332 data=00e37e40 len=0005d540 of
fset=80100000 sec_en=0
"18:50" core (int)message: "0:0:-1:6:60;"
"18:50" core (int)message: "0:0:-1:6:70;"
"18:50" core (int)message: "0:0:-1:6:75;"
"18:50" core (int)message: "0:0:-1:6:80;"
"18:50" core (string)message: "0:0:-1:12:GD25Q127CSIG;"
match 0xc84018 successfully
"18:51" core (int)message: "0:0:-1:6:90;"
&&&&&&&&&&bootrom_security_en: 0
"18:51" core (string)message: "0:0:-1:7:ERASING;"
  
```

The bottom window shows the progress table:

	boot	uboot	kernel	rootfs	appfs	
1	ERASING	0%	0%	0%	0%	Stop
2						Lock Level 3 English
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

At the bottom of the interface, there are buttons for: T31LC, SFC NOR, GD25Q127CSIG, CHIP ERASE, NORMAL, and N/A.

4.4. Then wait until all the burning tool's progress bars reach 100% and it's then complete.



The screenshot shows the USBCloner2.5.26 application interface. At the top, a terminal window displays kernel messages from the core (int) component, indicating progress from 19:37 to 19:46. Below the terminal, the main application window shows a progress table with columns for boot, uboot, kernel, rootfs, and appfs. The first row (index 1) shows 100% completion for all components. The interface also includes a 'Stop' button, a 'Lock Level' dropdown menu set to 3, and a language dropdown menu set to English. At the bottom, there are buttons for 'T31LC', 'SFC NOR', 'GD25Q127CSIG', 'CHIP ERASE', 'NORMAL', and 'N/A'.

	boot	uboot	kernel	rootfs	appfs
1	100%	100%	100%	100%	100%
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

5. Revision History

Date	Revision	Description
22, May, 2023	1.0	Initial version