IAC-A5D3x-Kit

Linux System Image Burning Manual

QIYANG INTELLIGNET TECHNOLOGY Co., Ltd

Catalogue

Version Illustration:

Version	Hardware Platform	Description	Date	Revisor
1.0	IAC-A5D3x -Kit	Launched	2014-02-08	yao
2.0	IAC-A5D3x -Kit	Add the image method for burning sama5d36	2014-10-08	wwx

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Preface

This manual mainly introduces how to burn system image to the development board.

Please read *IAC-A5D3x-Kit Linux Linux User Manual* detailedly before using this manual.

According to the bootstrap's storage medium, the development board provides two boot modes : Dataflash boot method and Nandflash boot method.

Difference:
Boot from dataflash, store primary bootstrap and secondary bootstrap into dataflash;
Boot from nandflash, store primary bootstrap and secondary bootstrap into nandflash.
Burn the kernel and file system image into the same position of the nandflash.
According to the suitable boot method and burn procedures to burn.

The default boot method: Dataflash.

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Ⅰ.Preparation

1.1 Boot Method Introduction

This development board provides two boot methods: Boot from dataflash , boot from nandflash . The difference is medium for storing primary and secondary bootstrap: The former be stored in dataflash, the latter be stored in nandflash.

This development board provides three methods by dataflash boot method to burn image; two methods by nandflash boot method to burn image.

1.1.1. Boot From Dataflash

This boot method provides three burning methods: By manual; auto script; SD card.

Through [sam-ba]software, burn the image to the development board by manual or auto script through [usb]connector.

Please set ,as per Chapter 1.2.1 before burning image.

SD card burning, you could achieve automatic burning by SD card, please refer to Chapter 1.2.2 to set before burning.

1.1.2. Boot From Nandflash

This boot method provides two burning methods: By manual and auto script.

All of them are by [sam-ba]software to burn image into nandflash through [usb] connector. Please refer to Chapter 1.2.1 to set before burning.

1.2. Set

According to different burning methods, the preparation are different:
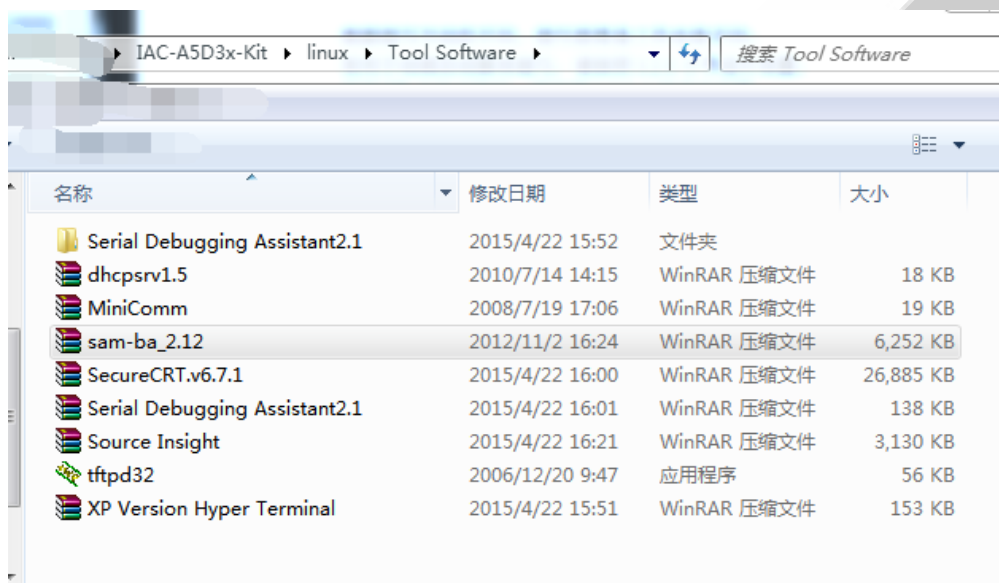
By manual or auto script to burn , please refer to Chapter 1.2.1 to set;

Use SD card to do automatic burning, please refer to Chapter 1.2.2 to set.

1.2.1.Preparation By USB Burning

The following operation procedures are all executed in windows xp, if using windows 7 to burn, the operation method is same. We are using the [sam-ba_2.12.rar]in CD for current burning use. In order to burn smoothly, please do not use the other version [sam-ba] tool.
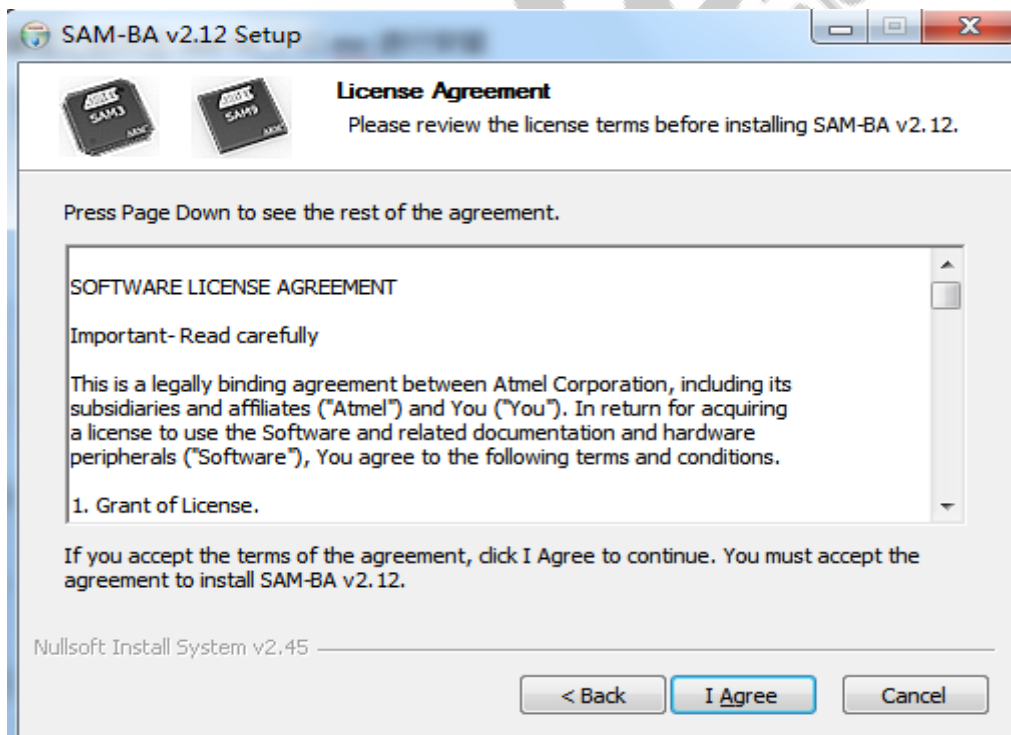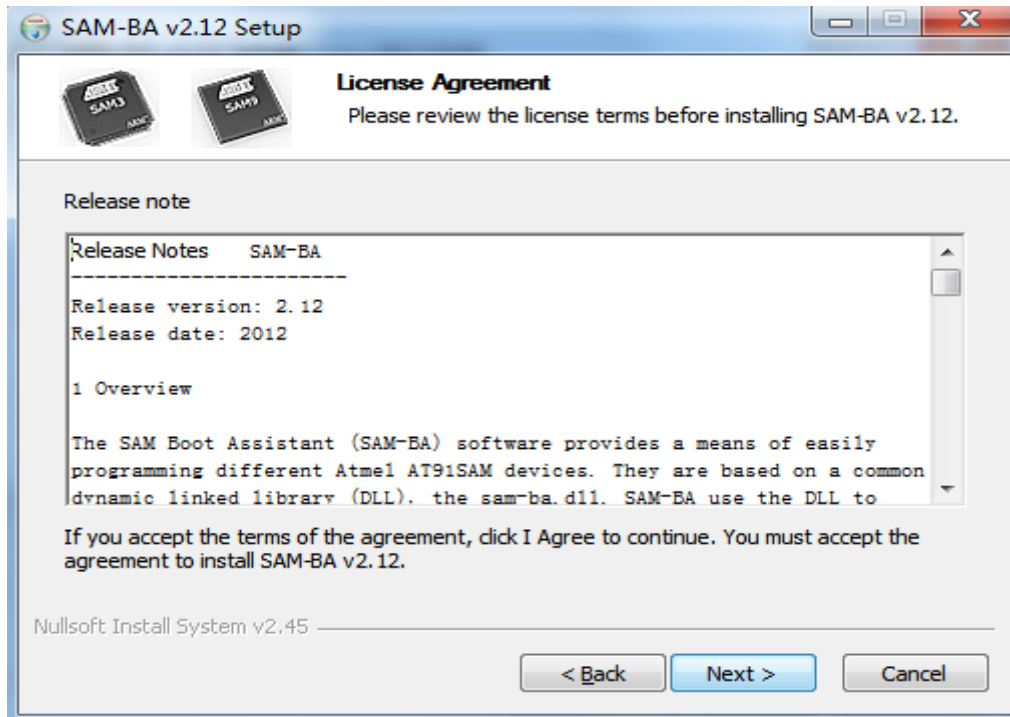
Install[samba-2.12].

名称	修改日期	类型	大小
Serial Debugging Assistant2.1	2015/4/22 15:52	文件夹	
dhcpsrv1.5	2010/7/14 14:15	WinRAR 压缩文件	18 KB
MiniComm	2008/7/19 17:06	WinRAR 压缩文件	19 KB
sam-ba_2.12	2012/11/2 16:24	WinRAR 压缩文件	6,252 KB
SecureCRT.v6.7.1	2015/4/22 16:00	WinRAR 压缩文件	26,885 KB
Serial Debugging Assistant2.1	2015/4/22 16:01	WinRAR 压缩文件	138 KB
Source Insight	2015/4/22 16:21	WinRAR 压缩文件	3,130 KB
tftpd32	2006/12/20 9:47	应用程序	56 KB
XP Version Hyper Terminal	2015/4/22 15:51	WinRAR 压缩文件	153 KB

IAC-A5D3x-Kit ▸ linux ▸ Tool Software ▸   搜索 Tool Software

Extract, then double-click [sam-ba_2.12.exe] to install.

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Click[Next].

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Click [I Agree].

Click[Next].

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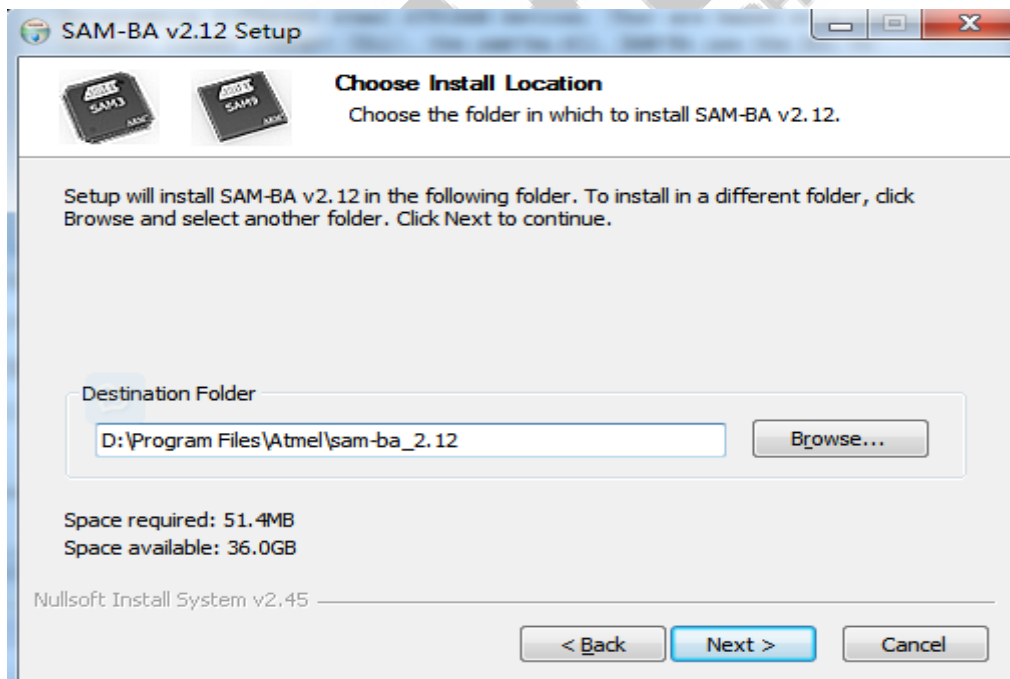
Select installation path, click [Next].
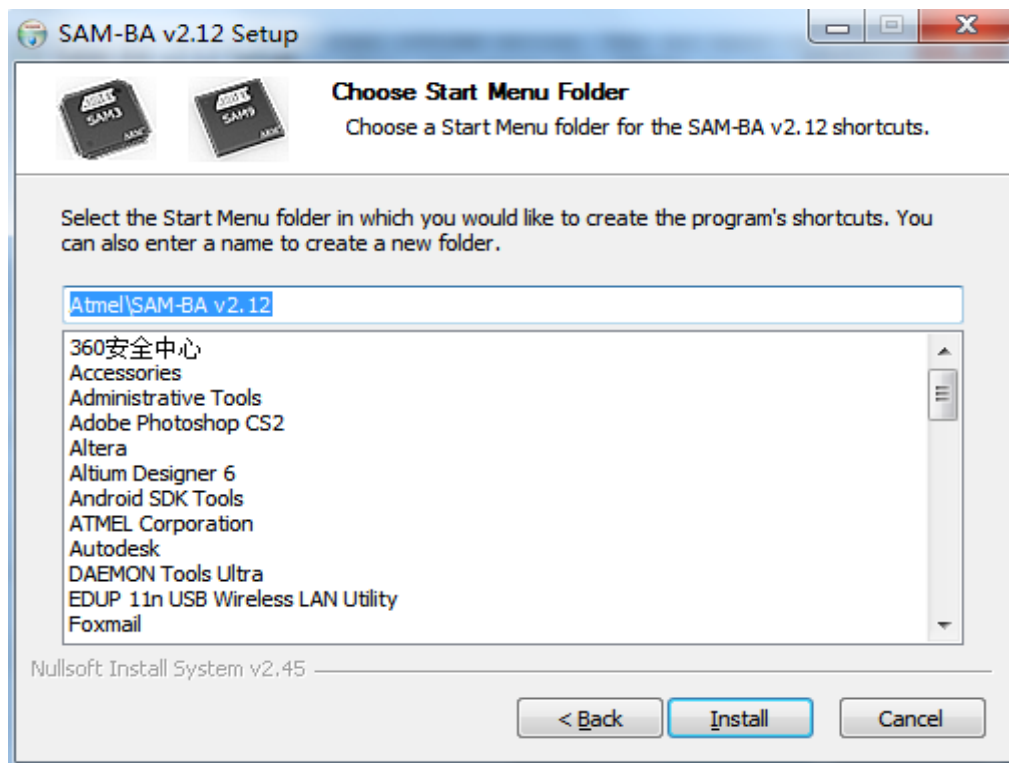
Click [Install], start to install.
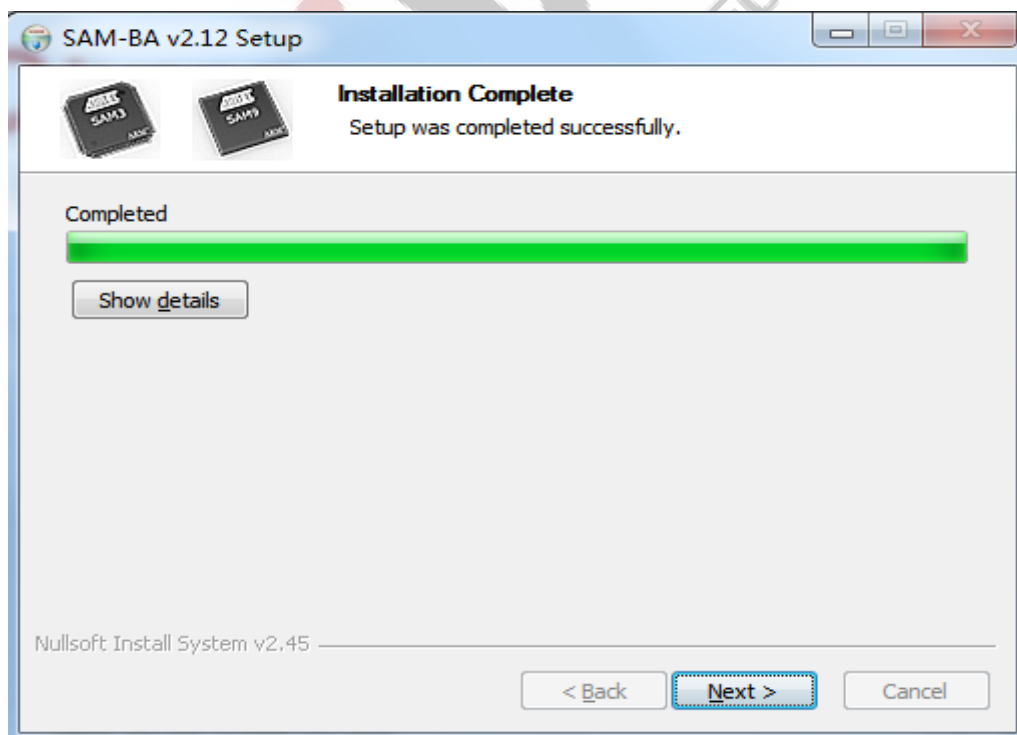
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Finished , click [Next].

Click [Next].

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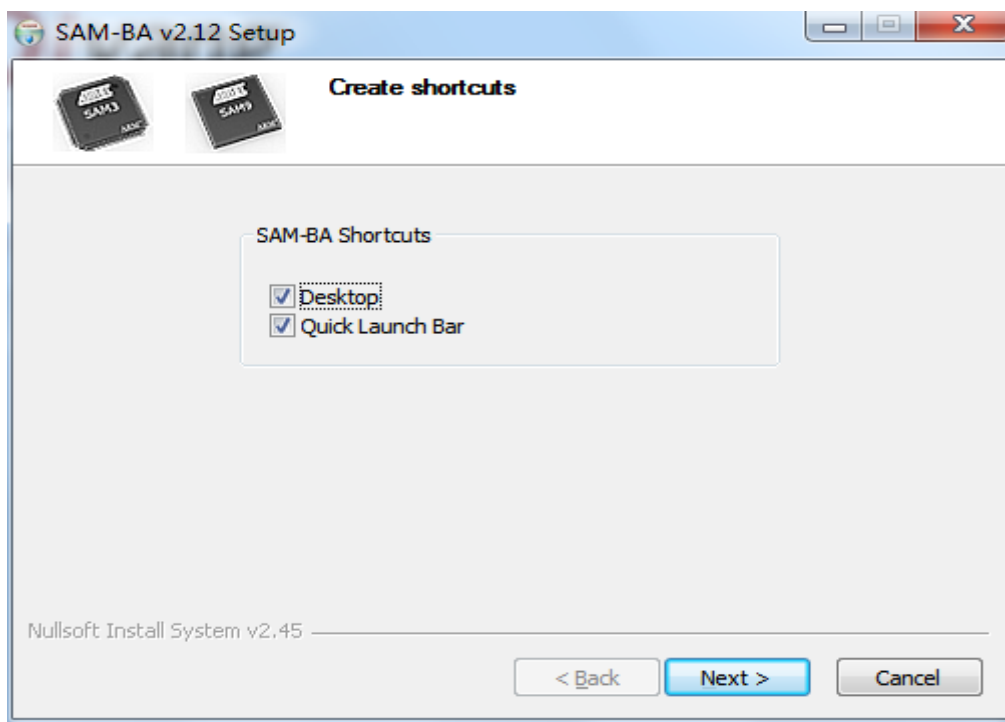
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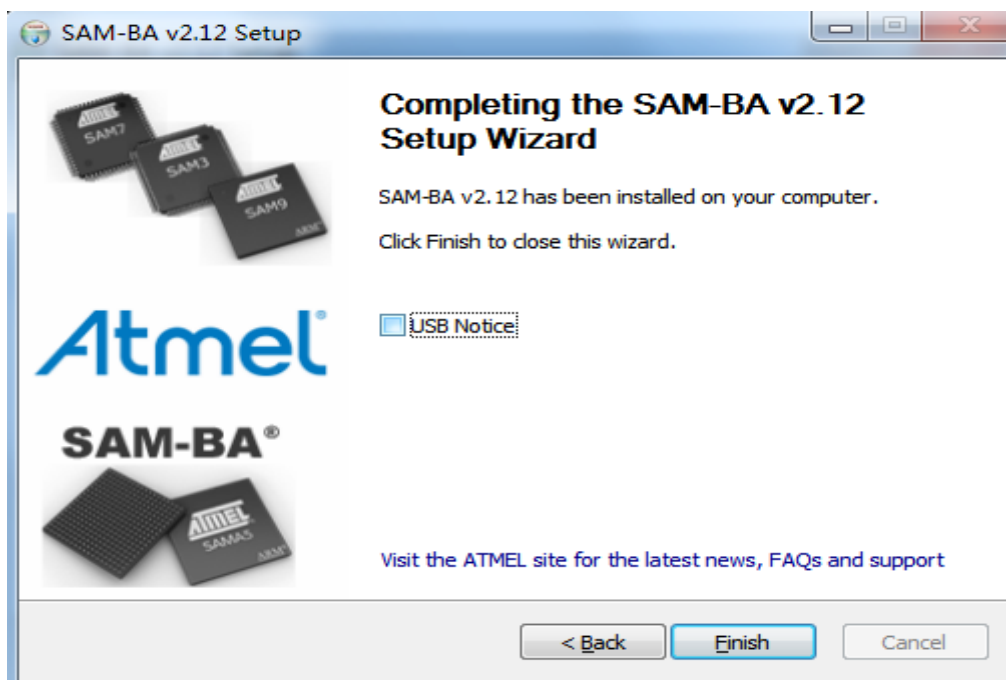
Here ,remove [USB Notice] option, click [finish], finish installation. If there is a hint to reboot computer, please reboot, then install.

Remove [J1] jumper cap from Core Board.

Connect COM on PC to debug port (J3) on IAC-A5D3x-Kit by cross serial wire. Open serial debug terminal on PC, set parameters: Baud Rate:[115200];Data Bit:[8]; Stop Bit:[1]; Parity Bit: [None]; Data Flow Control: [None].

Connect USB port on PC to USB port (J14) on IAC-A5D3x-KIT development board by USB cable.

Power on IAC-A5D3x-Kit development board , open the device management on computer. If the computer has recognized the board, you could find out the device on the device management port.
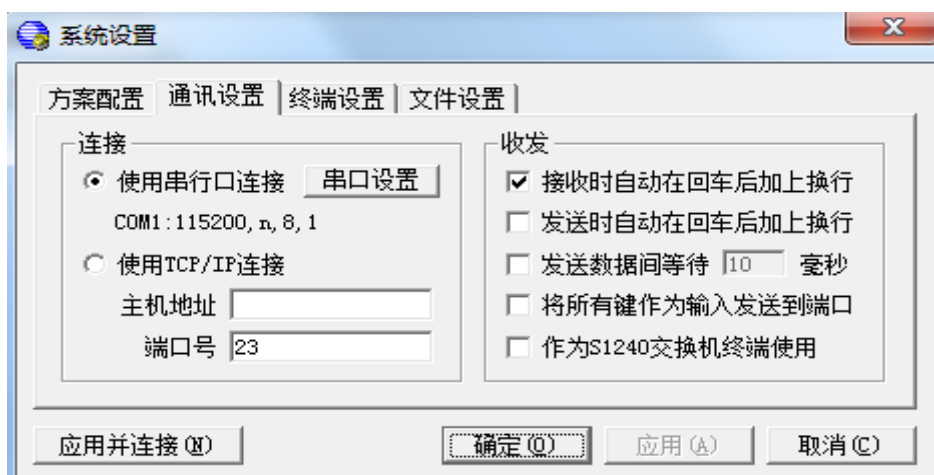
As shown, the red is the COM6, the actual user's terminal may be inconformity with this end.
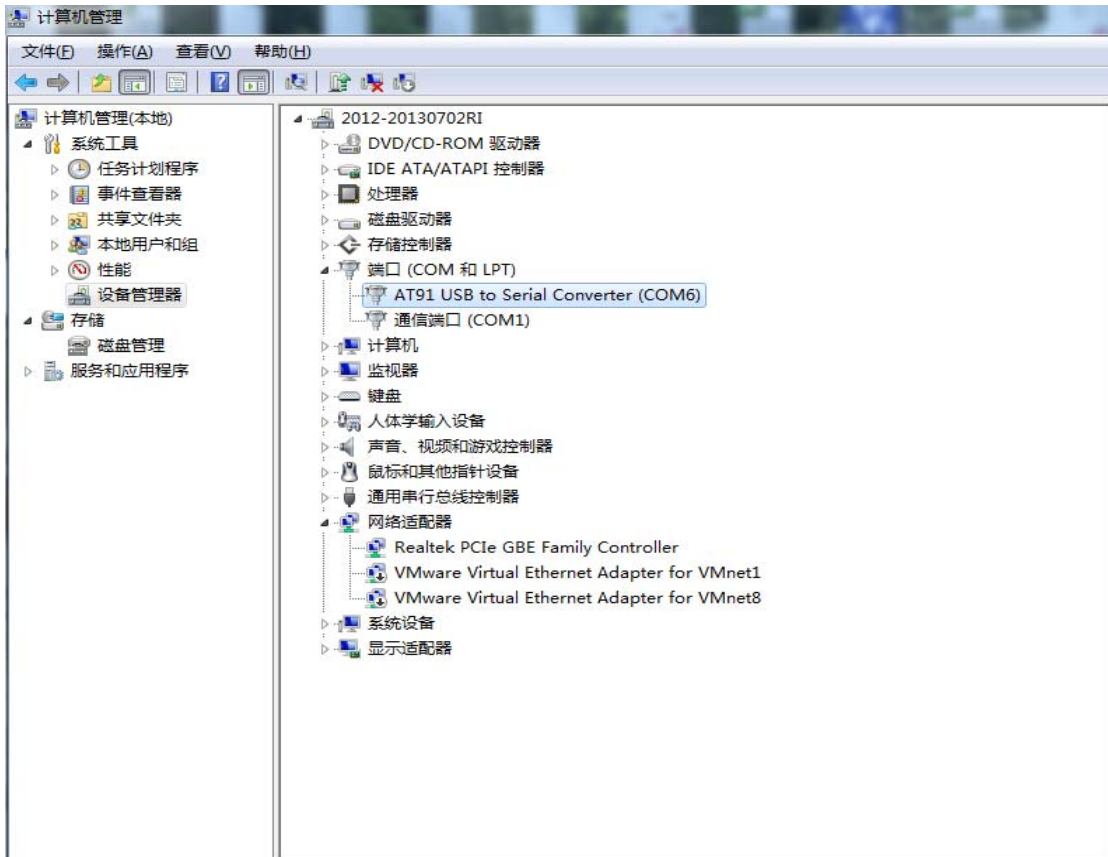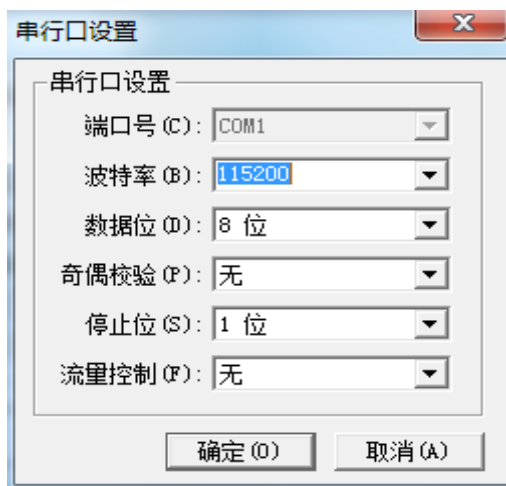
Open terminal program [MiniComm.exe], click [file-system set].

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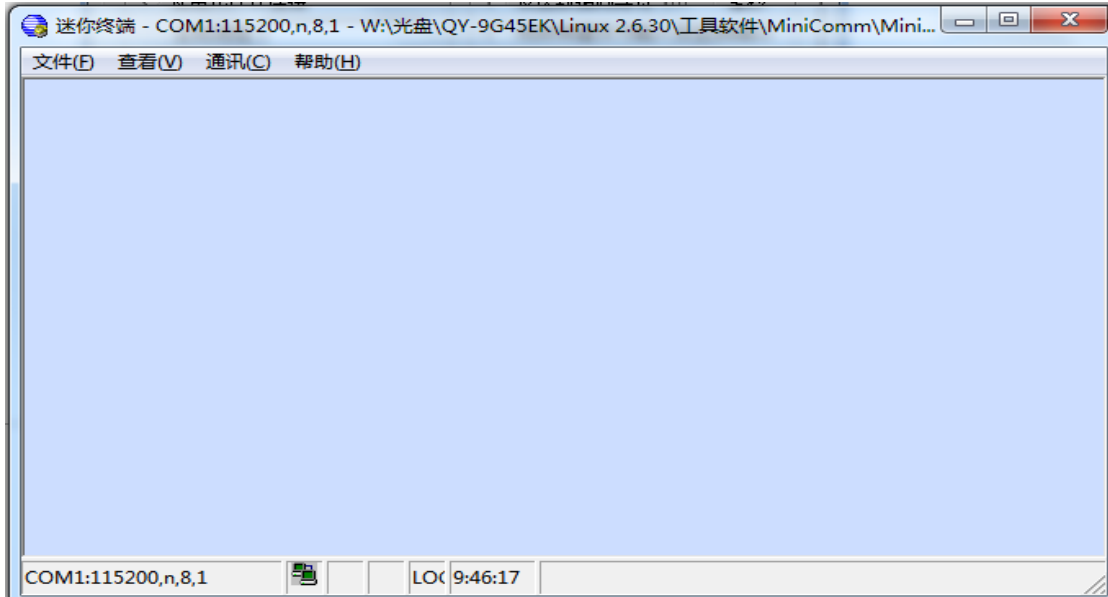
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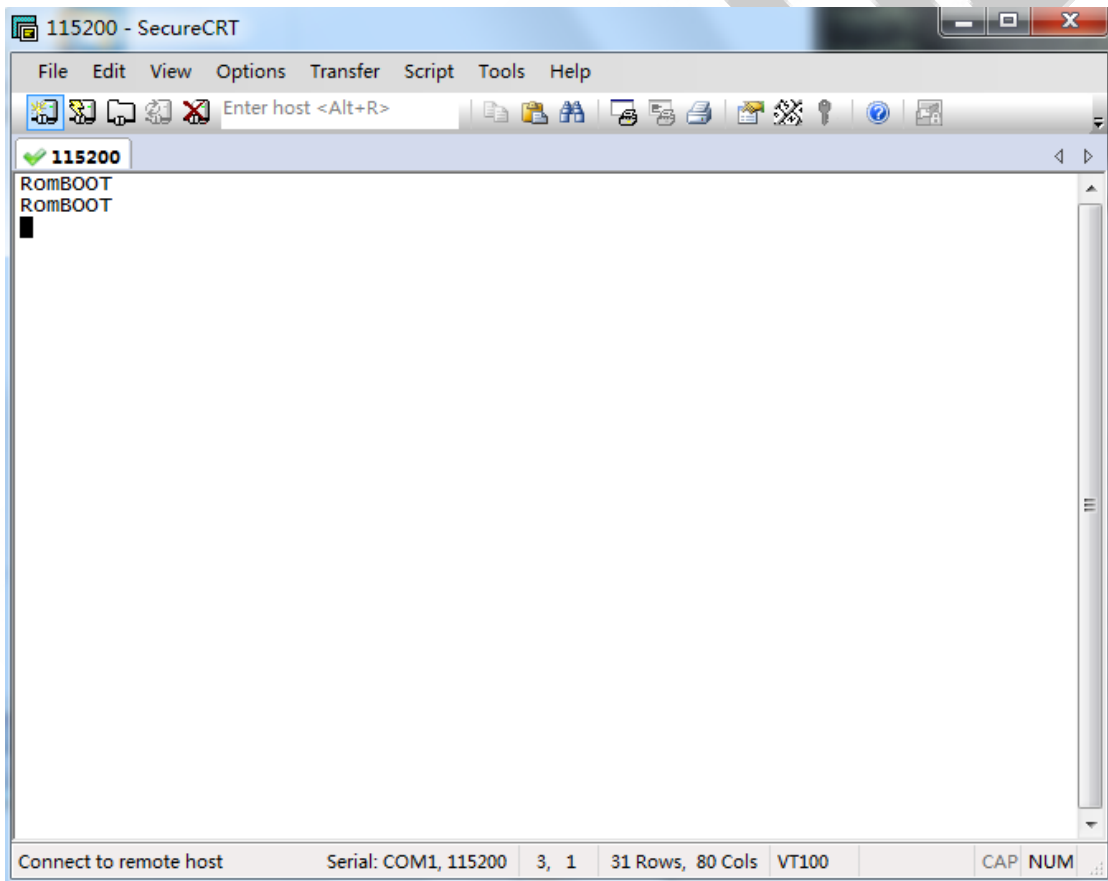Click[Communication Setting ----Serial Setting].

Set Baud Rate: [115200], Data Bit:[8],Parity Bit: [None] ,Stop Bit: [1]. Flow control: [None].

After setting, click [Confirm], then click [Apply and Connect], then click [Confirm].

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The debug UART will print the following information:

Now, open [SAM-BA V2.12.exe], it will recognize the [usbserial\com6] device, it means the
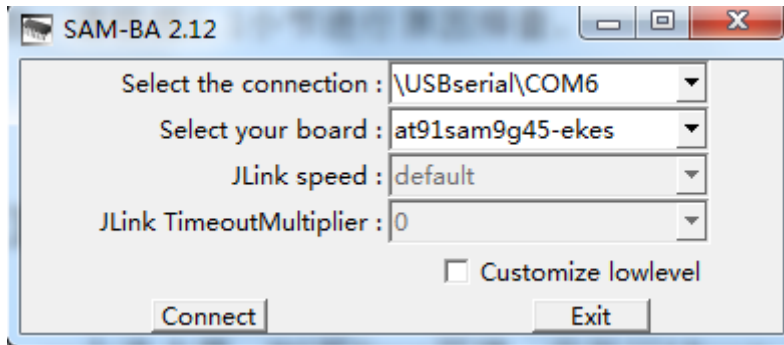
PC has recognized the development board.

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If PC could not recognize the development board, please check the issues according to

Chapter 5.1.

1.2.2. SD Card Burning Preparation

One SD card, one SD card reader, Linux environment in PC. Here ,we take [ubuntu 12.04] as

an example. If without it, please refer to Ubuntu Installation for Virtual Machine Manual to set up.

Log on by non [root] user. If using [root] account, you do not need to use[sudo]command.

By SD card reader, insert SD card into PC, then it will be recognized. If it could be recognized

on PC, click USB icon in Virtual Machine. Select [connect].

After connecting, it will generate the relevant device node [/dev/sdx]in [Ubuntu 12.04

/dev]directory. Including ,[x] means actual circumstance, it could be [a,b…]. If there are many

partitions in SD card, it will generate [sdx1,sdx2,…] in [/dev]. Here you could use [df]command

to search.

```
st@st-virtual-machine:~/work/image$ df
文件系统            1K-块      已用      可用 已用% 挂载点
/dev/sda1       40803120 10222888 28535560   27% /
udev              505116        4   505112    1% /dev
tmpfs             204964     1292   203672    1% /run
none                5120        0     5120    0% /run/lock
none              512404       80   512324    1% /run/shm
/dev/sdb1        3864656    77448  3787208    3% /media/31F2-636B
st@st-virtual-machine:~/work/image$
```

The above picture indicates that the device node is [/dev/sdb1] which has inserted   the SD

card. The actual circumstance is accordance with the search result.

In [ubuntu 12.04], please use [dd] command to clear MBR information and partition

information.

$ sudo dd if=/dev/zero of=/dev/sdb1 bs=10M count=1

Use [fdisk] command to create boot partition, according to hint information, input [p] to show
partition information. Then input [n] to create a new partition and set partition size. Then input [t]
to assign partition format [FAT16], after finish setting,   you could input [p] to check the current
setting partition list. After setting correct, you could input [w], write partition information into the
SD card, or input [q] to give up the current setting then exit.

$ sudo fdisk /dev/sdb1
Command (m for help): p
Disk /dev/sdb1: 2002 MB, 2002780160 bytes
11 heads, 10 sectors/track, 35560 cylinders
Units = cylinders of 110 * 512 = 56320 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

   Device Boot   Start   End   Blocks   Id   System
Command (m for help): n
Command action
    e   extended
    p   primary partition (1-4)
p
Partition number (1-4): **1**
First cylinder (1-35560, default 1):
Using default value 1
Last cylinder, +cylinders or +size{K,M,G} (1-35560, default 35560): **+64M**

Command (m for help): t

Selected partition 1

Hex code (type L to list codes): **6**

Changed system type of partition 1 to 6 (FAT16)

Command (m for help): p

Device Boot	Start	End	Blocks	Id	System
/dev/sdb1	1	1193	65610	6	FAT16

Command (m for help): w

The partition table has been altered!

Calling ioctl() to re-read partition table.

Format partition, and mount 。

$ sudo umount /dev/sdb1

$ sudo mkfs.msdos /dev/sdb1

$ sudo mount -t vfat /dev/sdb1 /mnt

CD path: CD\Image file\dataflash boot, copy all images to [ubuntu 12.04]directory. Here, we take[~/work/image] as an example. Then use the following command to copy the image and burning tool to [/mnt]directory.

$ sudo cp –rf ~/work/image /mnt

$ ls /mnt

```
st@st-virtual-machine:~/work/image$ sudo cp * /mnt
st@st-virtual-machine:~/work/image$ ls /mnt/
at91sama5d3xek-dataflashboot-uboot-3.5.4.bin    logfile.log
at91sama5d3xek-nandflashboot-uboot-3.5.4.bin    rootfs.ubi
boot.bin                                        sama5d34ek.dtb
env.txt                                         TempWmicBatchFile.bat
flash_tool.bin                                  u-boot.bin
iac-a5d3x-v2.x_linux_dataflash_autoflash.bat    uImage
iac-a5d3x-v2.x_linux_dataflash.tcl
st@st-virtual-machine:~/work/image$ sduo umount /mnt
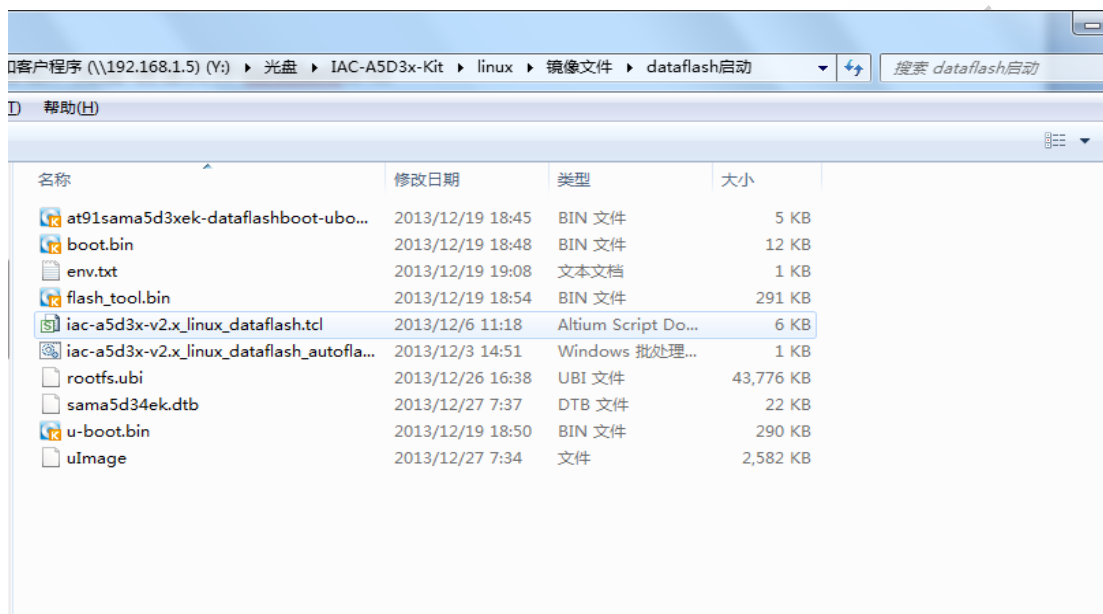```

Finish copying, then umount.

# sudo umount /mnt

Pull out SD card, then insert it into SD slot MCI0(J16) on development board. If inset it into J17, you could not boot from SD card.

## 1.3. Image Illustration

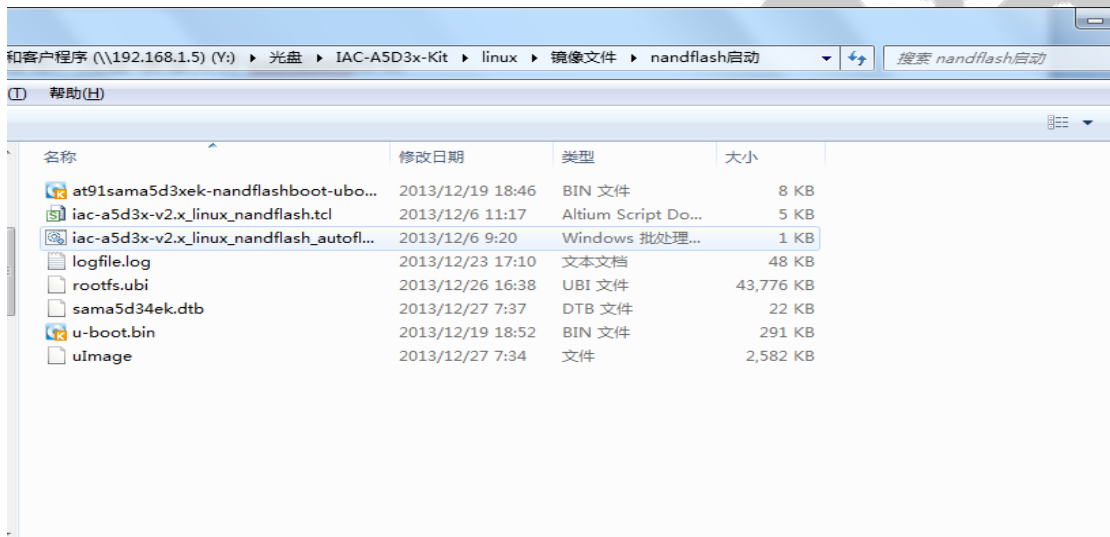### 1.3.1. Dataflash Boot

Existing Path: CD\Image File\datafalsh boot



Under burning Image and file explanation:

| Image Name | Image Meaning | Target Address | Explanation |
|---|---|---|---|
| at91sama5d3xek-dataflashboot-uboot-3.5.4.bin | Primary Bootstrap | 0x0 | None |
| u-boot.bin | Secondary Boostrap | 0x8400 | None |
| sama5d34ek.dtb | Device Tree | 0x180000 | None |
| uImage.bin | Kernel | 0x200000 | None |
| rootfs.ubi | File System | 0x80000 | None |
| iac-a5d3x-v2.x_linux_dataflash_autoflash.bat | Auto-burn [bat]script | None | Only by automatic burning. |
| iac-a5d3x-v2.x_linux_dataflash.tcl | Burn [tcl] script | None | Only by auto- burning. |

| boot.bin | SD card bootstrap | | Only by SD Card burning. |
|---|---|---|---|
| flash_tool.bin | SD card burning tool | None | Only by SD Card burning |
| env.txt | SD card to burn environment variables | None | Only by SD Card burning |

## 1.3.2. Nandflash Boot

Existing Path: CD\Image File\Nandflash Boot



Under burning Image and file explanation:

| Image Name | Image Meaning | Target Address | Explanation |
|---|---|---|---|
| at91sama5d3xek-nandflashboot-uboot-3.5.4.bin | Primary Bootstrap | 0x0 | None |
| u-boot.bin | Secondary Bootstrap | 0x4000 | None |
| sama5d34ek.dtb | Device Tree | 0x180000 | None |
| uImage.bin | Kernel | 0x200000 | None |
| rootfs.ubi | File System | 0x80000 | None |

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| iac-a5d3x-v2.x_linux_nandflash_autoflash.bat | Auto-burn [bat]script. | None | Only by auto-burning. |
|---|---|---|---|
| iac-a5d3x-v2.x_linux_nandflash.tcl | Image burning command ,[tcl]script | None | Only by auto-burning. |

# Ⅱ.Burn Image From Dataflash

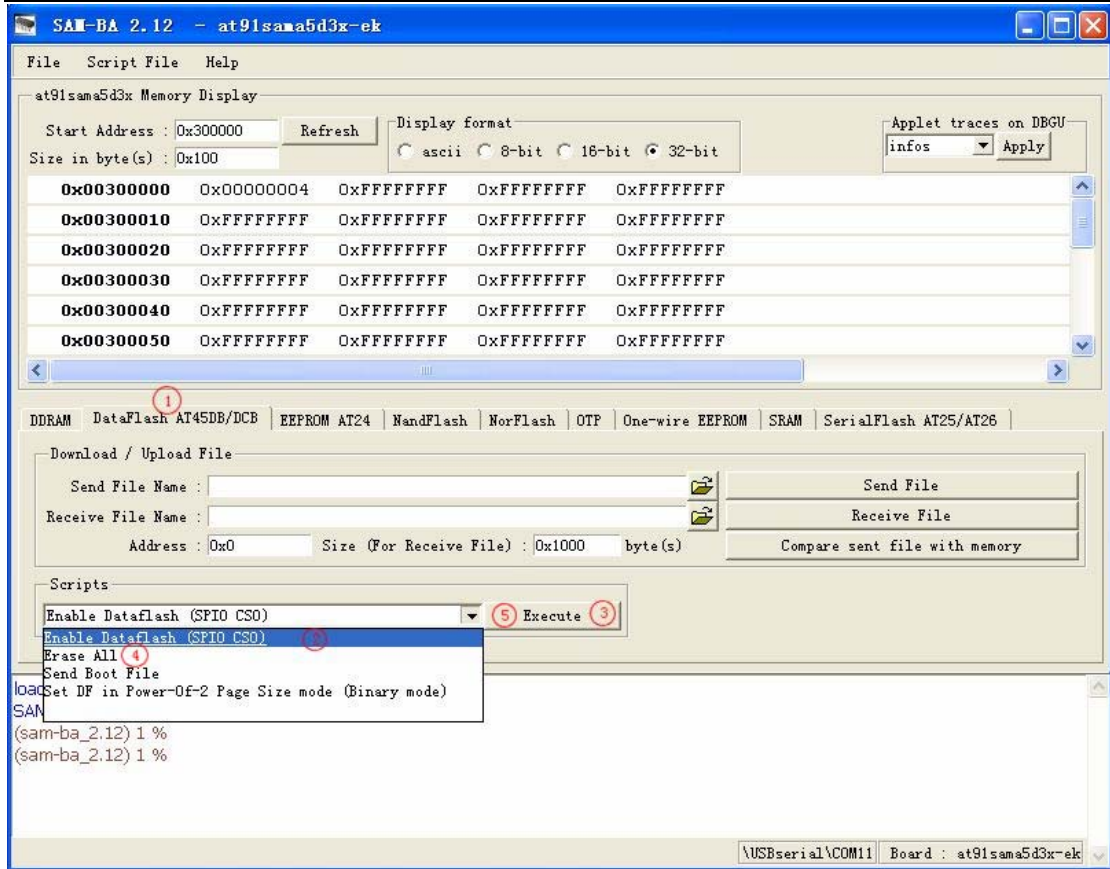## 2.1. Burn Procedure By Manual

### 2.1.1. Initialize Dataflash

After the PC recognizes the board, click [SAM-BA V2.12]software. If it appears [\USBserial\COM11] when connecting to the USB port, it means USB connection is ok. Please refer to the Quarter 4 to check the problems.

Reconnect to the J1 jumper cap on core board;

After the mainboard selected the [at91sama5d3x-ek], click [Connect] button to enter into the main interface.
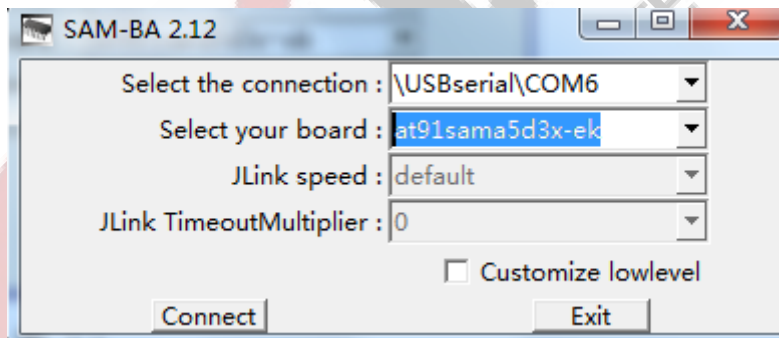


Open the main interface, on the basis of the procedures in red color to enable and erase [dataflash].

If it shows error as the following picture, please confirm J1 jumper cap connected.

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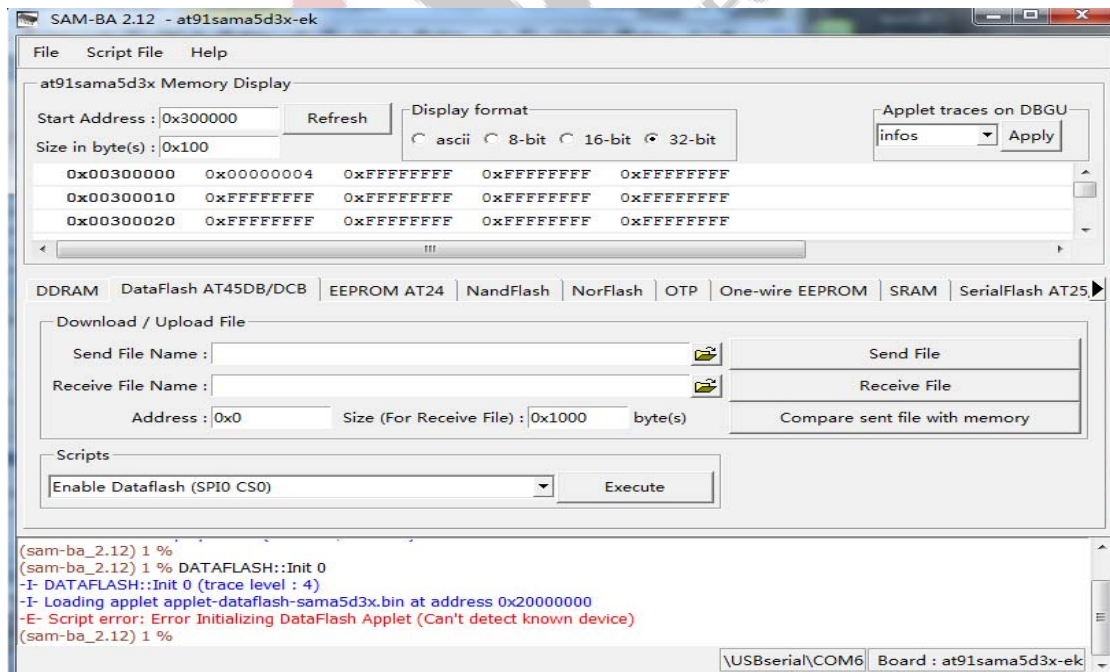
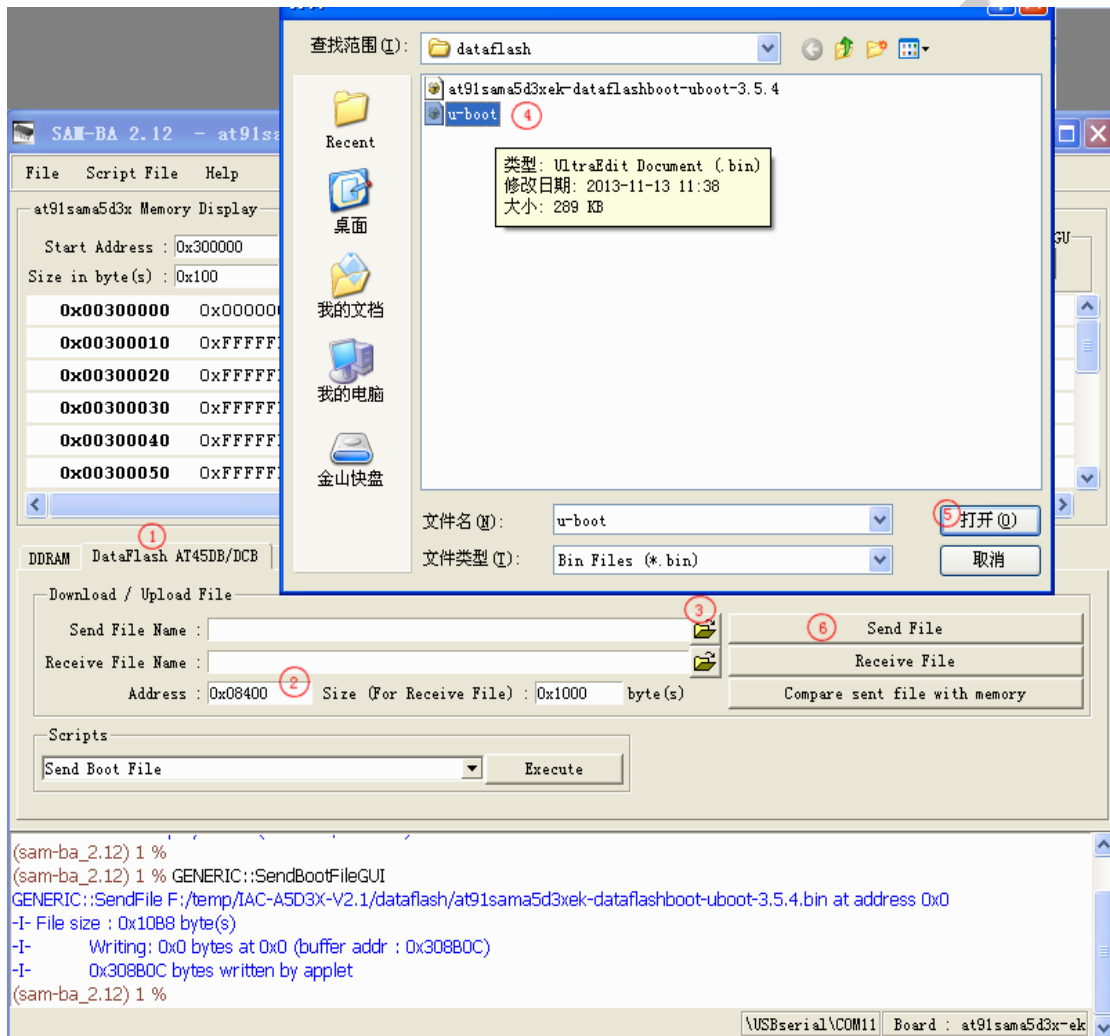## 2.1.2. Burn Primary Boot Image

Execute the following procedures, please find out the directory which the primary

bootstrap image locates in the interface, select

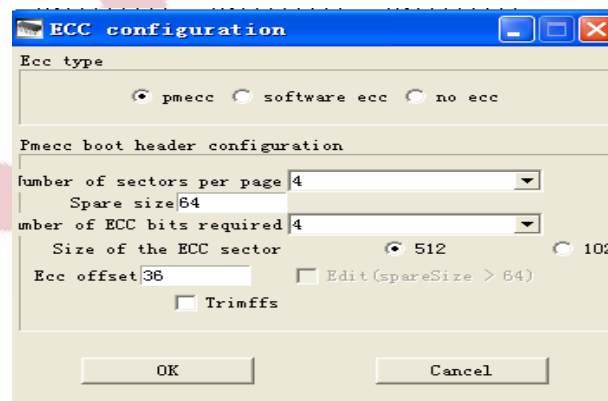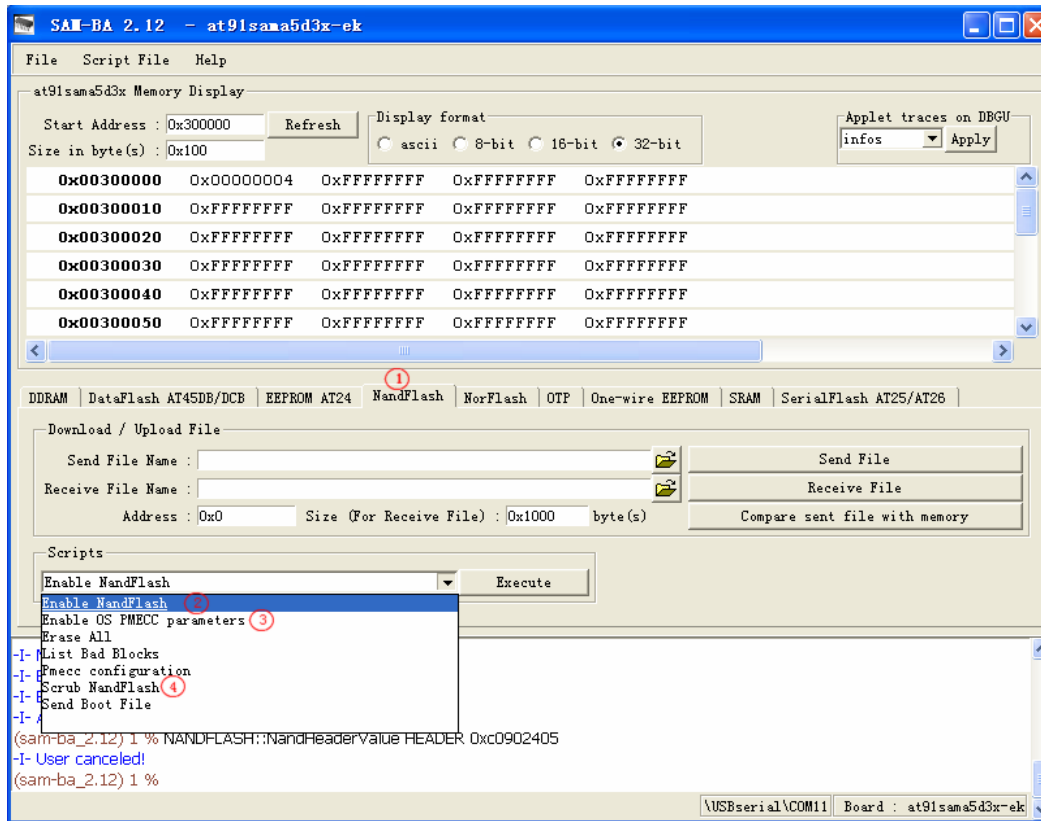[at91sama5d3xek-dataflashboot-uboot-3.5.4.bin], then burn.
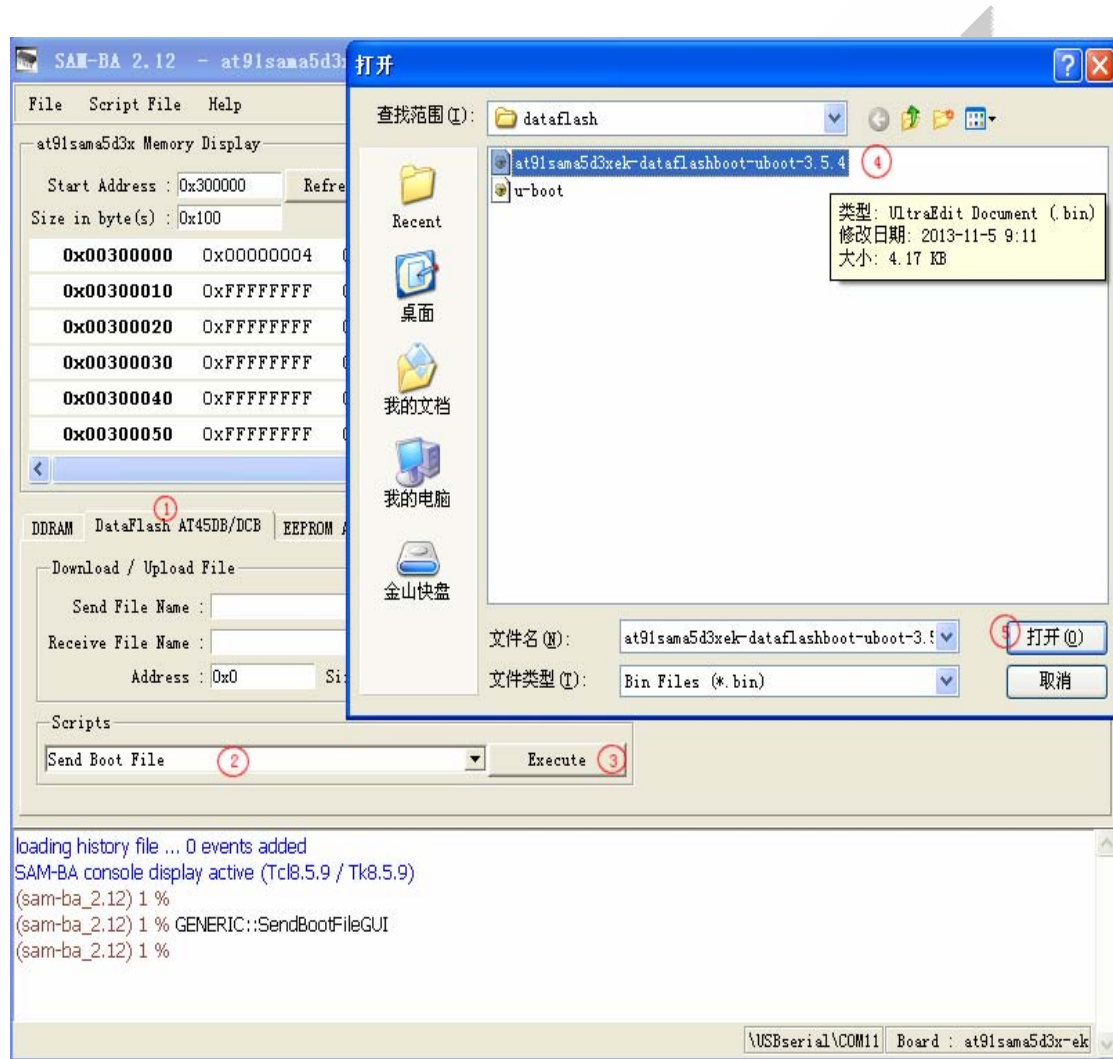
## 2.1.3. Burn Secondary Bootstrap

After finish burning, execute the following procedures, fill in the secondary bootstrap

address[0x8400] which is used for burning secondary bootstrap. Open the location where is

[u-boot.bin] locates, select [u-boot.bin]image, then burn it into dataflash.



## 2.1.4. Initialize Nanaflash

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Execute as sequence in red color, when executing the procedure③, it will pop up ECC Configuration Window as shown in Picture 2.6. Please make sure that you will configure ECC according to this picture. When finishing configuration, click [OK], then continue to execute the procedure ④，then initialization is finished.





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## 2.1.5. Burn Device Tree Image

As the following procedure sequence, fill in burning address: [0x180000], please find out the directory where the [sama5d34ek.dtb]image locates, then open it to burn,
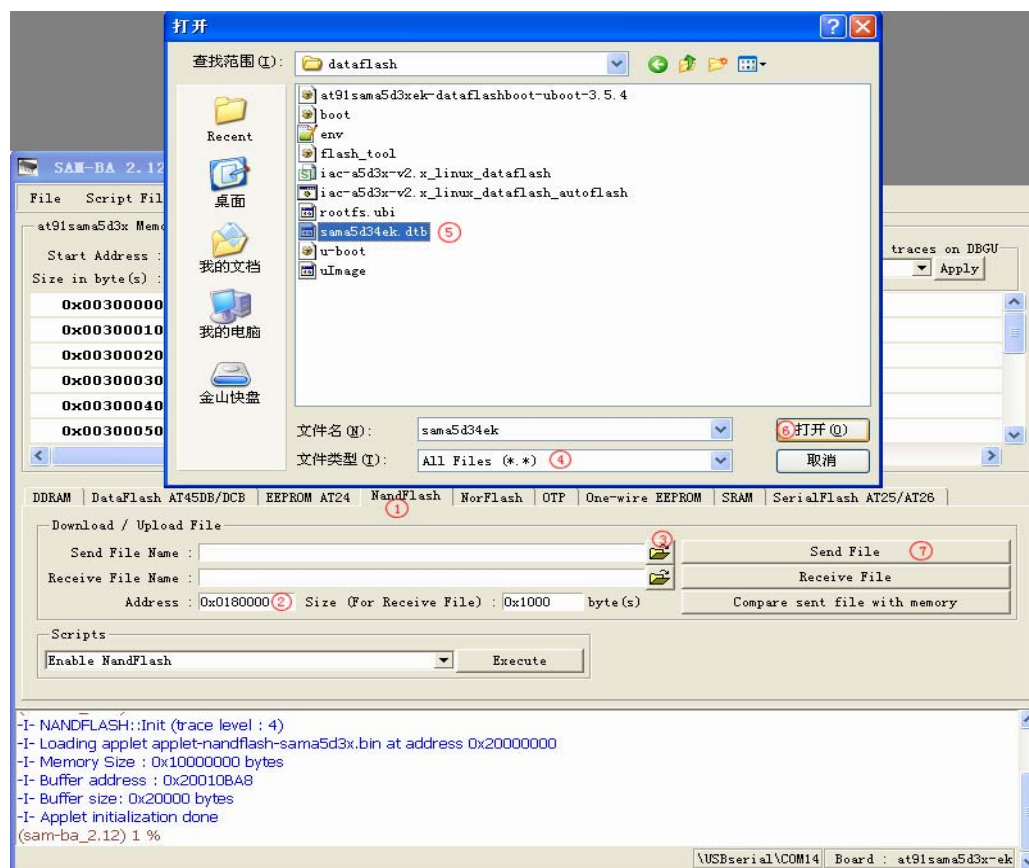


## 2.1.6. Burn Kernel Image

According to the procedures in red color, fill in [0x200000] in the burning address for [uImage.bin], then find out the image location in the opened directory, select then to burn.
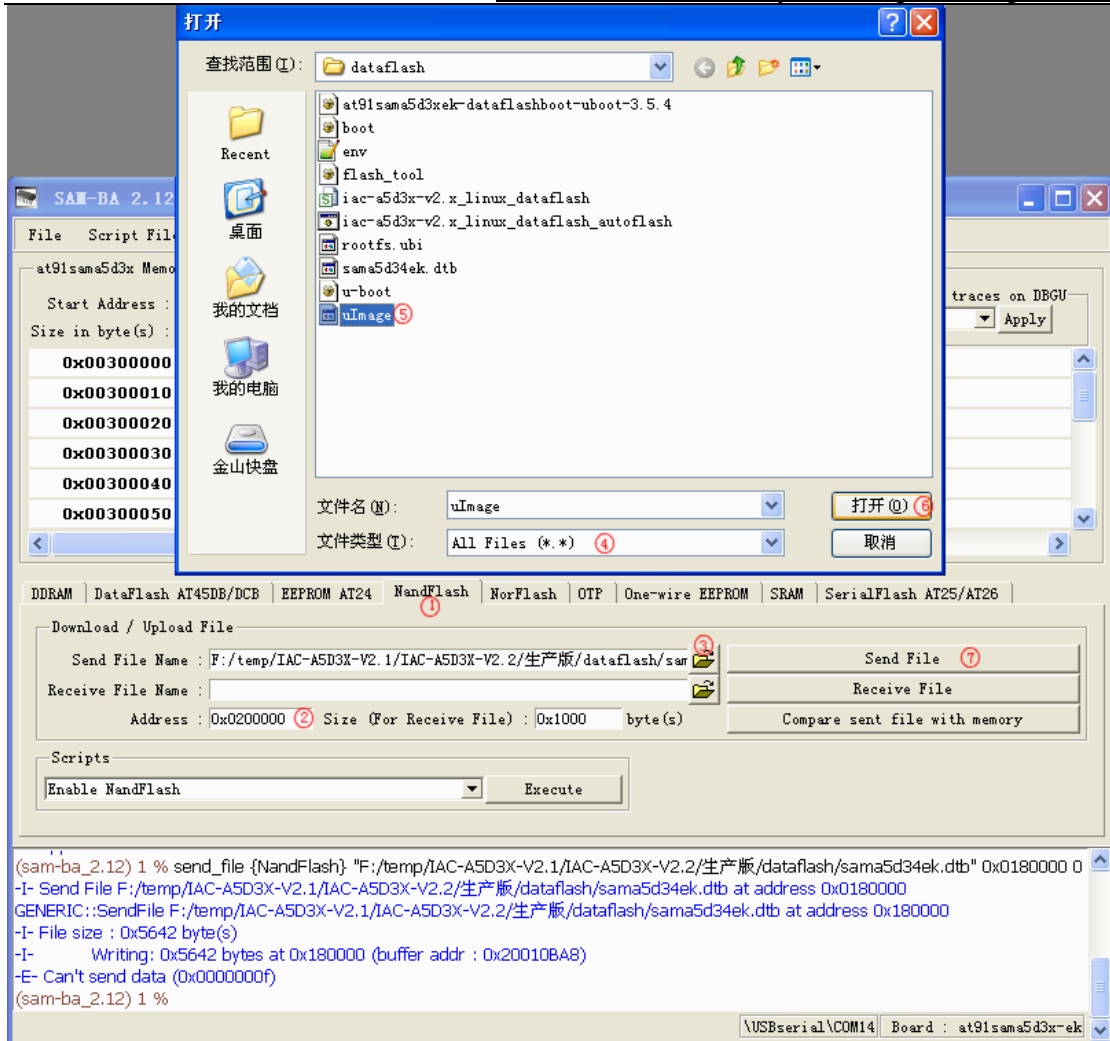
## 2.1.7. Burn File System Image

ECC configuration in file system is different with the previous one. It needs reconfiguration. Before burning file system image, we need to configure ECC as the following parameters. Execute procedure③, it will pop-up ECC configuration window.
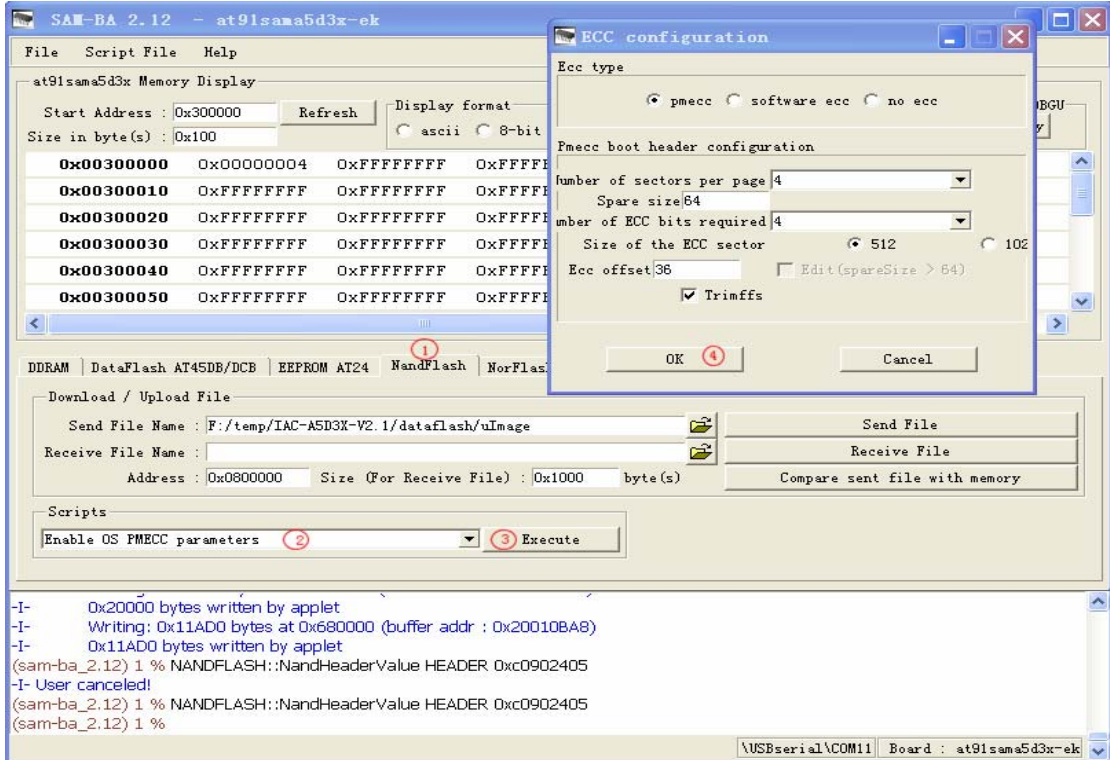
After configuring Nandflash ECC, according to the procedures in red color, fill in the address [0x800000] for [rootfs.ubi], open the location where the image locates, select image, then burn.
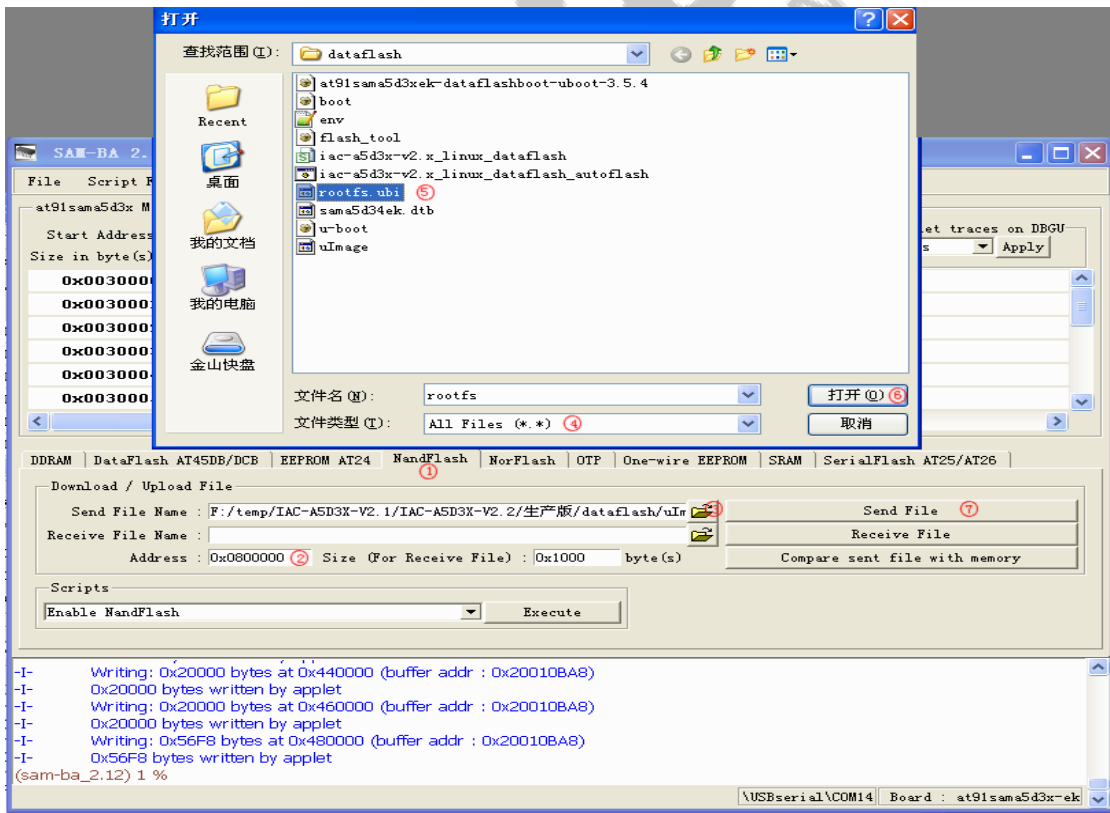
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## 2.1.8. Finish Burning

It needs time to burn file system. Please be patient.

After finishing, please close [SAM-BA], pull out USB cable, power on the development board again. You will see the printed information when the image is running in the debug UART.
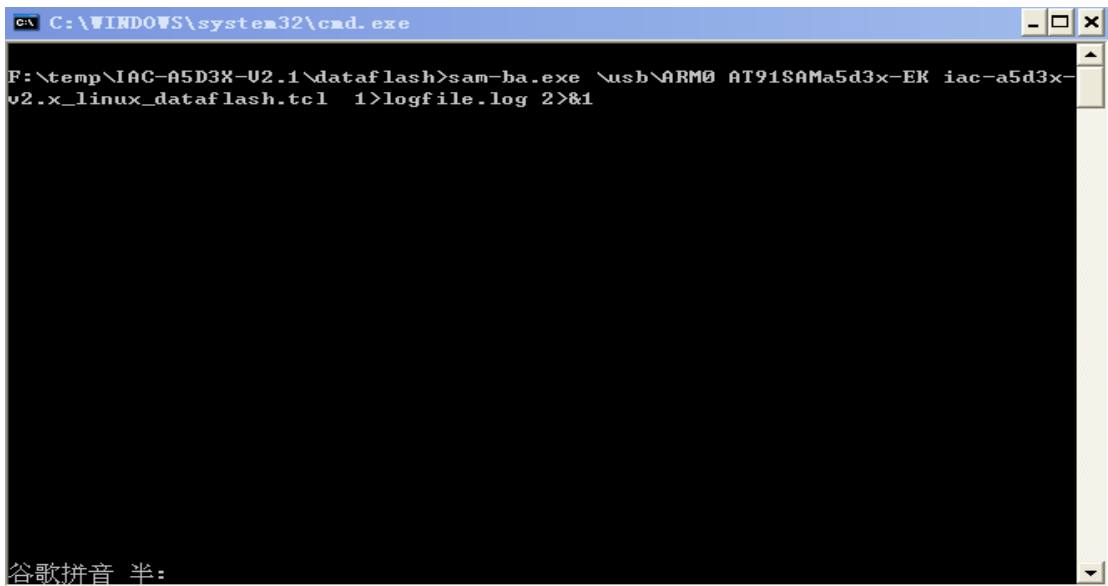
## 2.2. Auto Burning Procedure

Before burning image, disconnect jumper cap [J1] at first. Please make sure that the current development board has been connected with the PC and it has been recognized in PC. Then re-connect the jumper cap [J1].

There are two scripts in dataflash boot image directory in CD. Including, [iac-a5d3x-v2.x_linux_dataflash_autoflash.bat] is [bat]script. It call [samba]program to analyze [tcl]script;[ iac-a5d3x-v2.x_linux_dataflash.tcl] achieve the specific image burning command, as shown:
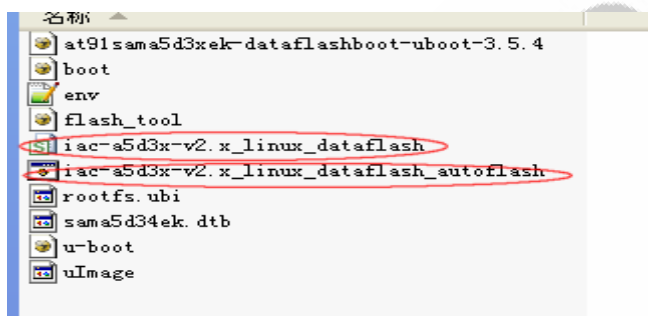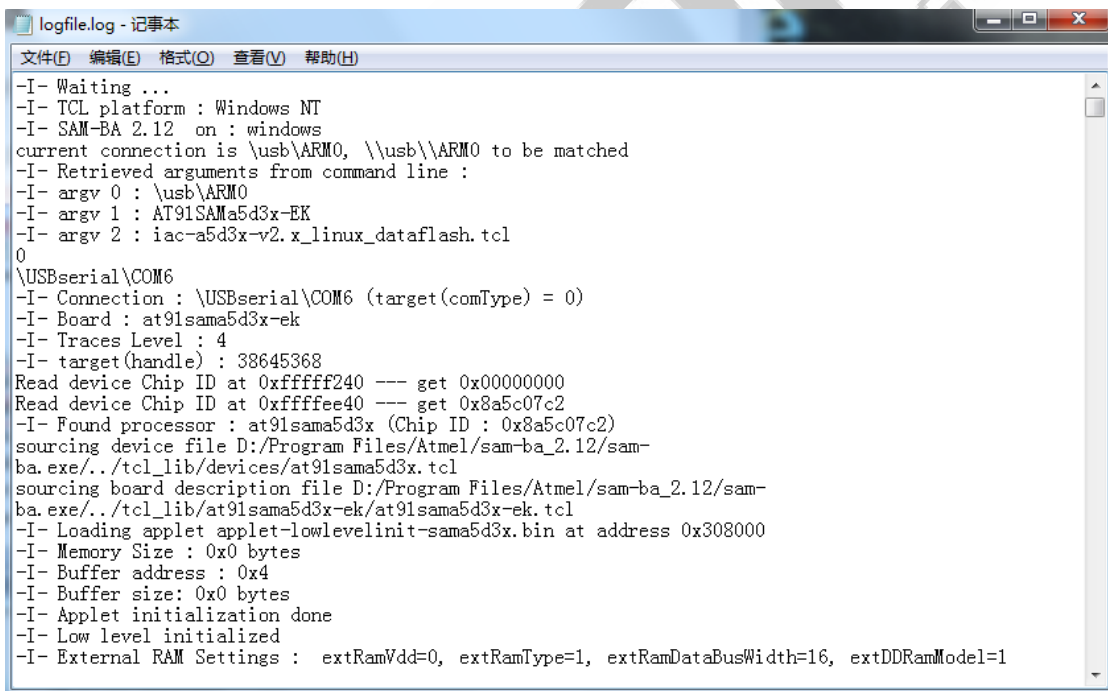


Double click [iac-a5d3x-v2.x_linux_dataflash_autoflash.bat] script, it shows the following

picture. It means

[at91sama5d3xek-dataflashboot-uboot-3.5.4.bin][u-boot.bin],[sama5d34ek.dtb],[uImage.bin],[root

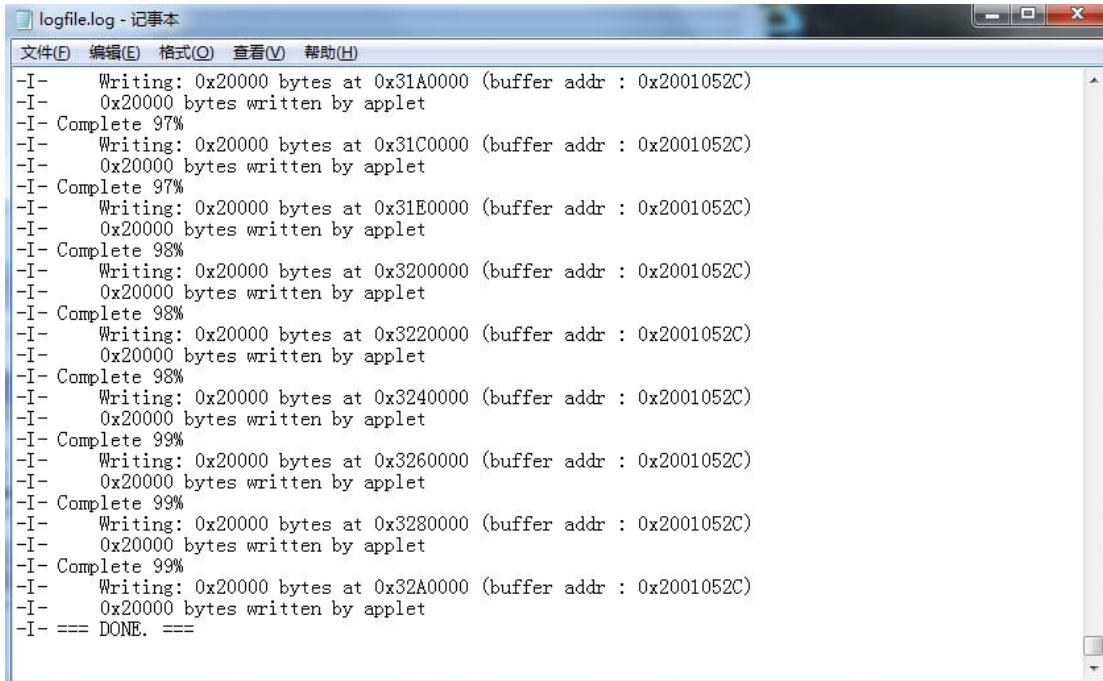fs.ubi] will be burnt into the development board in turn.

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It needs 3 minutes for burning standard configuration image. Be patient.

After burning, it will popup [logfile] file, as shown.

You could check whether the burning process is successful by this file.
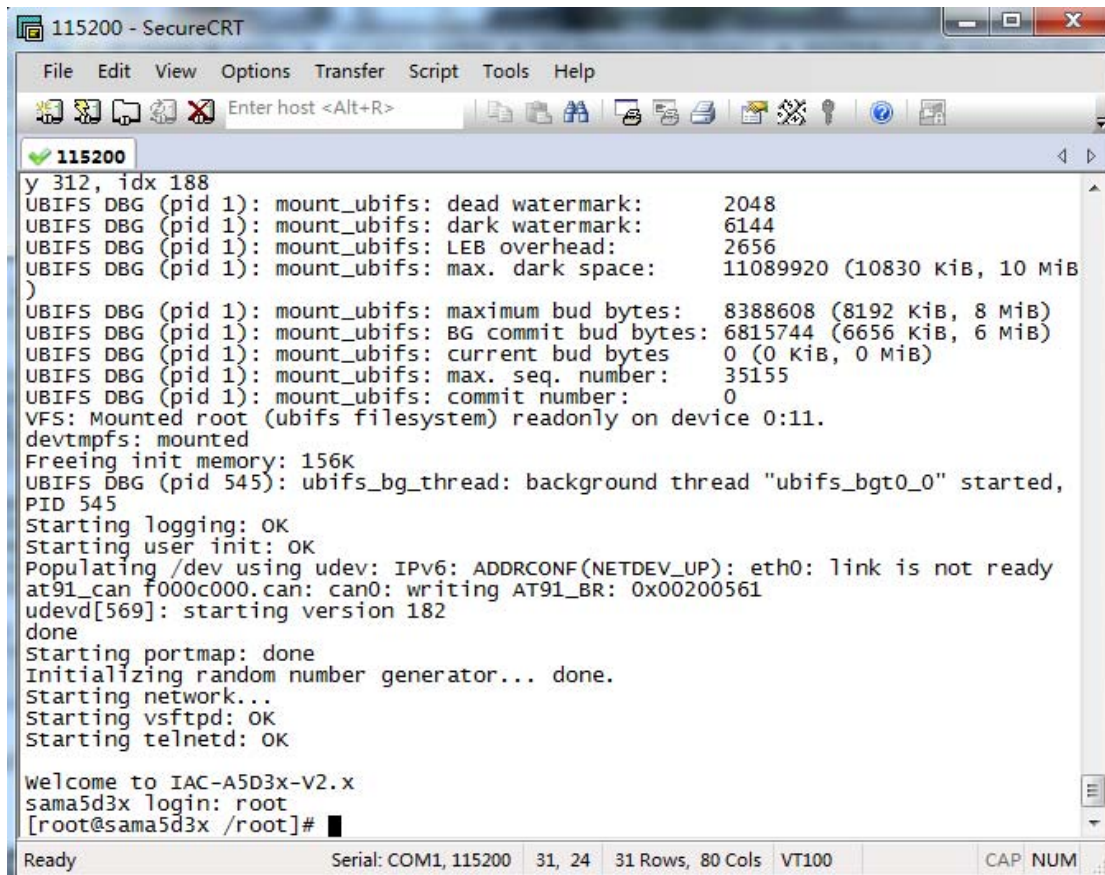
At this moment, the image burning is finished. Please pull out the USB cable. Then power on again, you will find out the printed information when the images are in the boot process from the debug UART.

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When it is in [sama5d3x login], it means that the system has been burnt correctly. Input

[root] ,then enter into file system.

## 2.3. SD Card Burning Procedure

If it is the first time to burn the image, or there is no bootstrap in dataflash. You just need to insert the SD card to J20. Connect J1 jumper cap, power on, then the system will read data from the SD card, and burn the boot image from the dataflash into the relevant medium. Finish burning, pull out the SD card, reboot the development board, the system will boot from dataflash, then enter into the file system.

## Ⅲ. Nandflash To Burn Image

## 3.1. Procedures For Burning By Manual

## 3.1.1. Initialize Nandflash

After the PC recognizes the development board, click [SAM-BA V2.12] software. If it shows [\USBserial\COM11] in USB port in connection, it means the USB are connected well. Or you could check the problems by referring to Quarter 4.
Connect [J1] jumper cap on core board again, after selecting [at91sama5d3x-ek], click [Connect] button, then enter into the main interface.
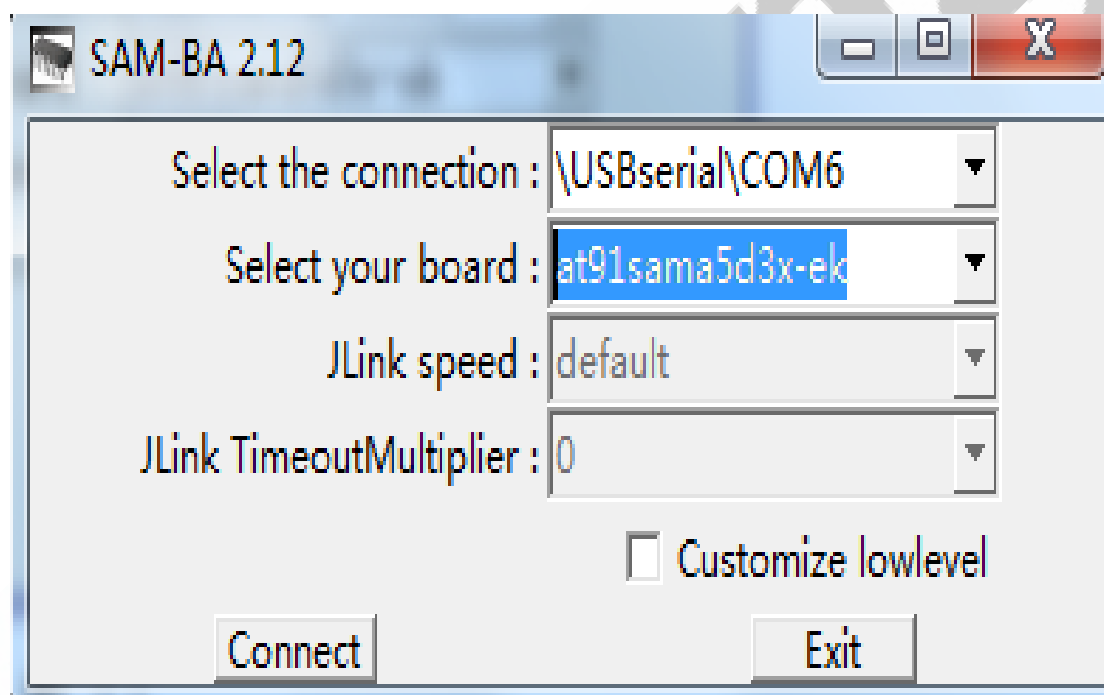


Execute as the sequence in red color, when executing procedure③, it will popup ECC Configuration Window, as Picture 3.3 shown:
Please make sure that you have configured ECC, after configuring, click [OK], continue to execute procedure④, now the initialization for nandflash is finished.

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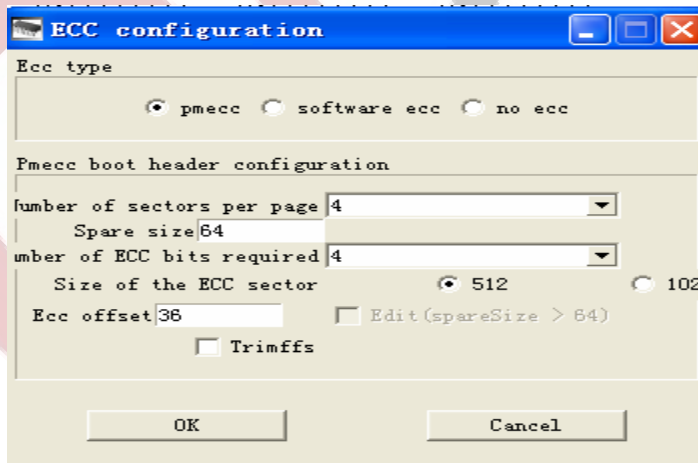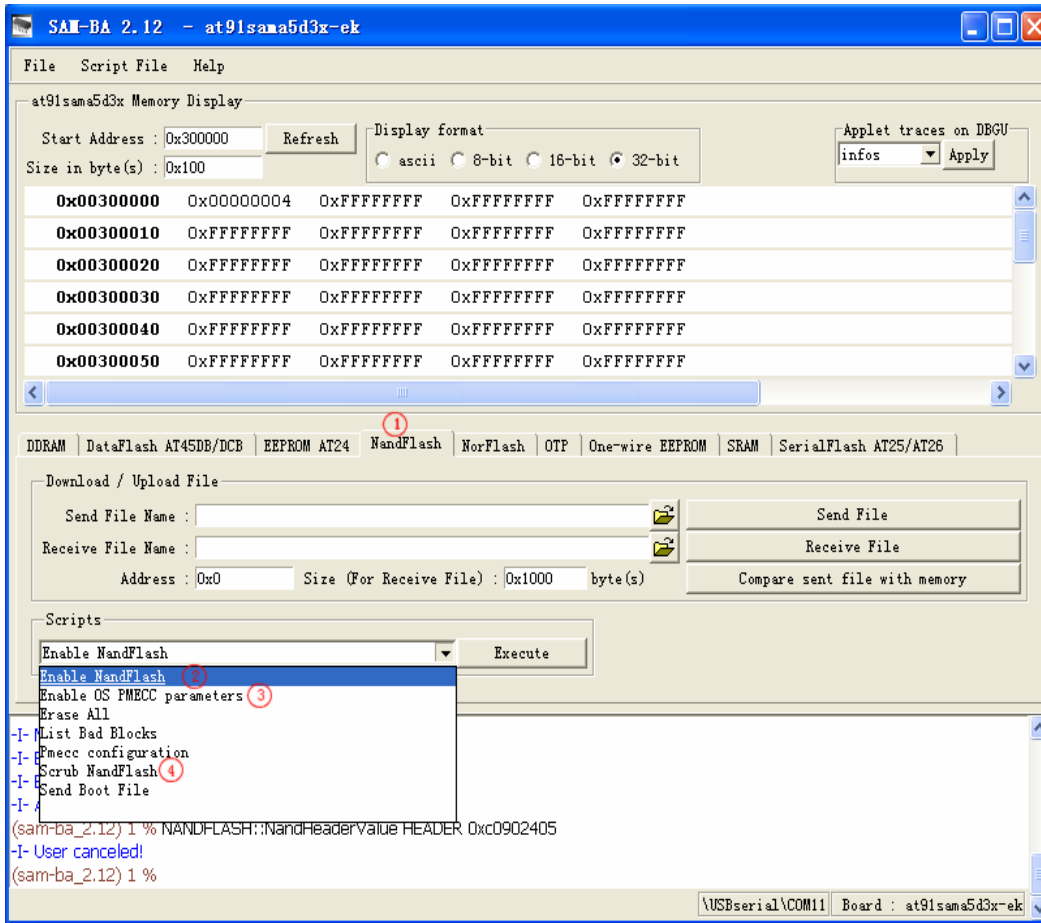
## 3.1.2. Burn Primary Boot Image

Execute the following procedures, please find out the directory where is the primary boot image locates in the interface. Select [at91sama5d3xek-nandflashboot-uboot-3.5.4.bin] to burn.
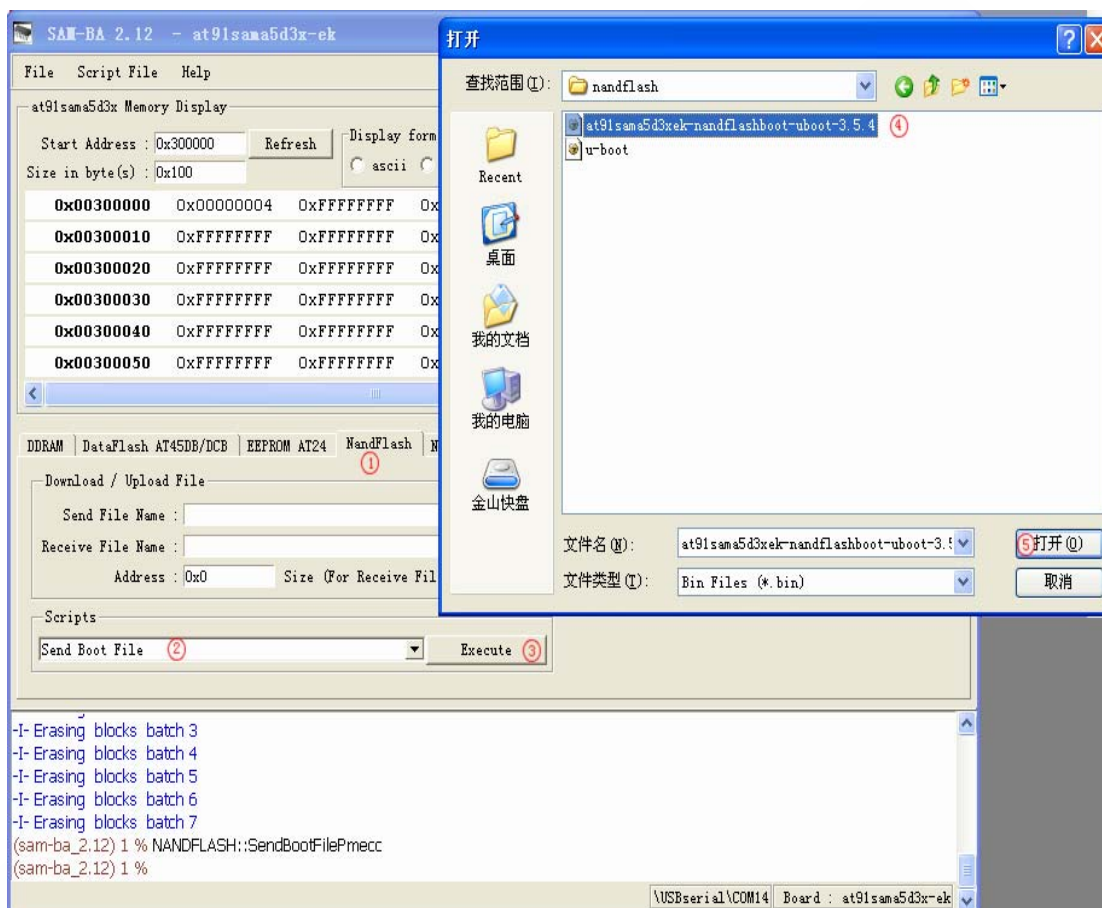


## 3.1.3. Burn Secondary Bootstrap

After burning image, execute the following procedures, fill in the address[0x40000] for secondary bootstrap, open[u-boot.bin], select [u-boot.bin]image, then burn it into nandflash.
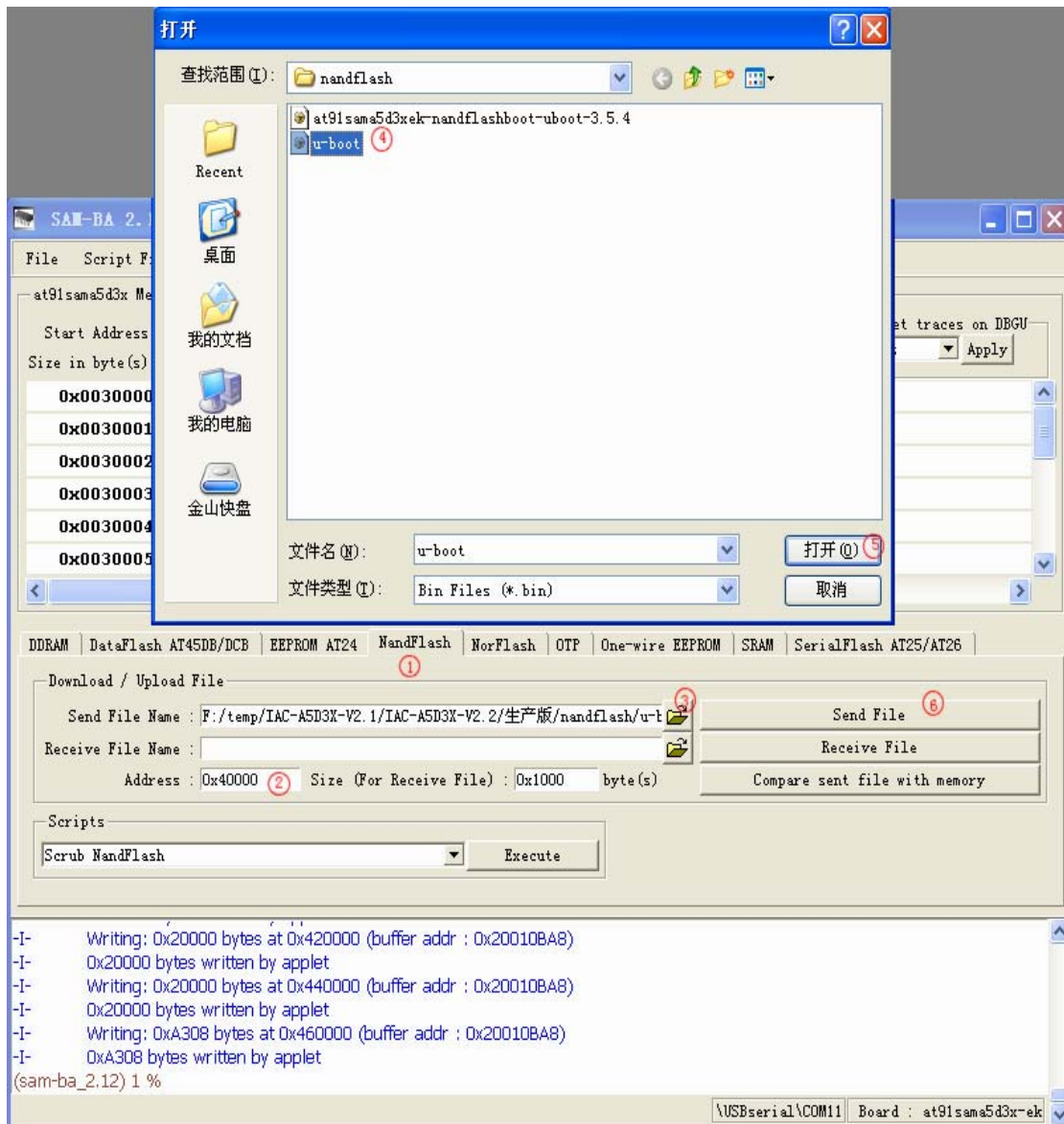
## 3.1.4. Burn Device Tree Image

As the following procedures, fill in burning address:[0x180000], find out the directory where the [sama5d34ek.dtb] image locates, then open it to burn.
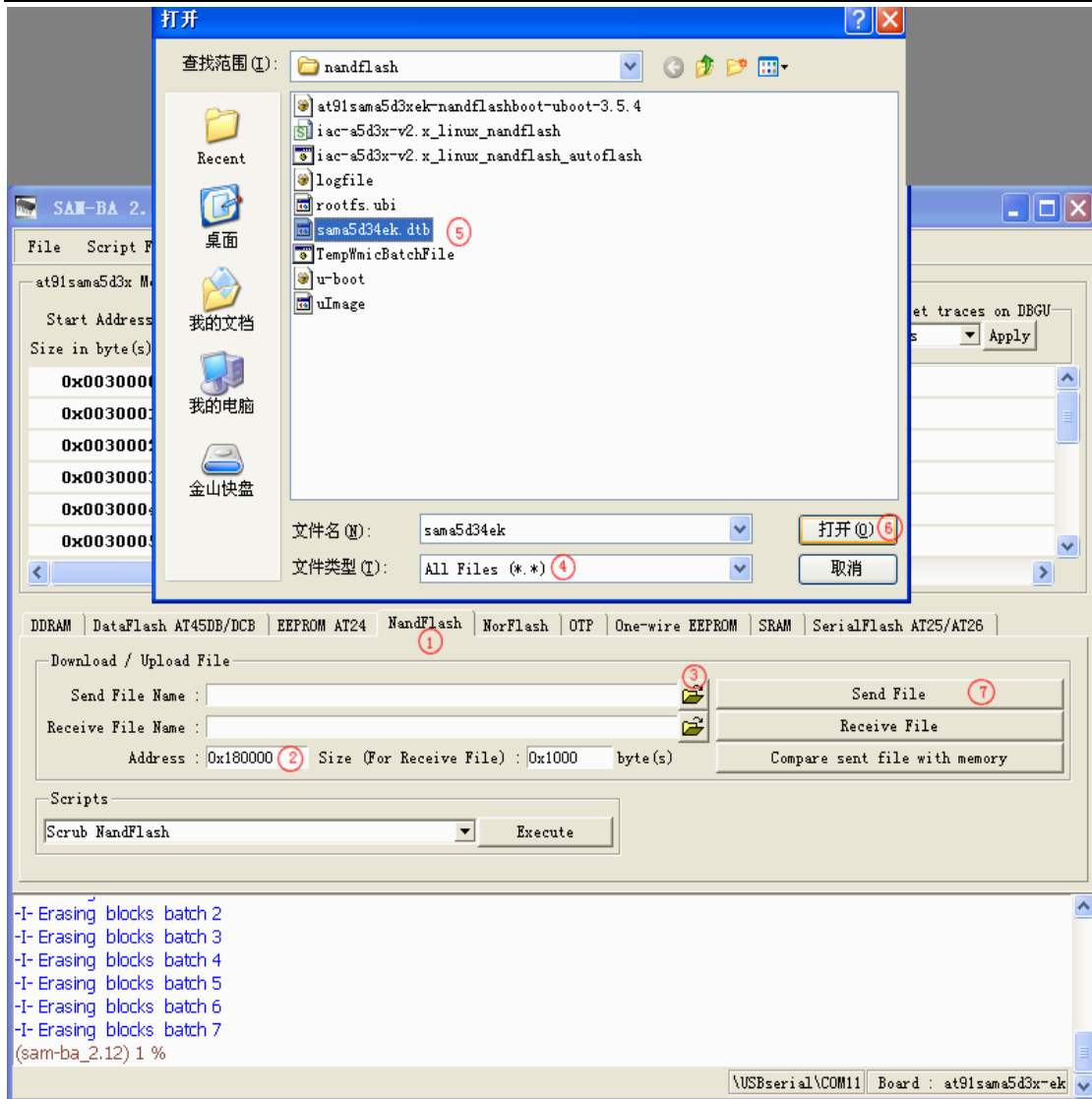
## 3.1.5. Burn Kernel Image

According to the procedures in red color, fill in the burning address[0x200000] for[uImage.bin], find out where the image locates in the opened directory, select then burn.

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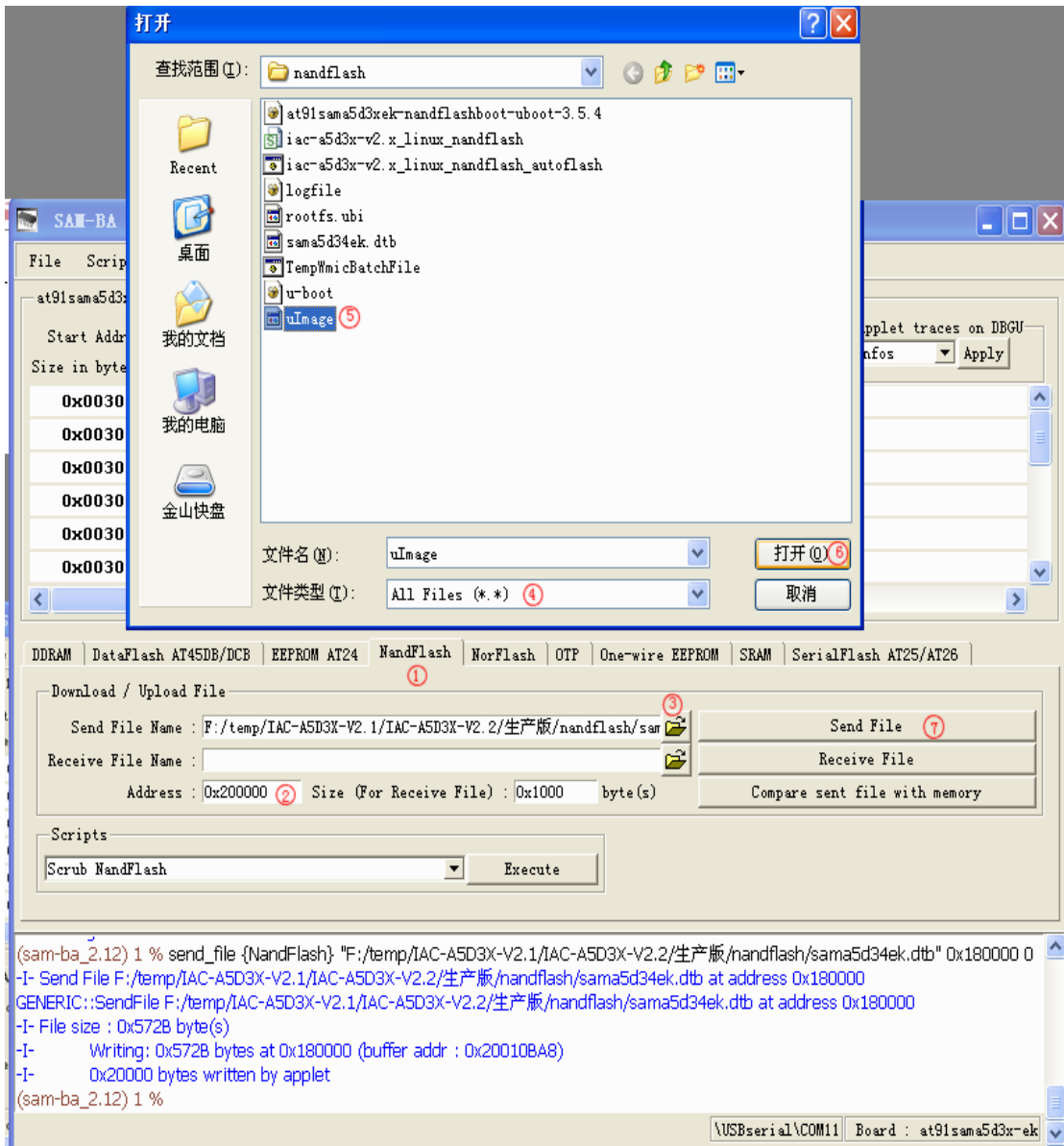
## 3.1.6. Burn File System Image

The ECC configuration is different with the previous one, it needs reconfiguring. So before burning file system image, you need configure ECC as the following parameters. Execute Step ③,it will popup ECC configuration window.
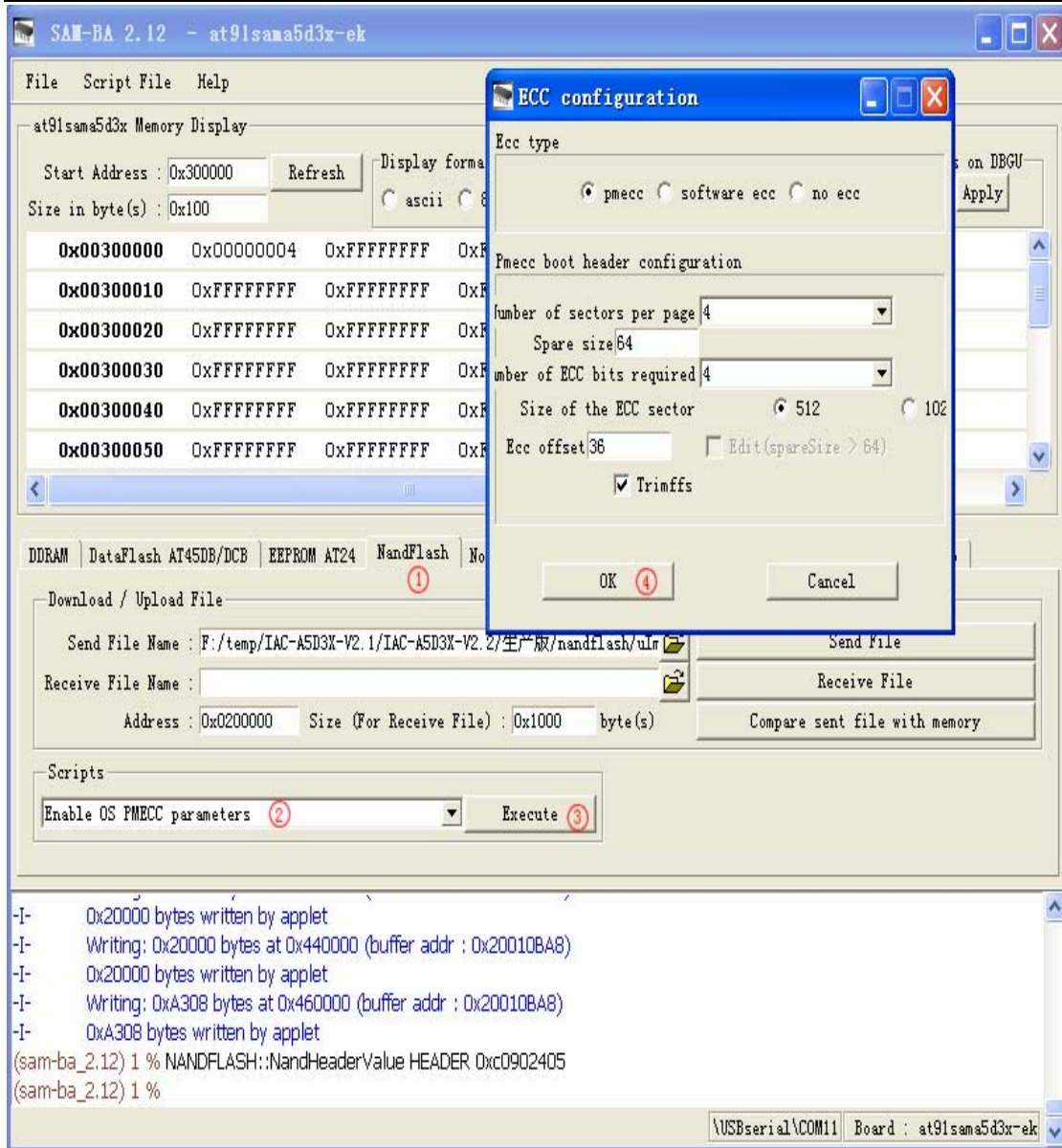
After configuring NANDFLASH ECC, according to the procedures in red color, fill in [rootfs.ubi] burning address [0x800000]. Open the image location, then select image to burn.

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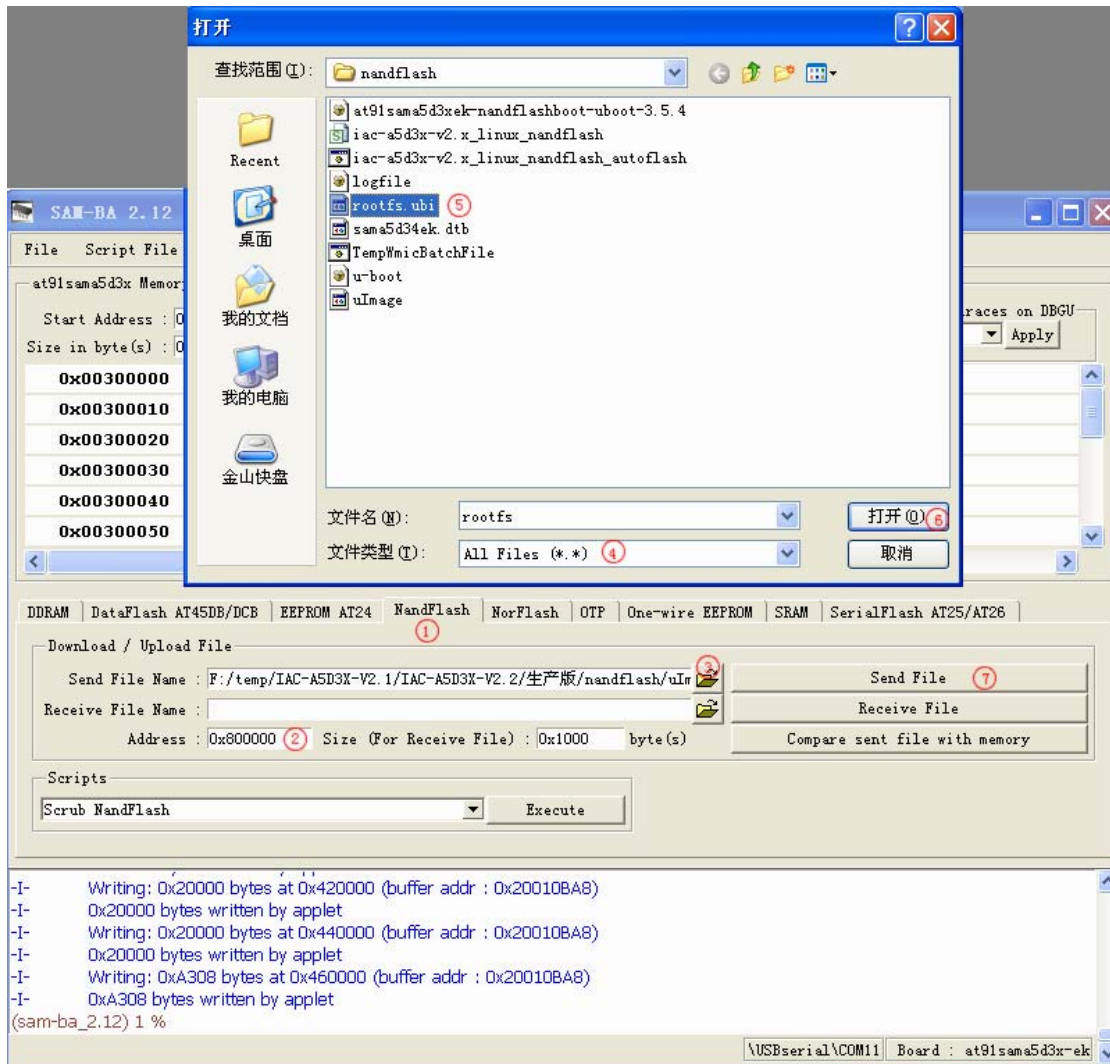
### 3.1.7. Finish Burning

It needs time to burn file system. Please be patient. When finish burning, close [SAM-BA], plug out USB cable. Power on the development board, you will see the printed information from the Debug UART when the images are running.

### 3.2. Auto- Burning Procedure

Before burning image, please make sure that the current development board has been connected well. And it could be recognized by the PC.

There are two scripts in boot image directory in CD dataflash. Including

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[iac-a5d3x-v2.x_linux_nandflash_autoflash.bat] is [bat] script. It achieves to call [samba]program to analyze [tcl]script; [iac-a5d3x-v2.x_linux_nandflash.tcl] achieves the specific burning image command,as the following picture in red color shown:
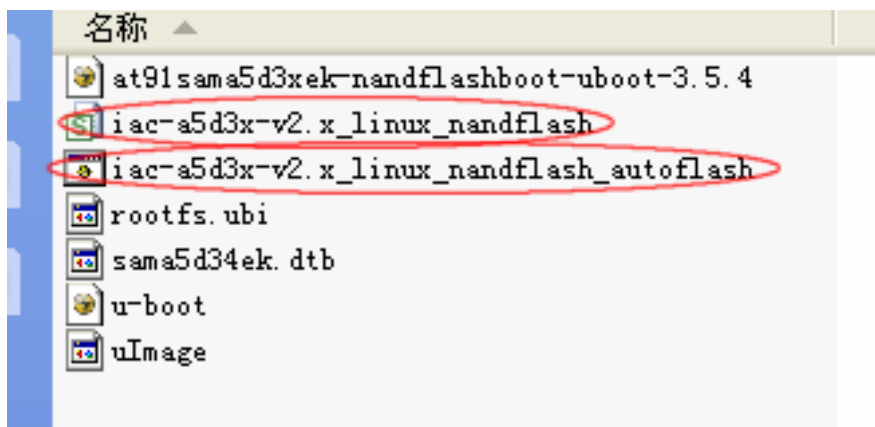


Double click [iac-a5d3x-v2.x_linux_nandflash_autoflash.bat] script, it shows the following window. It means we have burnt [at91sama5d3xek-nandflashboot-uboot-3.5.4.bin] [u-boot.bin] [sama5d34ek.dtb] [uImage.bin] [rootfs.ubi] into development board.



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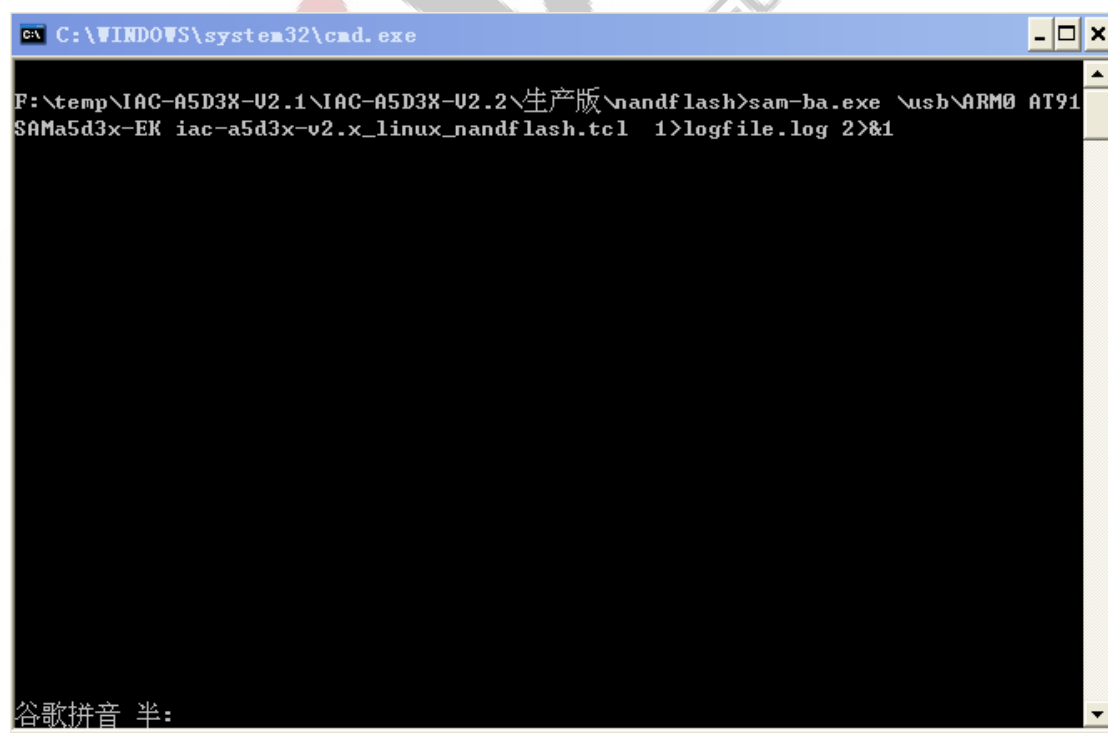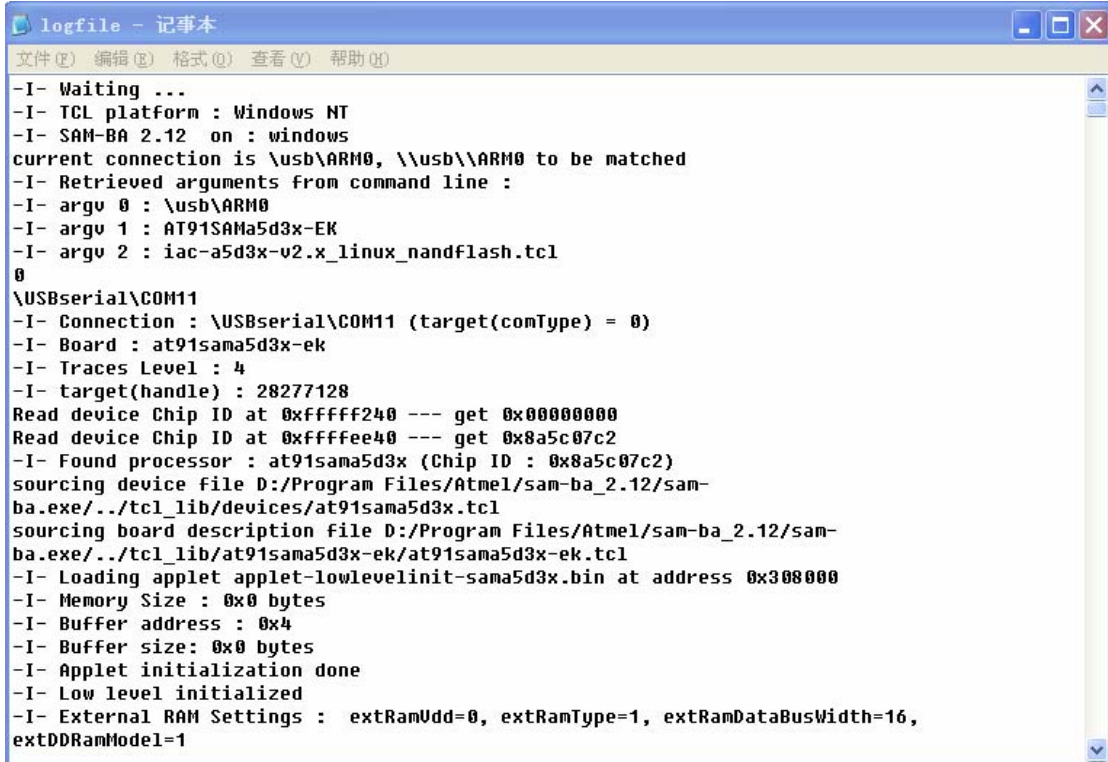
It needs some time. Please be patient.

Finish burning, it will popup [logfile] as shown:

You could check whether the burning process is successful by this file.



At this moment, the burning is finished. Please pull out the USB cable. Then power on again, you could see the printed information when it is in the boot progress from the debug UART.

## Ⅳ.Update Image By Network

For the development board which has been burnt the image [u-boot.bin] [sama5d34ek.dtb] [uImage] [rootfs.ubi]. We have provided the methods to introduce how to update the image by network.

## 4.1. Preparation

There is [tftp] server software in windows of PC. Please make sure that the under testing image has been located in [tftp] server directory. Open [tftp] software.

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| 名称 | 修改日期 | 类型 | 大小 |
|---|---|---|---|
| Serial Debugging Assistant2.1 | 2015/4/22 15:52 | 文件夹 | |
| dhcpsrv1.5 | 2010/7/14 14:15 | WinRAR 压缩文件 | 18 KB |
| MiniComm | 2008/7/19 17:06 | WinRAR 压缩文件 | 19 KB |
| sam-ba_2.12 | 2012/11/2 16:24 | WinRAR 压缩文件 | 6,252 KB |
| SecureCRT.v6.7.1 | 2015/4/22 16:00 | WinRAR 压缩文件 | 26,885 KB |
| Serial Debugging Assistant2.1 | 2015/4/22 16:01 | WinRAR 压缩文件 | 138 KB |
| Source Insight | 2015/4/22 16:21 | WinRAR 压缩文件 | 3,130 KB |
| tftpd32 | 2006/12/20 9:47 | 应用程序 | 56 KB |
| XP Version Hyper Terminal | 2015/4/22 15:51 | WinRAR 压缩文件 | 153 KB |

Make sure that the development board has been connected to the network. And it could telecommunicate with the PC. You could connect the development board to PC directory, or you could connect the development board to the router where is the PC local area network. Support the LAN 1 (J7) in uboot.

Serial Setting: Open terminal telecommunication in Windows( Mini terminal or Hyper terminal). Select the serial and set parameter as follows:

Baud Rate:[115200], Data Bit:[8] bit, Stop Bit:[1]bit, Check Bit:[None], Data flow Control: [None].

## 4.2. Enter Into U-boot Operation Interface

Power on, press button when it is in the debugging terminal interface. Then enter into [uboot] interface.

```
RomBOOT

AT91Bootstrap 3.5.4 QiYang (Thu Dec 19 18:43:48 CST 2013)

SF: Got Manufacturer and Device ID:0x1f 0x26 0x0 0x0 0x0
SF: Copy 0x80000 bytes from 0x8400 to 0x26f00000
SF: Done to load image


U-Boot 2012.10 QiYang (Dec 19 2013 - 18:49:58)

CPU: SAMA5D34
Crystal frequency:      12 MHz
CPU clock       :       528 MHz
Master clock    :       132 MHz
DRAM:   256 MiB
NAND:   256 MiB
MMC:    mci: 0
SF: Detected AT45DB161D with page size 528 Bytes, total 2.1 MiB
In:     serial
Out:    serial
Err:    serial
Net:    gmacb0
Hit any key to stop autoboot:  0
U-Boot>
U-Boot>
U-Boot>
```

4.3. Set Network Parameter

In [uboot] environment, the default IP is [192.168.1.126], Server IP (PC where is the under burning image) is [192.168.1.99]. Gateway:[192.168.1.1],Sub Net Mask: [255.255.255.0].

Here, if you need, you could modify according to the following instruction:

U-Boot> set serverip 192.168.1.81   /* Set PC server IP*/

U-Boot> set ipaddr 192.168.1.179   /* Set Mainboard IP*/

U-Boot> set gatewayip 192.168.1.1   /* Set Gateway */

U-Boot> set netmask 255.255.0.0   /* Set Sub Net Mask*/

```
AT91Bootstrap 3.5.4 QiYang (Wed Jan  8 12:36:06 CST 2014)

SF: Got Manufacturer and Device ID:0x1f 0x26 0x0 0x0 0x0
SF: Copy 0x80000 bytes from 0x8400 to 0x26f00000
SF: Done to load image


U-Boot 2012.10 QiYang (Jan 08 2014 - 11:39:56)

CPU: SAMA5D34
Crystal frequency:       12 MHz
CPU clock       :        528 MHz
Master clock    :        132 MHz
DRAM:  256 MiB
NAND:  256 MiB
MMC:   mci: 0
SF: Detected AT45DB161D with page size 528 Bytes, total 2.1 MiB
In:    serial
Out:   serial
Err:   serial
Net:   gmacb0
Hit any key to stop autoboot:  0
U-Boot>
U-Boot>
U-Boot> set serverip 192.168.1.81
U-Boot> set ipaddr 192.168.1.179
U-Boot> set gatewayip 192.168.1.1
U-Boot> set netmask 255.255.0.0
U-Boot>
```

After configuration, you could use the following command to check whether the [ipaddr] [netmask] [serverip] [gatewayip] is correct:

U-Boot> print

```
U-Boot> print
baudrate=115200
bootargs=console=ttyS0,115200 earlyprintk mtdparts=atmel_nand:1536k(spare)ro,512
k(dtb),6M(kernel)ro,-(rootfs) rootfstype=ubifs ubi.mtd=3 root=ubi0:rootfs
bootcmd=nand read 0x21000000 0x180000 0x80000;nand read 0x22000000 0x200000 0x60
0000;bootm 0x22000000 - 0x21000000
bootdelay=1
dd=tftp 0x22000000 sama5d34ek.dtb; nand erase 0x180000 0x80000; nand write 0x220
00000 0x180000 $filesize
df=tftp 0x22000000 rootfs.ubi; nand erase 0x800000 $nand_fs_size; nand write.tri
mffs 0x22000000 0x800000 $filesize
dk=tftp 0x22000000 uImage; nand erase 0x200000 0x600000; nand write 0x22000000 2
00000 $filesize
du=tftp 0x22000000 u-boot.bin;sf probe 0;sf erase 0x4200 0x8c400;sf write 0x2200
0000 0x8400 $filesize;
eth1addr=12:34:56:78:90:01
ethact=gmacb0
ethaddr=12:34:56:78:90:00
gatewayip=192.168.1.1
ipaddr=192.168.1.179
nand_fs_size=f800000
netmask=255.255.0.0
serverip=192.168.1.81
up=run dd;run dk;run df

Environment size: 948/16892 bytes
U-Boot>
```

You could use the following command to store the modified parameters into the stadium. If you do not execute the instruction, the above configuration should take effect in the current circumstance. After rebooting, it will come back to the default status.

U-Boot> saveenv

```
U-Boot> saveenv
Saving Environment to SPI Flash...
SF: Detected AT45DB161D with page size 528 Bytes, total 2.1 MiB
Erasing SPI flash...Writing to SPI flash...done
U-Boot>
```

Finish the above configuration, it could be by the following instructions to test the current

board and the network on PC, whether the connection is ok.

U-Boot> ping 192.168.1.81

If the network is connected well, and the configuration is correct. Then it shows the mainfram's [alive].

```
U-Boot> ping 192.168.1.99
gmacb0: PHY present at 31
gmacb0: Starting autonegotiation...
gmacb0: Autonegotiation complete
gmacb0: link up, 100Mbps full-duplex (lpa: 0x45e1)
Using gmacb0 device
host 192.168.1.99 is alive
U-Boot>
```

If the network connection is abnormal, or the configuration is not correct. It will show the mainframe [not alive], as shown:

The target server IP is error:

```
U-Boot> ping 192.168.1.100
gmacb0: PHY present at 31
gmacb0: link up, 100Mbps full-duplex (lpa: 0x45e1)
Using gmacb0 device
ping failed; host 192.168.1.100 is not alive
U-Boot>
```

Network cable or Network chip is not working.

```
U-Boot> ping 192.168.1.99
gmacb0: PHY present at 31
gmacb0: Starting autonegotiation...
gmacb0: Autonegotiation timed out (status=0x7849)
gmacb0: link down (status: 0x7849)
ping failed; host 192.168.1.99 is not alive
U-Boot>
```

4.4. Update Image

After configuration, start to update image. [Uboot] has generated all commands to update these images[u-boot.bin], [uImage], [sama5d34ek.dtb], [rootfs.ubi], there are :[du],[dk],[dd],[df].

u-boot   --->   run du

uImage   --->   run dk

sama5d34ek.dtb ---> run dd

Rootfs.ubi   --->   run df

Execute the following commands to update [u-boot.bin]:

```
U-Boot> run du
gmacb0: PHY present at 31
gmacb0: link up, 100Mbps full-duplex (lpa: 0x45e1)
Using gmacb0 device
TFTP from server 192.168.1.99; our IP address is 192.168.1.126
Filename 'u-boot.bin'.
Load address: 0x22000000
Loading: #################################################
done
Bytes transferred = 296244 (48534 hex)
SF: Detected AT45DB161D with page size 528 Bytes, total 2.1 MiB
U-Boot>
```

Execute the following commands to update [sama5d34ek.dtb]:

```
U-Boot> run dd
gmacb0: PHY present at 31
gmacb0: link up, 100Mbps full-duplex (lpa: 0x45e1)
Using gmacb0 device
TFTP from server 192.168.1.99; our IP address is 192.168.1.126
Filename 'sama5d34ek.dtb'.
Load address: 0x22000000
Loading: #####
done
Bytes transferred = 22082 (5642 hex)

NAND erase: device 0 offset 0x180000, size 0x80000
Erasing at 0x1e0000 -- 100% complete.
OK

NAND write: device 0 offset 0x180000, size 0x5642
 22082 bytes written: OK
U-Boot>
```

Execute the following commands to update [uImage]:

```
U-Boot> run dk
gmacb0: PHY present at 31
gmacb0: link up, 100Mbps full-duplex (lpa: 0x45e1)
Using gmacb0 device
TFTP from server 192.168.1.99; our IP address is 192.168.1.126
Filename 'uImage'.
Load address: 0x22000000
Loading: #################################################################
         #################################################################
         #################################################################
         #################################################################
         #################################################################
         #################################################################
         #################################################################
         ##########################################################
done
Bytes transferred = 2643704 (2856f8 hex)

NAND erase: device 0 offset 0x200000, size 0x600000
Erasing at 0x7e0000 -- 100% complete.
OK

NAND write: device 0 offset 0x200000, size 0x2856f8
 2643704 bytes written: OK
U-Boot>
```

Execute the following commands to update [rootfs.ubi]:

U-Boot> run df

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gmacb0: PHY present at 31

gmacb0: link up, 100Mbps full-duplex (lpa: 0x45e1)

Using gmacb0 device

TFTP from server 192.168.1.99; our IP address is 192.168.1.126

Filename 'rootfs.ubi'.

Load address: 0x22000000

Loading:

##

##

…

##

    ##

done

Bytes transferred = 44826624 (2ac0000 hex)

NAND erase: device 0 offset 0x800000, size 0xf800000

Erasing at 0xffe0000 -- 100% complete.

OK

NAND write: device 0 offset 0x800000, size 0x2ac0000

 44826624 bytes written: OK

Finish, then reboot mainboard.

4.5. Enter into system

```
y 312, idx 188
UBIFS DBG (pid 1): mount_ubifs: dead watermark:        2048
UBIFS DBG (pid 1): mount_ubifs: dark watermark:        6144
UBIFS DBG (pid 1): mount_ubifs: LEB overhead:          2656
UBIFS DBG (pid 1): mount_ubifs: max. dark space:       11089920 (10830 KiB, 10 MiB
)
UBIFS DBG (pid 1): mount_ubifs: maximum bud bytes:     8388608 (8192 KiB, 8 MiB)
UBIFS DBG (pid 1): mount_ubifs: BG commit bud bytes:   6815744 (6656 KiB, 6 MiB)
UBIFS DBG (pid 1): mount_ubifs: current bud bytes      182272 (178 KiB, 0 MiB)
UBIFS DBG (pid 1): mount_ubifs: max. seq. number:      35533
UBIFS DBG (pid 1): mount_ubifs: commit number:         9
VFS: Mounted root (ubifs filesystem) readonly on device 0:11.
devtmpfs: mounted
Freeing init memory: 156K
UBIFS: completing deferred recovery
UBIFS DBG (pid 545): ubifs_bg_thread: background thread "ubifs_bgt0_0" started,
PID 545
UBIFS: deferred recovery completed
Starting logging: OK
Starting user init: OK
Populating /dev using udev: IPv6: ADDRCONF(NETDEV_UP): eth0: link is not ready
udevd[568]: starting version 182
at91_can f000c000.can: can0: writing AT91_BR: 0x00200561
done
Starting portmap: done
Initializing random number generator... done.
Starting network...
Starting vsftpd: OK
Starting telnetd: OK

Welcome to IAC-A5D3x-V2.x
sama5d3x login: macb f0028000.ethernet: eth0: link up (100/Full)
IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready
IPv6: eth0: IPv6 duplicate address fe80::1034:56ff:fe78:9076 detected!

Welcome to IAC-A5D3x-V2.x
sama5d3x login: root
[root@sama5d3x /root]# 
```

Input[root] , enter into file system.

Ⅴ. FAQ

5.1. Check errors when the image is burnt by USB

PC could not recognize the development board.

a、Whether the [Samba]driver is installed well.

b、Whether the USB port on PC is working well.

c、Whether the USB cable is connected well.

d、Whether the J1 jumper cap is disconnected on core board.

e、Whether there is any printed information in debug serial port terminal.

f、Whether the serial cable is connected well.

g、Whether the core board is working well.

h、Whether other boot modes have the bootstrap or not, you can erase or disconnect , then reconnect.

①、 SAMBA is in suspended animation in burning process.

a、USB port is not connected well.

b、After rebooting PC, burn the image again.

5.2．Check errors when the image is burnt by SD card

Failed by SD card when in burning image.

a、Whether the SD card has be created well as per Chapter 1.2.2

b、Whether the under burning image and tool are copied to the card well or not.

c、Use jumper cap to connect , confirm [dataflash] is no bootstrap.

d、Disconnect jumper cap, recognize SD card. Connect again when burning dataflash.

e、Use another SD card to burn.

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