

Q: How to burn images to Nand in KIT210 (Android2.3)?

A:

1 Preparatory work

Step 1: The necessary hardware to connect.

1. **USB cable** (the small port of cable is connected to the mini USB interface of KIT210, and the other port is connected to the USB interface of PC).
2. **The serial cable** (one end is connected to the COM 1 of KIT210, and the other end is connected to the COM of PC, avoid using the USB->COM line, most of them are instability, and they are not recommended to use).
3. **Power.**

Step 2: The necessary software programming tools.

1. **DNW**: download the image by DNW.
2. **Xshell**: as the serial terminal, input the serial command to download and program image.

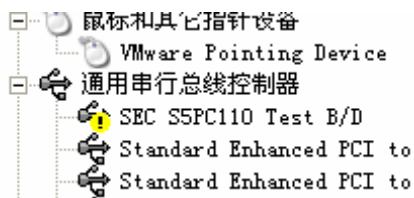
It can complete the process of downloading and programming by only using DNW, but DNW comes with imperfect serial terminal, it is often garbled, so we recommend to program by using DNW+xshell.

Step 3: Install the necessary drivers.

Before downloading, you should install the USB driver, under normal circumstance, connect KIT210 and computer with the USB cable, after power on, PC will find the new hardware and requires install the driver, as showed below:



We can see as following in PC device manager:



According to the pop-up installation wizard:



找到新的硬件向导



欢迎使用找到新硬件向导

这个向导帮助您安装软件:

SEC S5PC110 Test B/D



如果您的硬件带有安装 CD 或软盘，请现在将其插入。

您期望向导做什么？

自动安装软件 (推荐) (T)

从列表或指定位置安装 (高级) (S)

要继续，请单击“下一步”。

< 上一步 (B)

下一步 (N) >

取消

找到新的硬件向导

请选择您的搜索和安装选项。



在这些位置上搜索最佳驱动程序 (S)。

使用下列的复选框限制或扩展默认搜索，包括本机路径和可移动媒体。会安装找到的最佳驱动程序。

搜索可移动媒体 (软盘、CD-ROM...) (M)

在搜索中包括这个位置 (L):

F:\android_sdk\android-sdk-windows-1.6_r1\

浏览 (B)

不要搜索。我要自己选择要安装的驱动程序 (D)。

选择这个选项以便从列表中选择设备驱动程序。Windows 不能保证您所选择的驱动程序与您的硬件最匹配。

< 上一步 (B)

下一步 (N) >

取消



找到新的硬件向导

选择要为此硬件安装的设备驱动程序



请选定硬件的厂商和型号，然后单击“下一步”。如果手头有包含要安装的驱动程序的磁盘，请单击“从磁盘安装”。

显示兼容硬件 (C)

型号

SEC SOC SMDK Board
SEC SOC SMDK Board



这个驱动程序没有经过数字签署！
告诉我为什么驱动程序签名很重要

从磁盘安装 (H)...

< 上一步 (B)

下一步 (N) >

取消

从磁盘安装



插入厂商的安装盘，然后确定已在下面选定正确的驱动器。

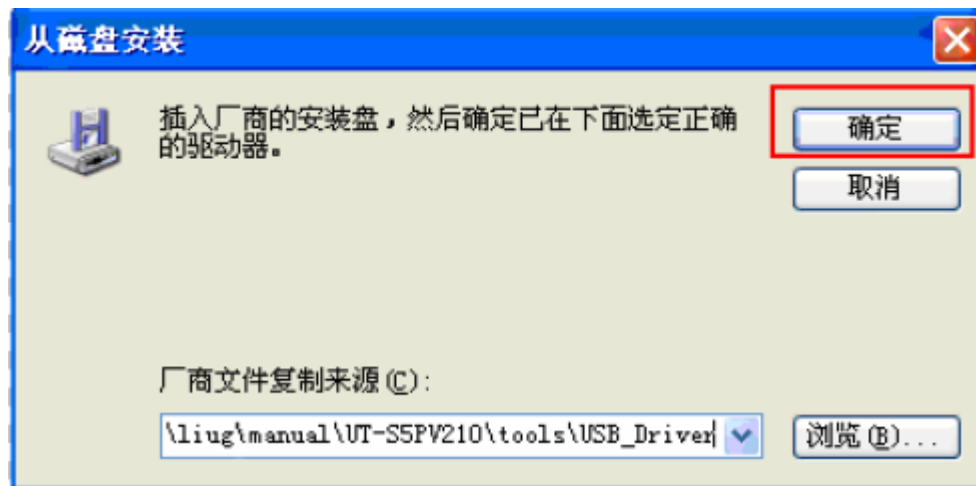
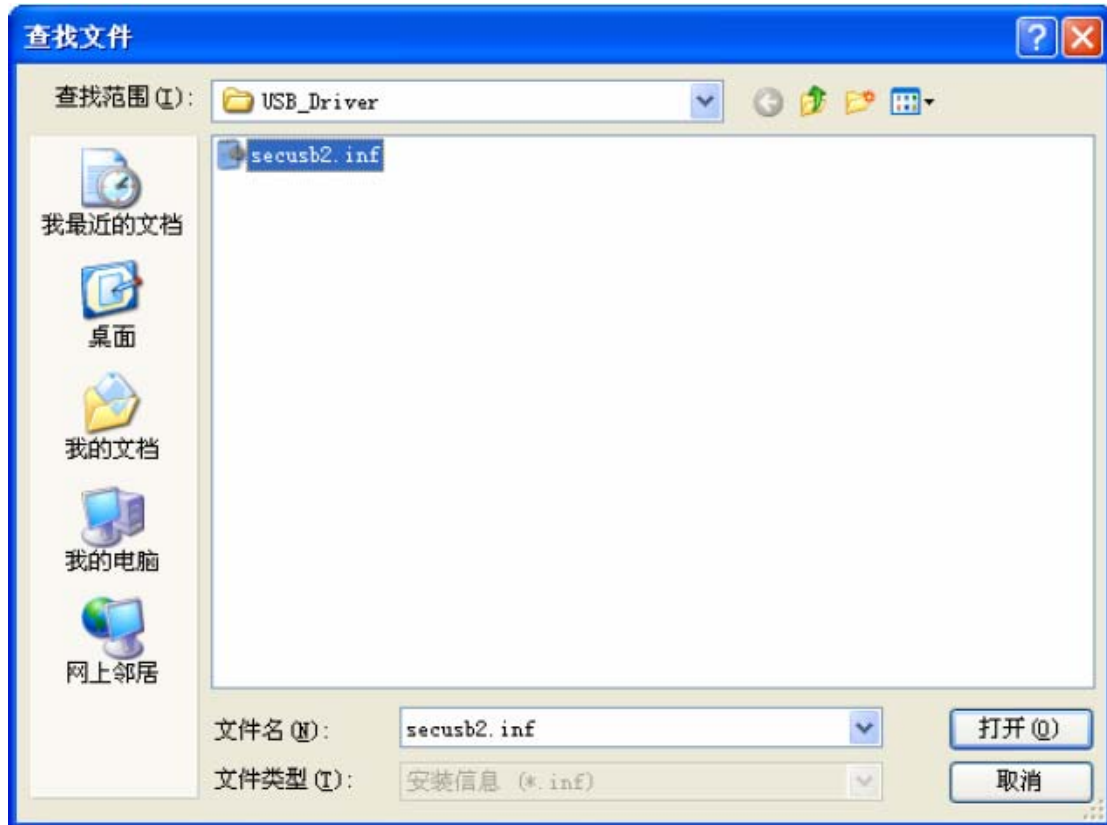
确定

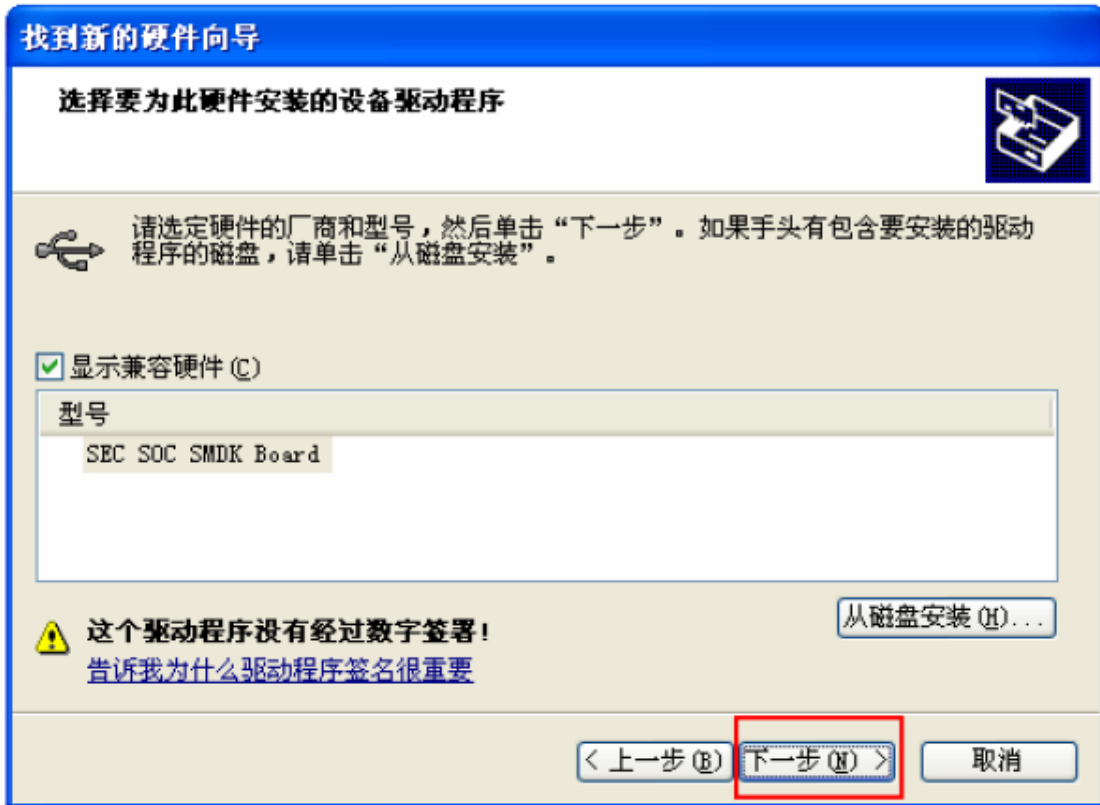
取消

厂商文件复制来源 (C):

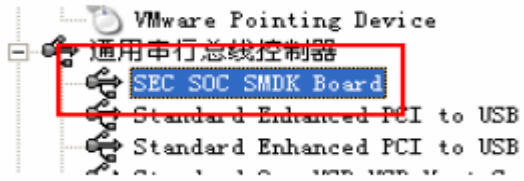
A:\

浏览 (B)...





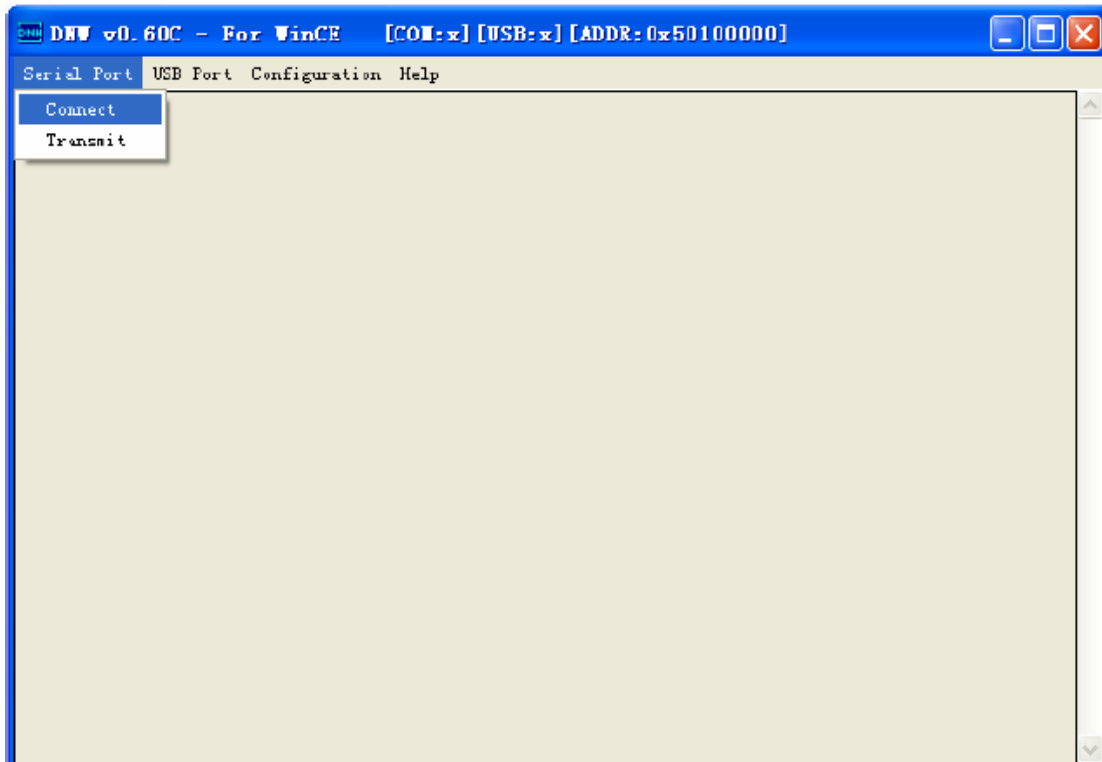
After installation, we can see as following in PC explorer.



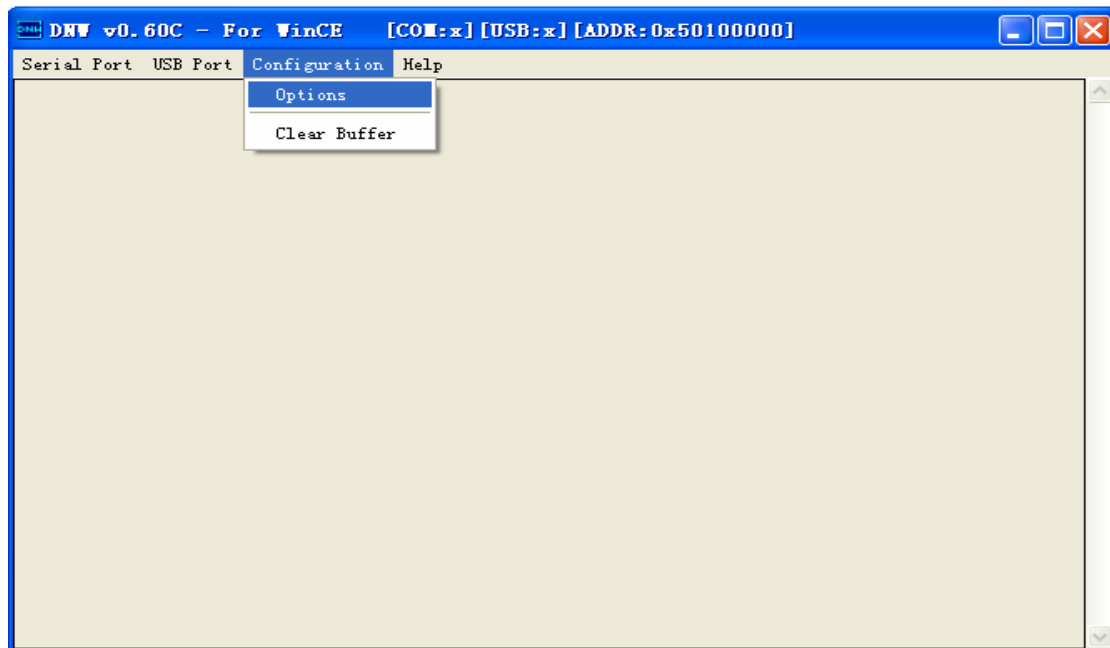
Step 4: DNW setup.

Open DNW or other serial debugging terminal, set DNW, the setup steps of DNW is as following:

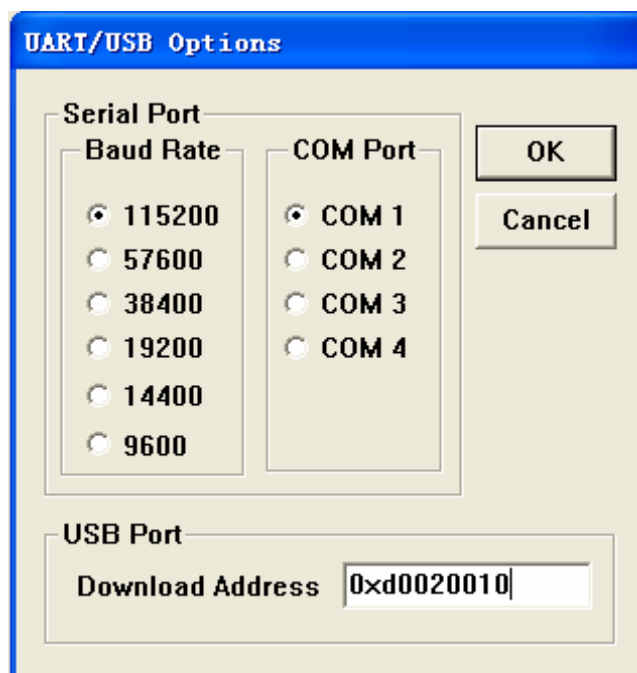
◆ **Serial Port -> Connect**



◆ **Configuration -> Options**



Set Download Address as **0xd0020010**



When download, we need to note:

When download **V210_USB.BL2.bin**, set Download Address as **0xd0020010**

When download **u-boot.bin**, set Download Address as **0x23e00000**

There will be a detailed introduction for programming process later.

2 Burn uboot

This section stresses: to start a boot program in the inner of CPU by USB interface; to

load and run V210_USB.BL2.bin by boot program; when V210_USB.BL2.bin runs, to load u-boot.bin into RAM by USB OTG interface and make it run; when u-boot runs, to write u-boot.bin into nand flash by USB interface. If it is the first time to program, or the u-boot is damaged in the original nand flash, u-boot can be re-programmed into nand flash by this method.

Step 1: Set USB boot mode.

KIT210 development board supports two boot modes: Boot from USB, Boot from Nand Flash.

SW1 DIP switch Pin	1	2	3	4
Boot from USB	1	0	0	1
Boot from Nand Flash	1	0	0	0

Default boot from Nand Flash, if you want to boot from USB, just push 4 feet switch to (ON).

Note:

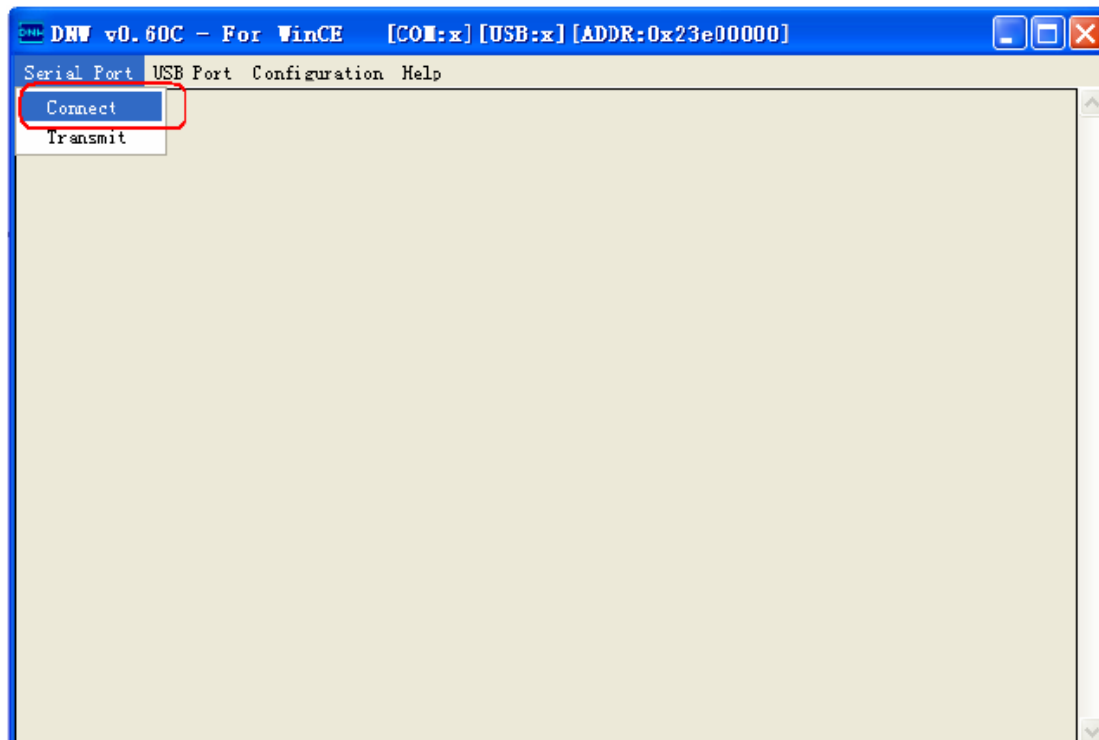
1. KIT210 development board is set boot from Nand Flash by default when ex-factory;
2. For SW1 switch, “1” represents ON, “0” represents OFF;
3. The direction of SW1: The front is facing evaluation board, from left to right (white triangle indication the 1 pin).

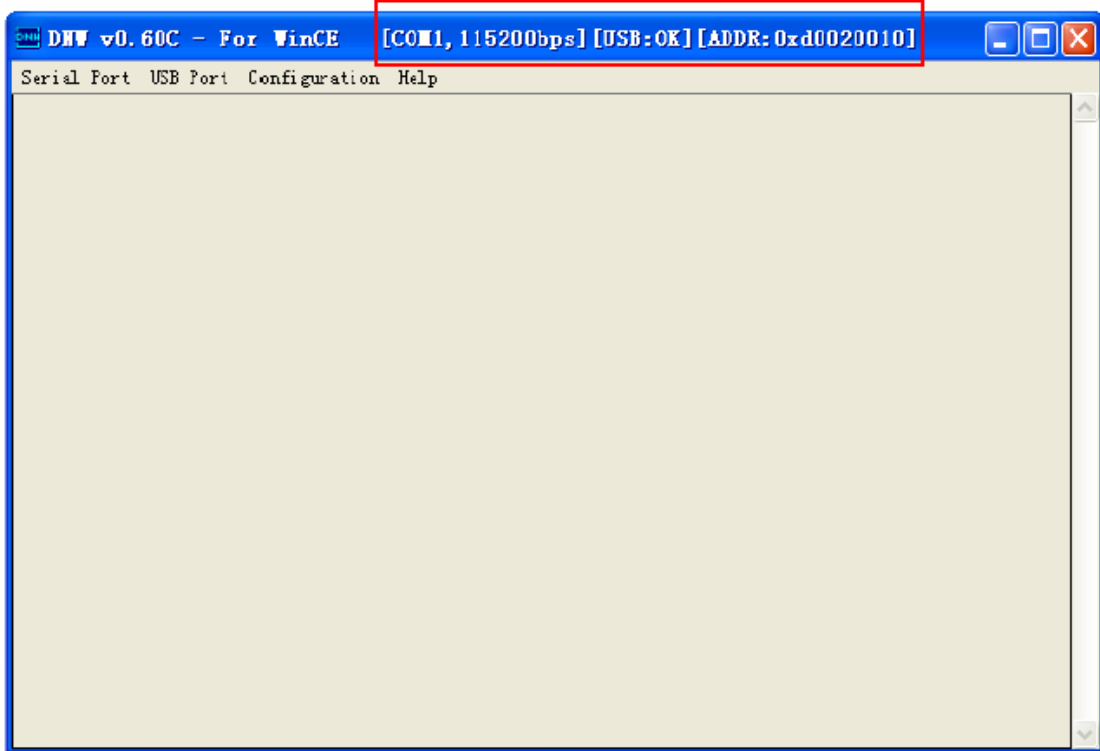
Before programming, set the boot mode to Boot from USB

SW1 DIP switch Pin	1	2	3	4
Boot from USB	1	0	0	1

Step 2: Burn uboot.bin.

Open DNW, connect Serial Port, and open the power switch of KIT210, start



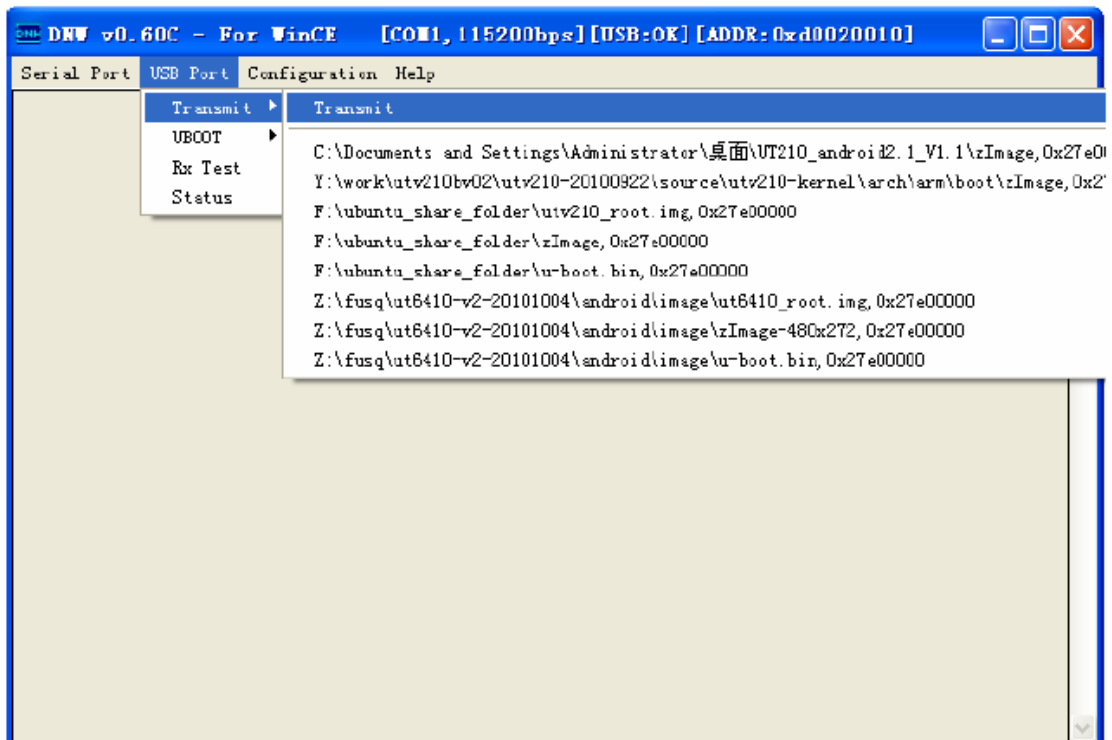


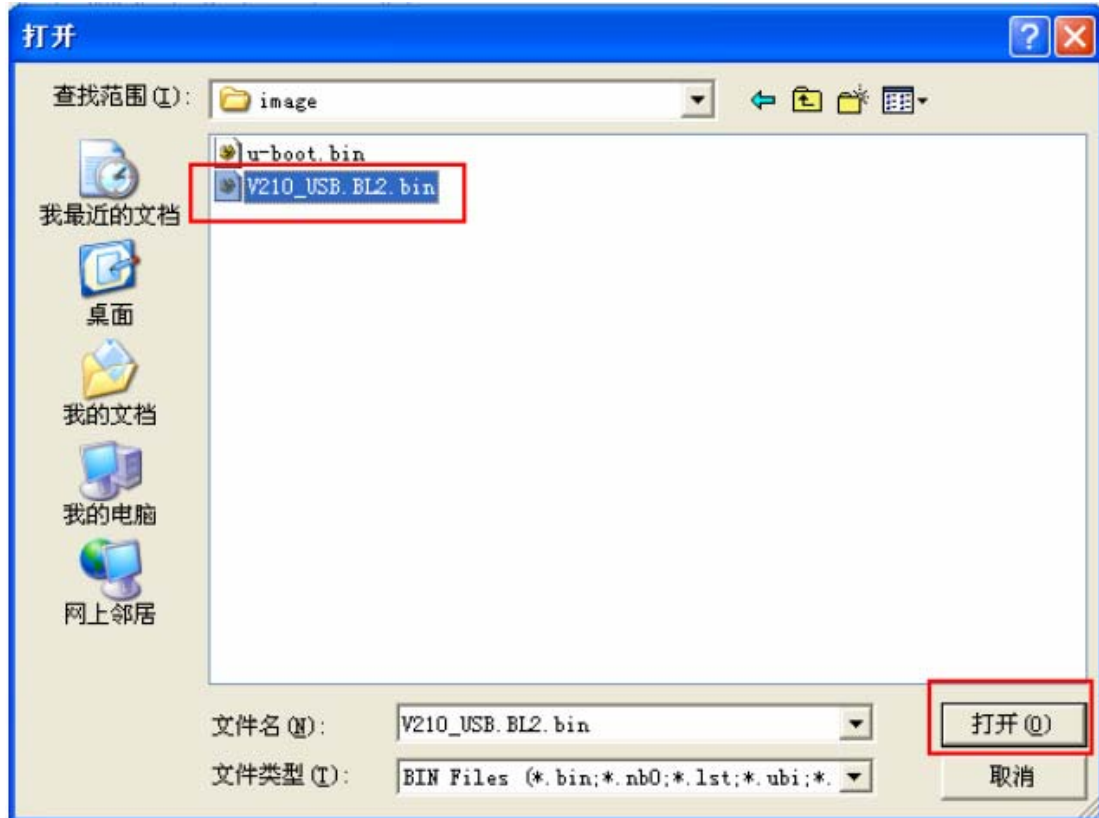
[COM1, 115200bps]: indicates the normal serial connection

[USB: **OK**]: CPU internal curing USB boot program runs OK

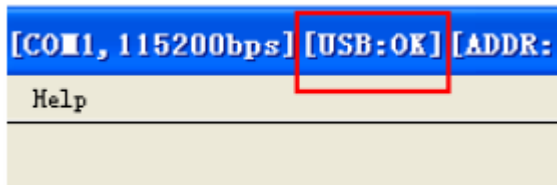
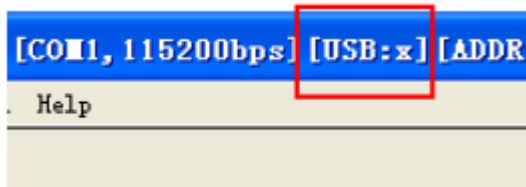
[ADDR: **0xd0020010**]: download address is 0xd0020010

Load V210_USB.BL2.bin by USB device:



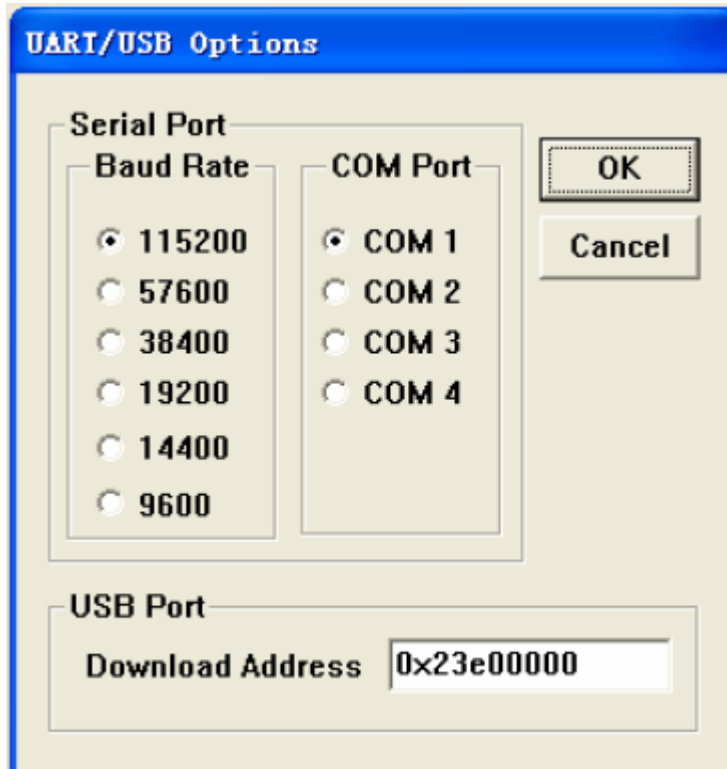


If V210_USB.BL2.bin is loaded successful, the USB state of DNW will have a process from 【USB: x】 to 【USB: OK】

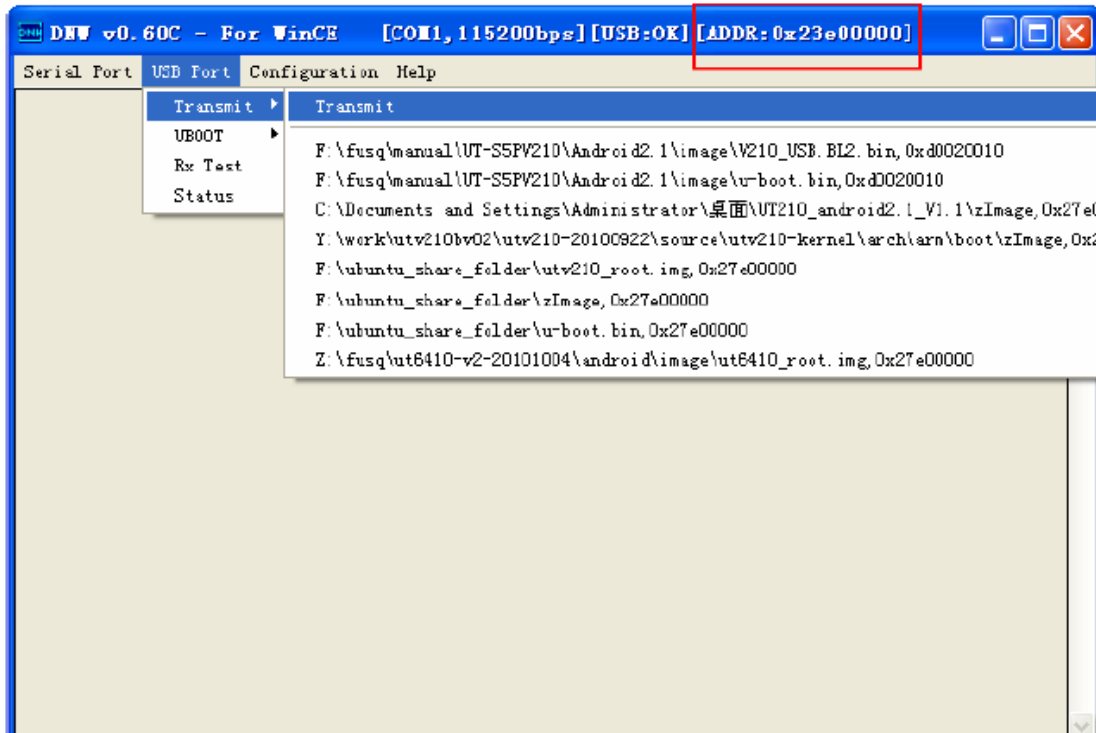


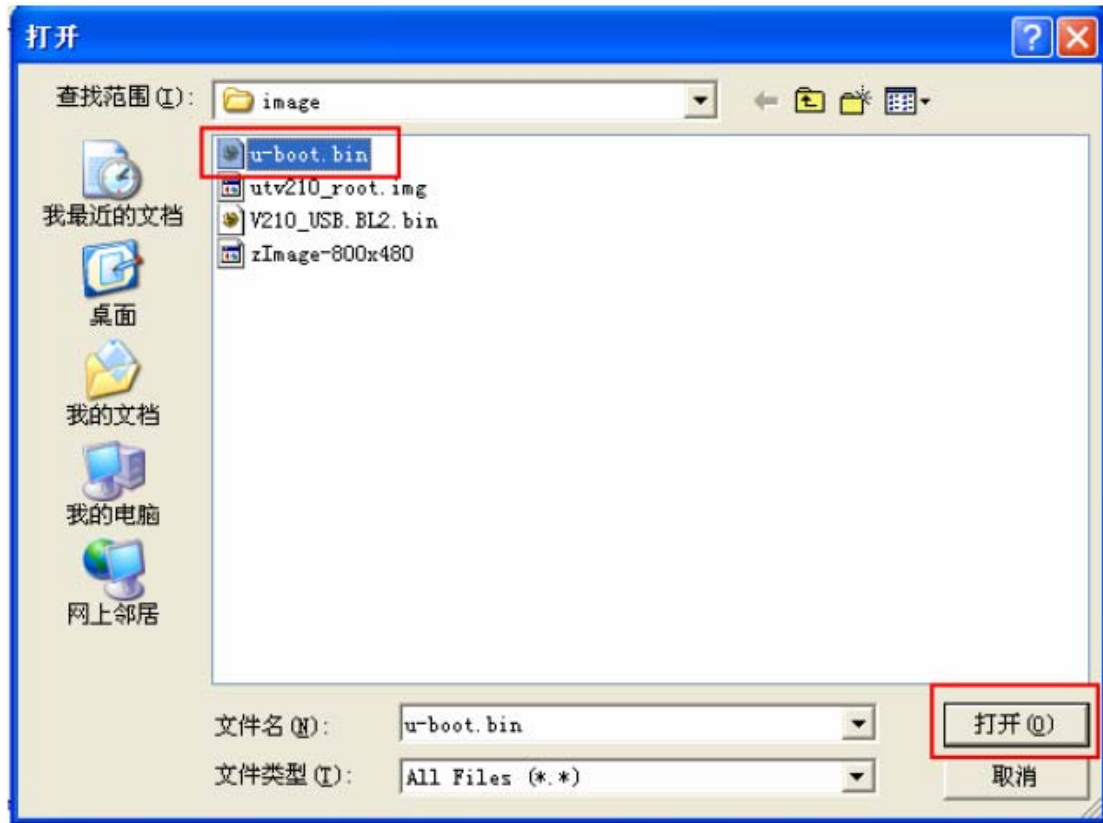
Note:

Before download u-boot.bin, change the Download Address of DNW as **0x23e00000**.



Download **u-boot.bin** to RAM, and run.





```
DNV v0.60C - For WinCE [COM1,115200bps] [USB:OK] [ADDR:0x23e00000]
Serial Port USB Port Configuration Help

U-Boot 1.3.4 (Sep 23 2010 - 00:18:29) for SMDKV210

CPU: S5PV210@1000MHz(FAIL)
      APLL = 1000MHz, HclkMsys = 200MHz, PclkMsys = 100MHz
      MPLL = 667MHz, EPLL = 96MHz
           HclkDsys = 166MHz, PclkDsys = 83MHz
           HclkPsys = 133MHz, PclkPsys = 66MHz
           SCLKA2M  = 200MHz

Serial = CLKUART
Board:  SMDKV210
DRAM:   1 GB
Flash:  8 MB
SD/MMC: Card init fail!
0 MB
NAND:   256 MB
*** Warning - using default environment

In:     serial
Out:    serial
Err:    serial

checking mode for fastboot ...

Hit any key to stop autoboot: 0

SMDKV210 #
```

It can be seen that u-boot is running, and then you can download u-boot again by uboot, and write in nand flash.

Input **nand scrub**, format nand flash

SMDKV210#nand scrub



```
DNW v0.60C - For WinCE [COM1, 115200bps] [USB:OK] [ADDR:0x23e00000]
Serial Port USB Port Configuration Help

In:      serial
Out:     serial
Err:     serial

checking mode for fastboot ...
Hit any key to stop autoboot: 0
SMDKV210 # nand scrub

NAND scrub: device 0 whole chip
Warning: scrub option will erase all factory set bad blocks!

        There is no reliable way to recover them.

        Use this command only for testing purposes if you
        are sure of what you are doing!

Really scrub this NAND flash? <y/N>
```

Input y, Enter

```
DNW v0.60C - For WinCE [COM1, 115200bps] [USB:OK] [ADDR:0x23e00000]
Serial Port USB Port Configuration Help

Erasing at 0xf320000 -- 95mplete.
Erasing at 0xf5c0000 -- 96mplete.
Erasing at 0xf840000 -- 97mplete.
Erasing at 0xfae0000 -- 98mplete.

NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5

Erasing at 0xfd60000 -- 99mplete.
Erasing at 0xffe0000 -- 100mplete.

Scanning device for bad blocks
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
OK
SMDKV210 #
```

After format, input **dnw c0008000**; Enter, as following:

SMDKV210# dnw c0008000

```

DHW v0.60C - For WinCE [COM1, 115200bps] [USB:OK] [ADDR:0x23e00000]
Serial Port USB Port Configuration Help
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5

Erasing at 0xfd60000 -- 99mplete.
Erasing at 0xffe0000 -- 100mplete.

Scanning device for bad blocks

s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected

OK

SHDKU210 # dnw c0008000

OTG cable Connected!

Now, Waiting for DNW to transmit data

```

Select earlier **u-boot.bin** once again

```

DHW v0.60C - For WinCE [COM1, 115200bps] [USB:OK] [ADDR:0x23e00000]
Serial Port USB Port Configuration Help
NAND 256MiB Transmit Transmit
UBOOT
Erasing at Erasing at Er Test
Status
Scanning device for
s3c-nand: ECC uncorr
s3c-nand: ECC uncorr
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected
s3c-nand: ECC uncorrectable error detected

OK

SHDKU210 # dnw c0008000

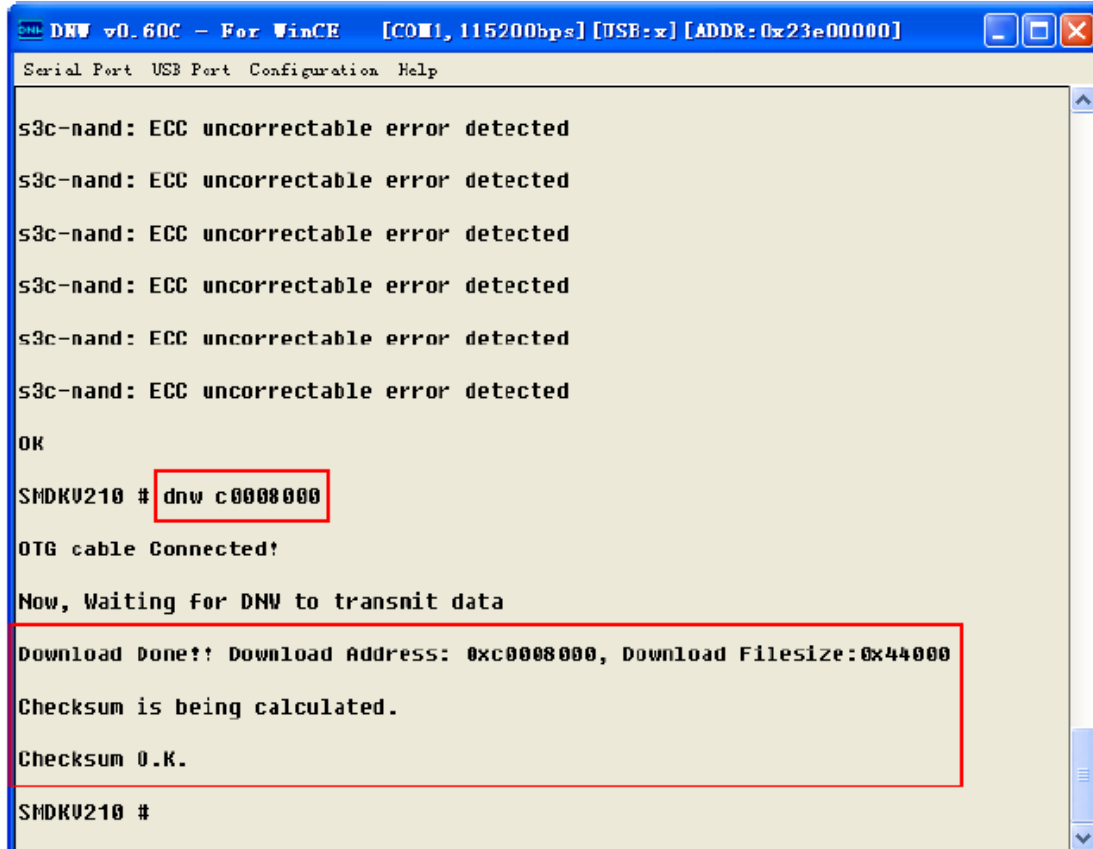
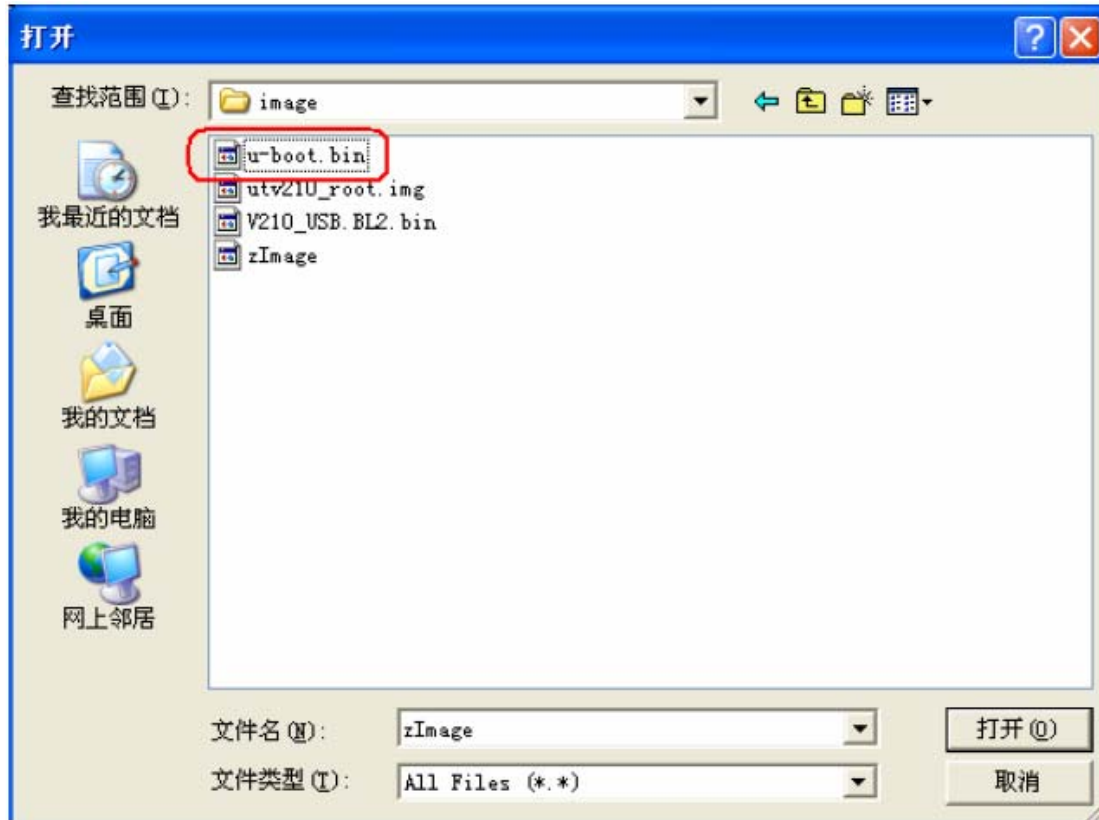
OTG cable Connected!

Now, Waiting for DNW to transmit data

```

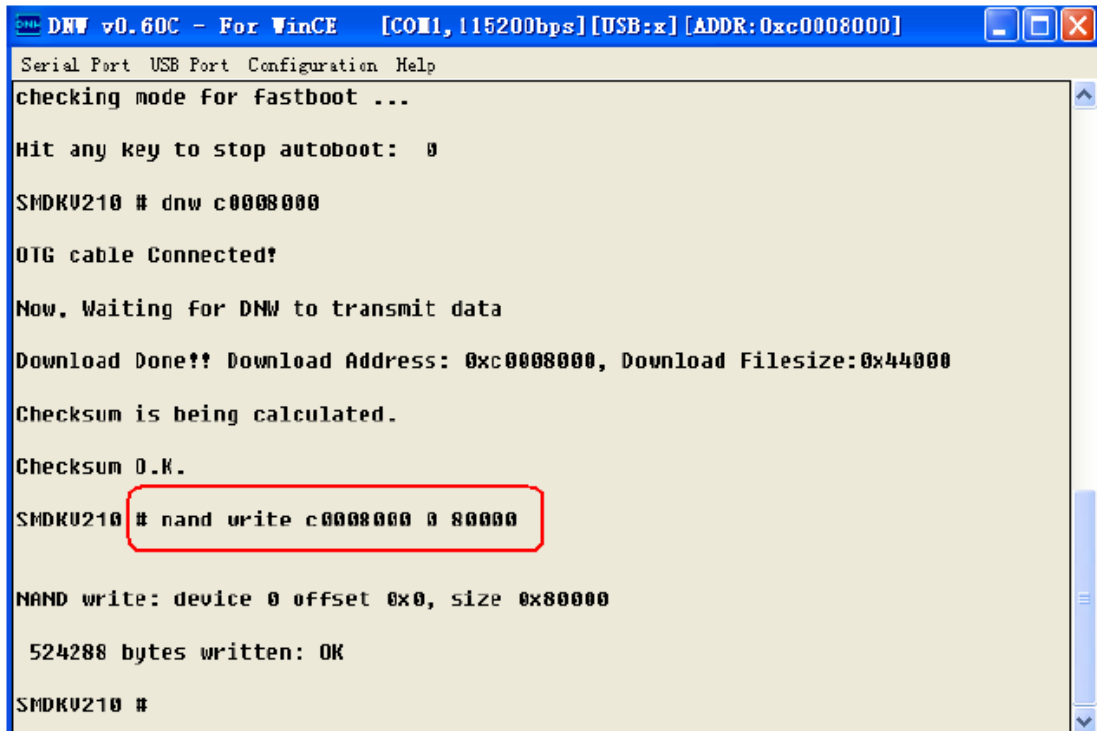
Transmit

- F:\fusq>manual\UT-S5PV210\Android2.1\image\u-boot.bin, 0x23e00000
- F:\fusq>manual\UT-S5PV210\Android2.1\image\V210_USB.BL2.bin, 0xd0020010
- F:\fusq>manual\UT-S5PV210\Android2.1\image\V210_USB.BL2.bin, 0x23e00000
- F:\fusq>manual\UT-S5PV210\Android2.1\image\u-boot.bin, 0xd0020010
- C:\Documents and Settings\Administrator\桌面\UT210_android2.1_V1.1\zImage, 0x27e0
- Y:\work\utv210bv02\utv210-20100922\source\utv210-kernel\arch\arm\boot\zImage, 0x2
- F:\ubuntu_share_folder\utv210_root.img, 0x27e00000
- F:\ubuntu_share_folder\zImage, 0x27e00000



Write u-boot.bin into nand flash. In the command line, input **nand write c0008000 0 80000**,
Enter

SMDKV210# nand write c0008000 0 80000



```

DNW v0.60C - For WinCE [COM1,115200bps] [USB:x] [ADDR:0xc0008000]
Serial Port USB Port Configuration Help
checking mode for fastboot ...
Hit any key to stop autoboot: 0
SMDKV210 # dnw c0008000
OTG cable Connected?
Now, Waiting for DNW to transmit data
Download Done!! Download Address: 0xc0008000, Download Filesize:0x44000
Checksum is being calculated.
Checksum O.K.
SMDKV210 # nand write c0008000 0 80000
NAND write: device 0 offset 0x0, size 0x80000
524288 bytes written: OK
SMDKV210 #

```

U-boot is successfully written into nand flash, and then you can set development board as nand startup.

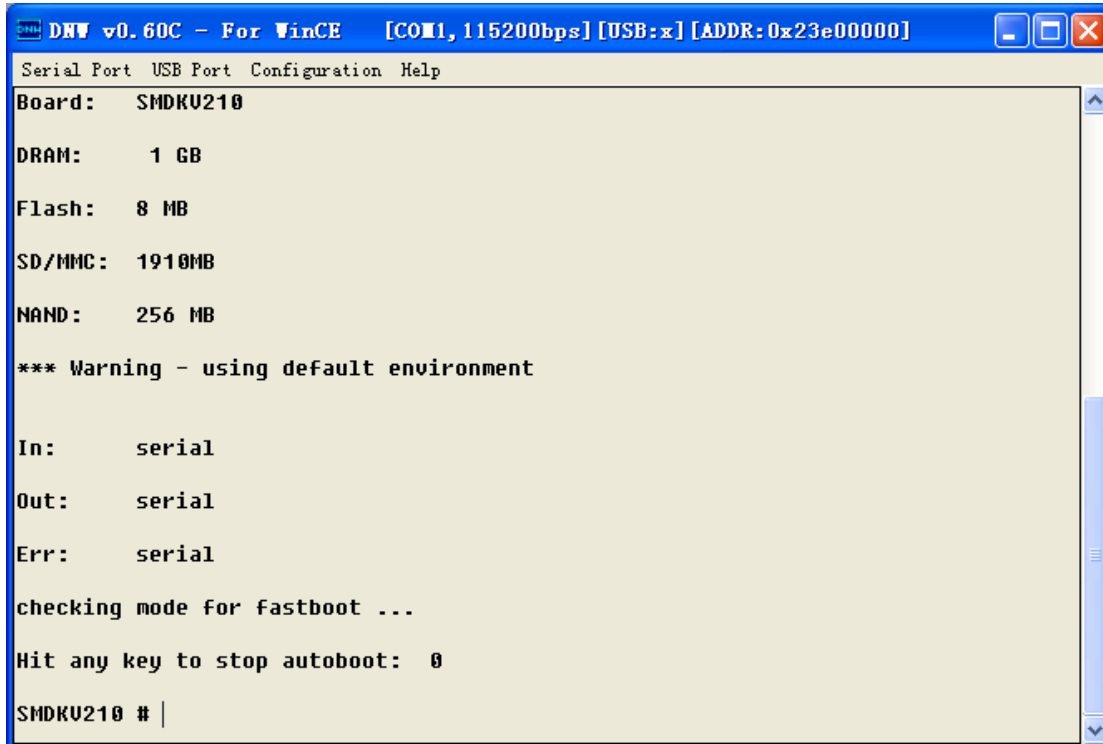
Step 3: Set Nand Flash boot mode

Set boot mode as nand flash boot mode:

SW1 DIP switch Pin	1	2	3	4
Boot from nand flash	1	0	0	0

Only need to change the pin4 of SW1 to **OFF**

Restart again, and then you can see u-boot startup from nand flash



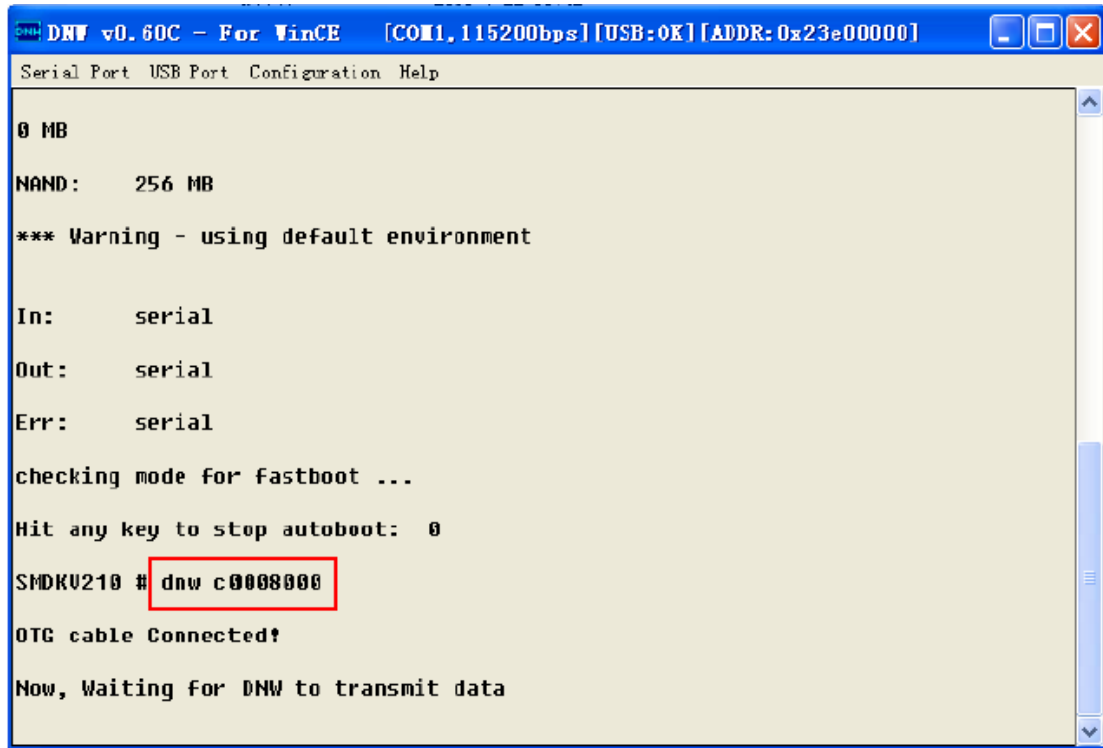
```
DNW v0.60C - For WinCE [COM1, 115200bps] [USB-x] [ADDR: 0x23e00000]
Serial Port USB Port Configuration Help
Board: SMDKV210
DRAM: 1 GB
Flash: 8 MB
SD/MMC: 1910MB
NAND: 256 MB
*** Warning - using default environment
In: serial
Out: serial
Err: serial
checking mode for fastboot ...
Hit any key to stop autoboot: 0
SMDKV210 # |
```

3 Burn kernel and Android (zimage ramdisk-uboot.img system.img)

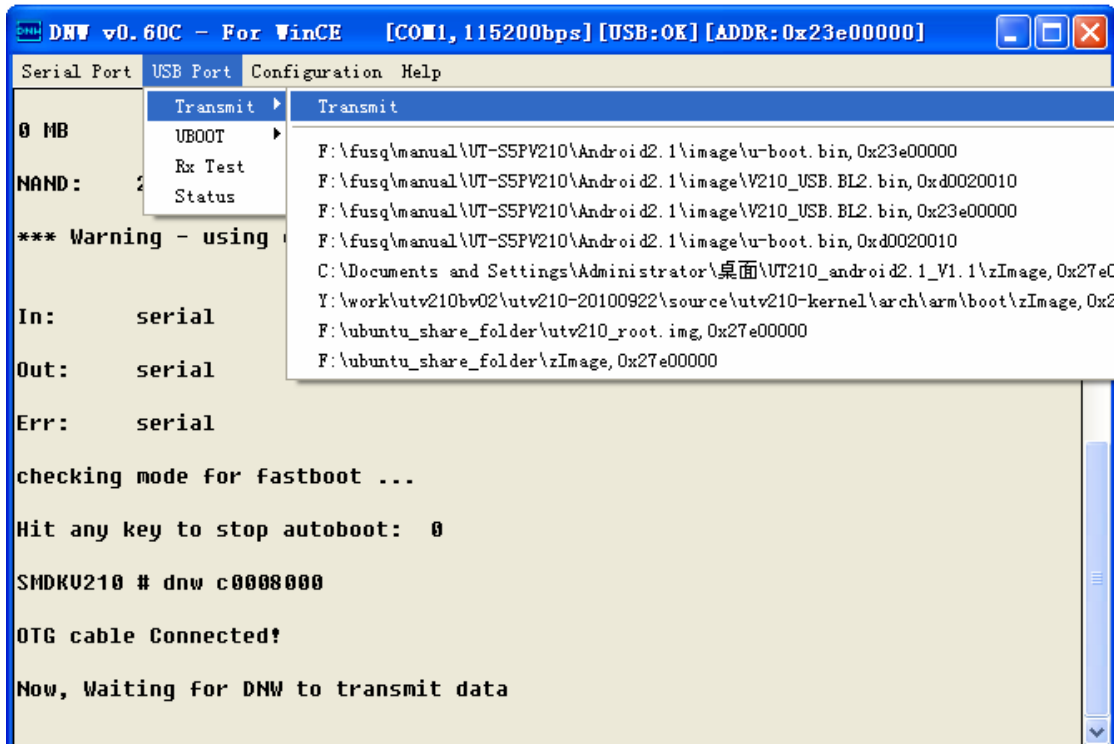
Step 1: Burn zimage.

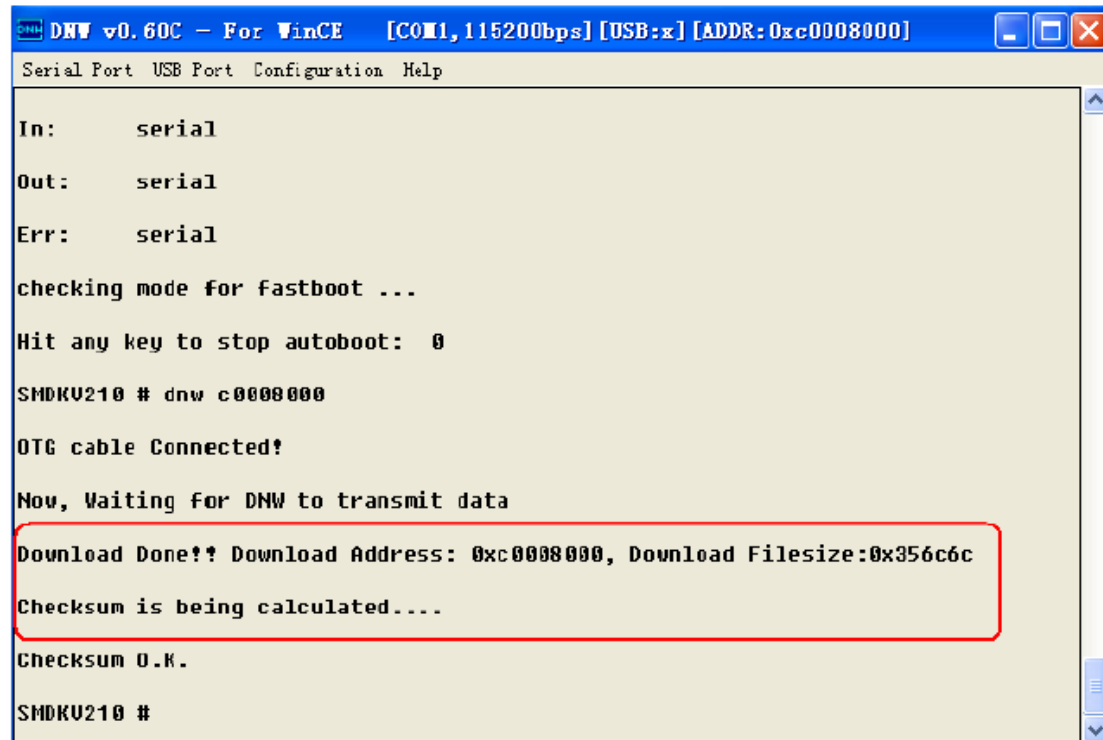
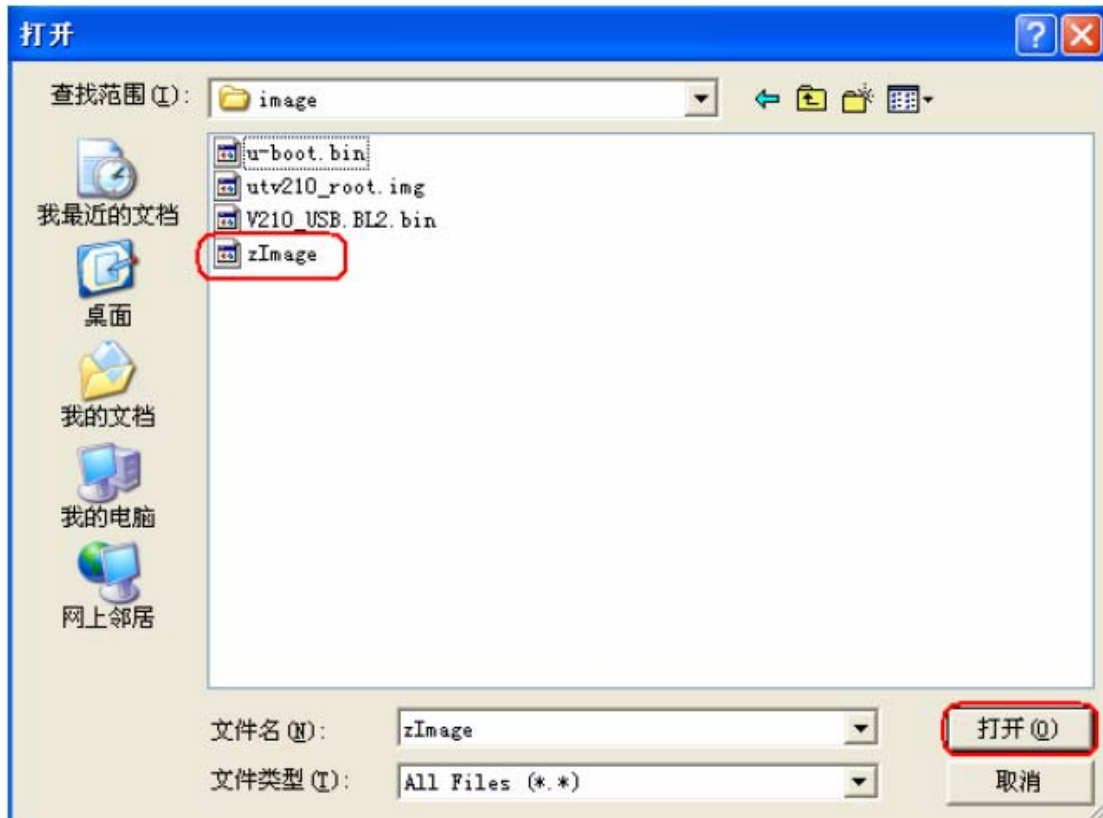
Download and program “zimage” by DNW:

SMDKV210# dnw c0008000



Download **zImage** to RAM.





Write to nand flash:

SMDKV210#nand write c0008000 60000 50000

```
SMDKV210 # dnw c0008000
OTG cable Connected!
Now, Waiting for DNW to transmit data
Download Done!! Download Address: 0xc0008000, Download Filesize:0x356c6c
Checksum is being calculated....
Checksum O.K.
SMDKV210 # nand write c0008000 600000 500000
NAND write: device 0 offset 0x600000, size 0x500000
5242880 bytes written: OK
```

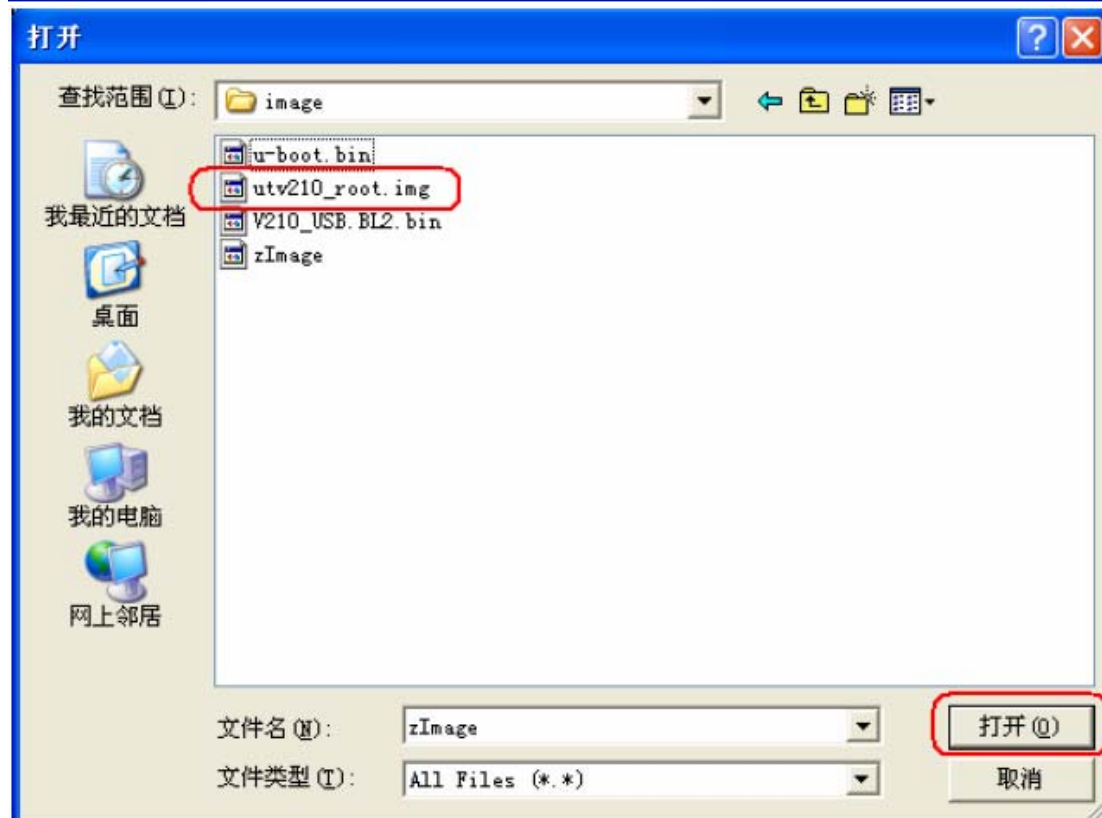
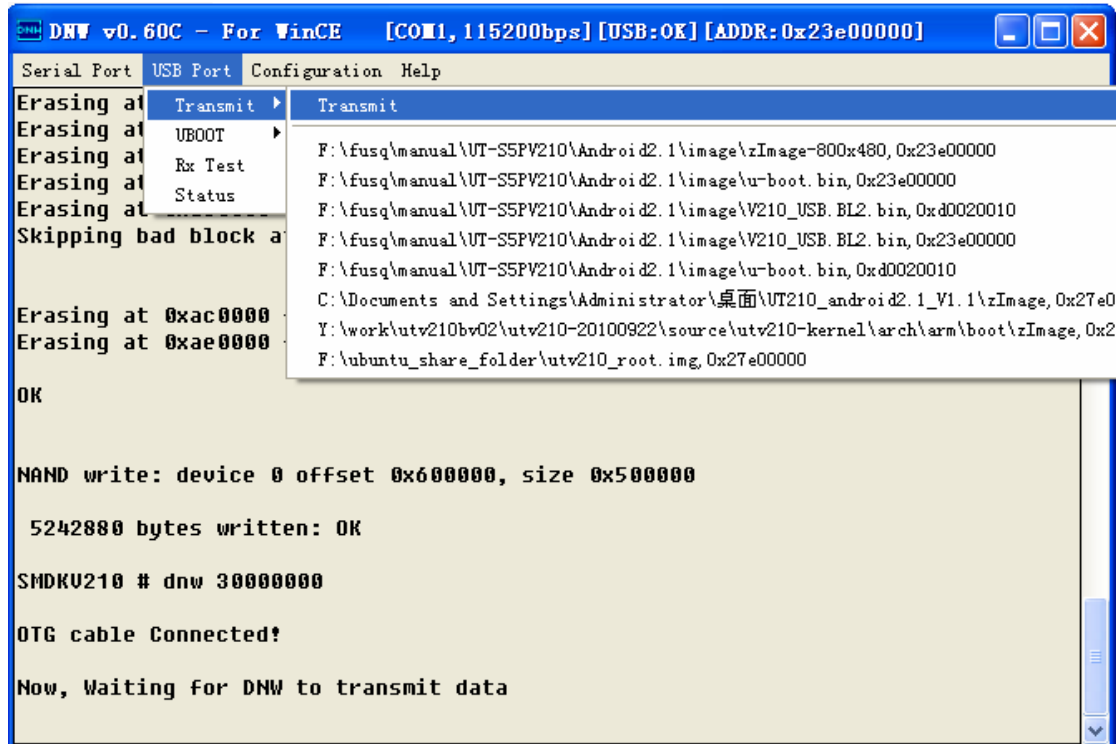
Next, program android file system, don't restart

Step 2: burn Android2.3 file system.

Download "utv210_root.img", input as following in uboot command line:

SMDKV210#dnw 25000000 (note: it is 25000000, not c0008000)

```
SMDKV210 # nand write c0008000 600000 500000
NAND write: device 0 offset 0x600000, size 0x500000
5242880 bytes written: OK
SMDKV210 # dnw 25000000
OTG cable Connected!
Now, Waiting for DNW to transmit data
```

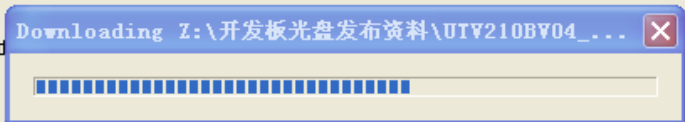


utv210_root.img is a large file, it may cost 15s when download.

```

DNU v0.60C - For WinCE [COM1,115200bps] [USB:OK] [ADDR:0x23e00000]
Serial Port USB Port Configuration Help
Erasing at 0xa00000 -- 82 complete.
Erasing at 0xa20000 -- 85 complete.
Erasing at 0xa40000 -- 87 complete.
Erasing at 0xa60000 -- 90 complete.
Erasing at 0xa80000 -- 92 complete.
Erasing at 0xaa0000 -- 95 complete.
Erasing at 0xac0000 -- 97 complete.
Erasing at 0xae0000 -- 100 complete.

OK
SMDKV210 # nand write c0000000 600000 500000
NAND write: device 0 offset 0x000000, size 0x500000
5242880 bytes written: OK
SMDKV210 # dnw 25000000
OTG cable Connected!
Now, Waiting for DNW to transmit data
    
```



```

DNU v0.60C - For WinCE [COM1,115200bps] [USB:x] [ADDR:0xc0008000]
Serial Port USB Port Configuration Help
Checksum O.K.
SMDKV210 # nand write c0000000 600000 500000
NAND write: device 0 offset 0x600000, size 0x500000
5242880 bytes written: OK
SMDKV210 # dnw 25000000
OTG cable Connected!
Now, Waiting for DNW to transmit data
Download Done!! Download Address: 0x25000000, Download Filesize:0x6956ac0
Checksum is being
calculated.....
Checksum O.K.
SMDKV210 #
    
```

Write into nand flash

SMDKV210#nand write.yaffs 25000000 e00000 xxxxxx

xxxxxx need to input the actual download file size of DNW. As shown above is **6956ac0**

```
DNW v0.60C - For WinCE [COM1, 115200bps] [USB:x] [ADDR: 0xc0008000]
Serial Port USB Port Configuration Help
OTG cable Connected!
Now, Waiting for DNW to transmit data
Download Done!! Download Address: 0x25000000, Download Filesize: 0x6956ac0
Checksum is being
calculated.....
.....
Checksum O.K.
SMDKV210 # nand write.yaffs 25000000 e00000 6956ac0
NAND write: device 0 offset 0xe00000, size 0x6956ac0
Writing data at 0xe00000 -- 0.
Writing data at 0xf05000 -- 1.
Writing data at 0x100a800 -- 2e.
Writing data at 0x1110000 -- 3e.
Writing data at 0x1215800 -- 4e.
```

```
DNW v0.60C - For WinCE [COM1, 115200bps] [USB:x] [ADDR: 0xc0008000]
Serial Port USB Port Configuration Help
Writing data at 0x6308000 -- 83e.
Writing data at 0x640d000 -- 84e.
Writing data at 0x6513000 -- 85e.
Writing data at 0x6618000 -- 86e.
Writing data at 0x671e000 -- 87e.
Writing data at 0x6823000 -- 88e.
Writing data at 0x6929000 -- 89e.
Writing data at 0x6a2e000 -- 90e.
Writing data at 0x6b34000 -- 91e.
Writing data at 0x6c39000 -- 92e.
Writing data at 0x6d3f000 -- 93e.
Writing data at 0x6e44000 -- 94e.
Writing data at 0x6f4a000 -- 95e.
Writing data at 0x704f000 -- 96e.
Writing data at 0x7155000 -- 97e.
Writing data at 0x725a000 -- 98e.
Writing data at 0x7360000 -- 99e.
Writing data at 0x7465000 -- 100e.
110455488 bytes written: OK
SMDKV210 #
```

In this step, the programming is completed, restart the development board or input reset in terminal to restart, you can enter android system, and enjoy the fun of android!