

# User's Manual

## **Computer on Module**

COM Ports

Two USB Hosts

LCD

Ethernet

CompactFlash

## **MXM-6410 Firmware Restore Guide**



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# Chapter

# 1

## System Information

This Chapter gives an introduction of system information to let users quickly pick up how to setting up the system.

Section include :

- System Setup
- Jumper Setting
- Firmware architecture in NAND flash

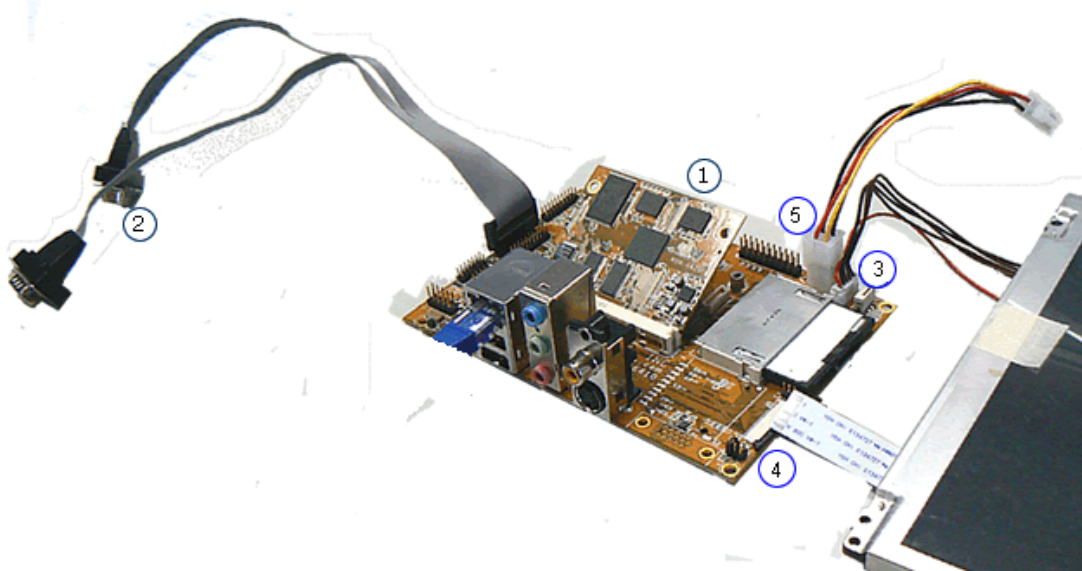
# Chapter 1 System Information

This Chapter gives an introduction of hardware information so that users can quickly set up the system.

## 1.1 Starting EVKM-MXM-6410

Before starting, please check the jumper to make sure that the jumper configuration is matching your demand. Figure 1.1 shows the steps.

**Figure 1.1 Starting EVKM-MXM-6410**



1. Press the MXM-6410 module and screw it tightly.
2. Connect the console port (UART0, CN20 on figure 1.3) to the console cable, then to a null modem cable and then connect to your PC. Open up the DNW 0.6c (Click **"Connect"** at **"Serial Port"** tab) and set the baud rate to 115200, 8N1, no hardware flow control. (At **"Configuration"** Tab → **"Options"** of DNW program serial port setting.)
3. Connect the backlight invert board power to CN9.
4. Connect the LCD FPC Cable (Top Contact) or LVDS cable.
5. Connect the power cable to power board.

## ***1.2 Jumper Setting***

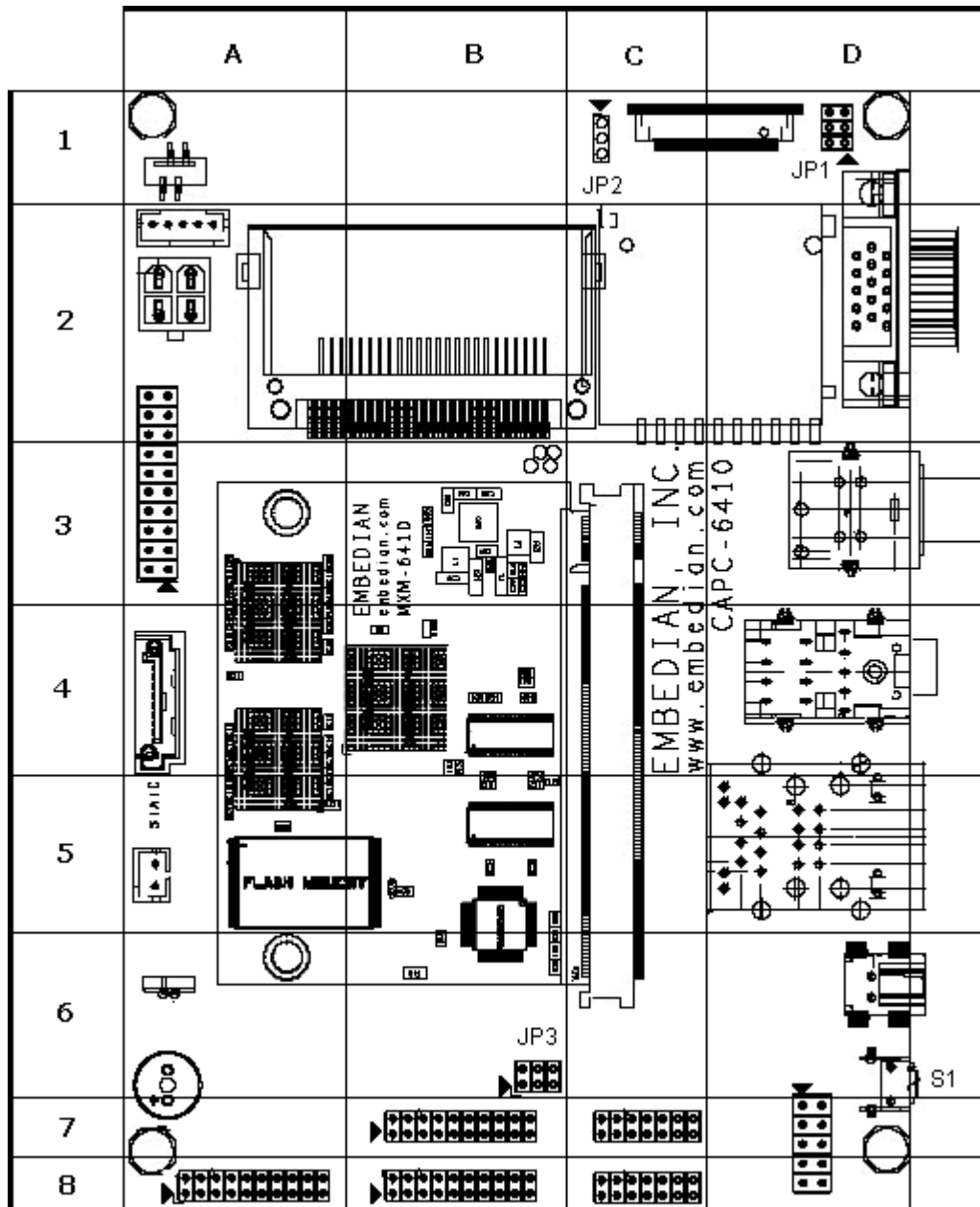
This section gives details of the hardware features of the EVKM-MXM-6410. These include a description of the switches, jumper settings, connectors and connector pin outs.

### ***Jumpers***

The EVKM-MXM-6410 SBC has a number of jumpers that allow you to configure your system to suit your application. All use 2mm shorting blocks (shunts) to select settings. Turn off power of the EVKM-MXM-6410 before changing the position of a shunt.

### ***Jumper Location***

***Figure 1.2 Jumper Location***



### List of Jumpers

The table below lists the function of various jumpers.

**Table 1.1 Jumpers**

Table 1.1	Jumpers
Label	Function
<b>JP1</b>	NOR boot or NAND boot Setting and LCD Scan Direction Setting
<b>JP2</b>	LCD Power Setting (3.3V or 5V for both TTL and LVDS)
<b>JP3</b>	RS232/422/485 Setting

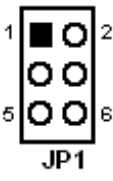
<b>S1</b>	<i>Reset Button</i>
-----------	---------------------

### **Jumper Settings**

The following tables describe how the jumper shunts to various configurations.

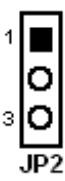
**JP1:** Location on Board, D1

**Table 1.2 NOR Boot or NAND Boot and LCD Scan Direction Setting (JP1)**

<b>Table 1.2</b>	<b>NOR Boot or NAND Boot and LCD Scan Direction Setting</b>	
	<b>Setting</b>	<b>Function</b>
	<i>N.C.(Default)</i>	<i>NAND Boot</i>
	<i>JP1 (1-2)</i>	<i>NOR Boot</i>
	<i>JP1 (3-4)</i>	<i>Pull-High of CN14 Pin 30</i>
	<i>JP1 (5-6)</i>	<i>Pull-High of CN14 Pin 31</i>

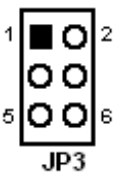
**JP2:** Location on Board, C1

**Table 1.3 LCD VCC Power Setting for CN14 and CN15 (JP2) (from CPU LVDS and TTL)**

<b>Table 1.3</b>	<b>LCD VCC Power Setting for CN14 (JP2) (from CPU LVDS and TTL)</b>	
	<b>Setting</b>	<b>Function</b>
	<i>JP2(1-2)(Default)</i>	<i>3.3V</i>
	<i>JP2(3-4)</i>	<i>5V</i>

**JP3:** Location on Board, B6

**Table 1.4 RS232/422/485 Mode Setting**

<b>Table 1.4</b>	<b>RS232/422/485 Setting</b>	
	<b>Setting</b>	<b>Function</b>
	<i>JP3(1-2)(Default)</i>	<i>RS232</i>
	<i>JP3(3-4)</i>	<i>RS422/RS485 half duplex</i>
	<i>JP3(5-6)</i>	<i>RS422/RS485 full duplex</i>

**Note:** If JP3 jumper set to be RS232, the RS232 connector will be CN20 (UART1) header. If JP3 jumper set to be RS422 and RS485, the connector will be CN22 header. User can only choose one (RS232 or RS422 or RS485) at the same time.

**S1: Location on Board, D6**

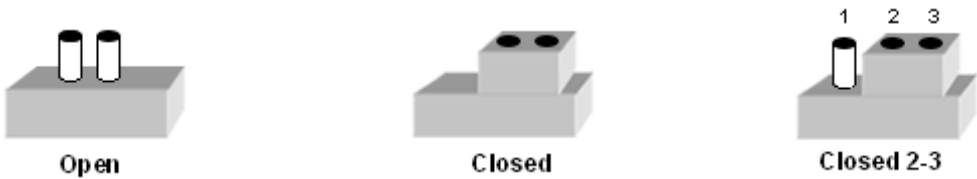
**Table 1.5 Reset Button**

Table 1.5	Reset Button	
	Setting	Function
		Press Button and Release Immediately

**Setting Jumpers**

You configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



The jumper settings are schematically depicted in this manual as follows.





A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

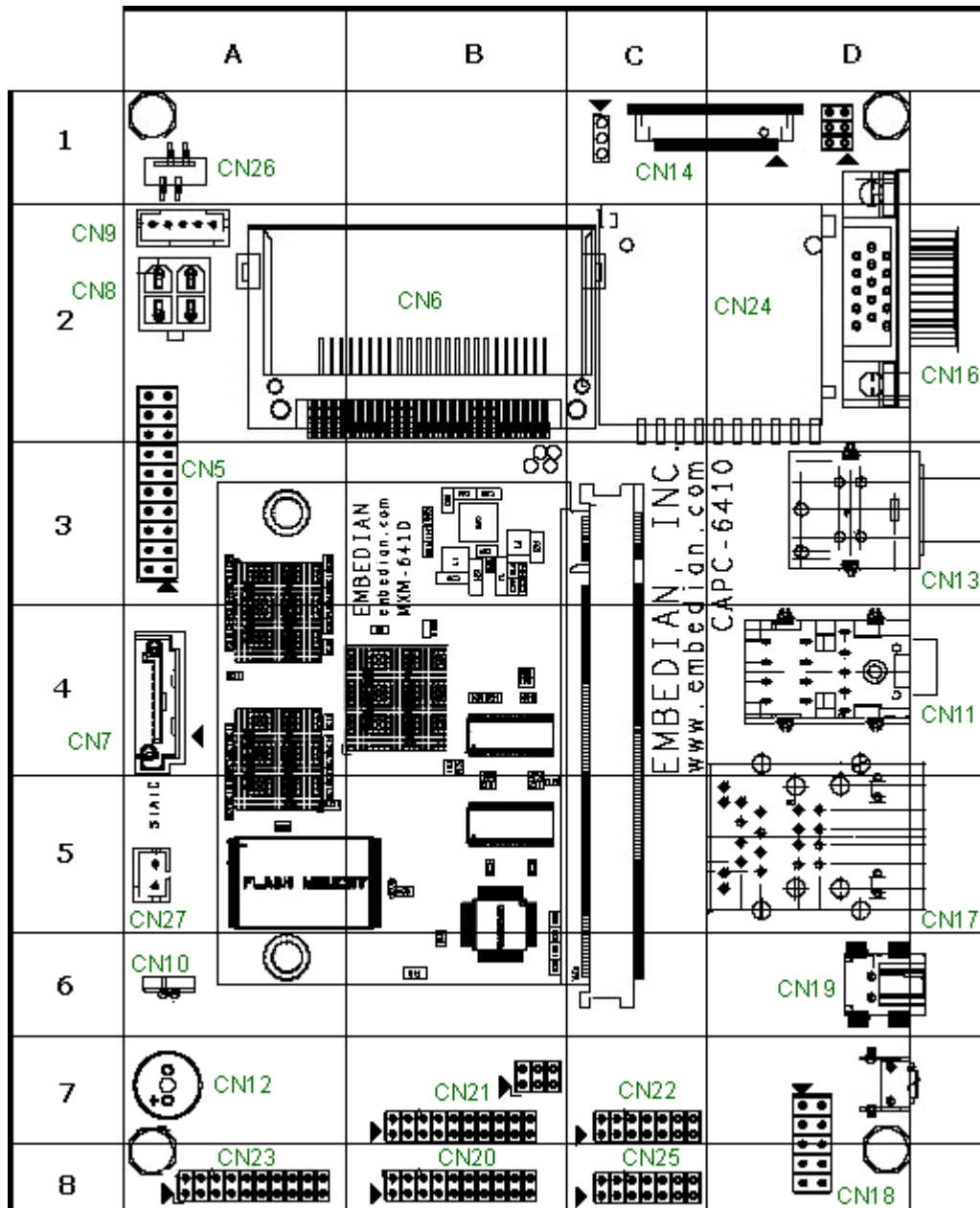
Generally, you simply need a standard cable to make most connections.

### 1.3 Connectors

Onboard connectors link the EVKM-MXM-6410 to external devices such as LCD panel, a keyboard, an audio headset or CompactFlash and to external communication such as 802.11, USB or Ethernet link. The table below lists the function of each of the board's connectors.

#### Connector Location

**Figure 1.3 Connector Location**



## List of Connectors

**Table 1.6 List of Connectors**

<b>Table 1.6</b>	<b>Connector</b>
<b>Label</b>	<b>Function</b>
<b>CN5</b>	JTAG
<b>CN6</b>	CF Type I/II Connector
<b>CN7</b>	SATA Connector
<b>CN8</b>	Power Connector
<b>CN9</b>	LCD Backlight Inverter Connector
<b>CN10</b>	RTC Battery Connector
<b>CN11</b>	Audio (Microphone in, Headphone out, Line in) Connector
<b>CN12</b>	Buzzer
<b>CN13</b>	S-Video and CVBS Video Connector
<b>CN14</b>	TTL Level LCD FPC Connector
<b>CN15</b>	LVDS LCD Connector
<b>CN16</b>	VGA DSub-15 Connector
<b>CN17</b>	Ethernet RJ45 and Double USB Host Type A Connector
<b>CN18</b>	Double USB Host Header
<b>CN19</b>	USB OTG Type B Connector
<b>CN20</b>	UART 0 and UART 1 Header
<b>CN21</b>	UART 2 and UART 3 Header
<b>CN22</b>	SPI and RS422/485 Header
<b>CN23</b>	UART 4 and UART 5 Header
<b>CN24</b>	SD/SDHC Connector
<b>CN25</b>	GPIO Header
<b>CN26</b>	4-Wire Touch Panel Connector
<b>CN27</b>	CAN Bus Connector

# Chapter

# 2

## Firmware Architecture

This Chapter gives background information on the firmware architecture of MXM-6410 computer on module.

Section include :

- Firmware
- Switching boot option from NOR or NAND
- Firmware architecture in NAND flash

# Chapter 2 Firmware Architecture

This Chapter gives an overall picture in regarding to the firmware architecture of MXM-6410 computer on module. This helps users understand what they are doing when upgrade or restore the firmware.

## **2.1 Firmware**

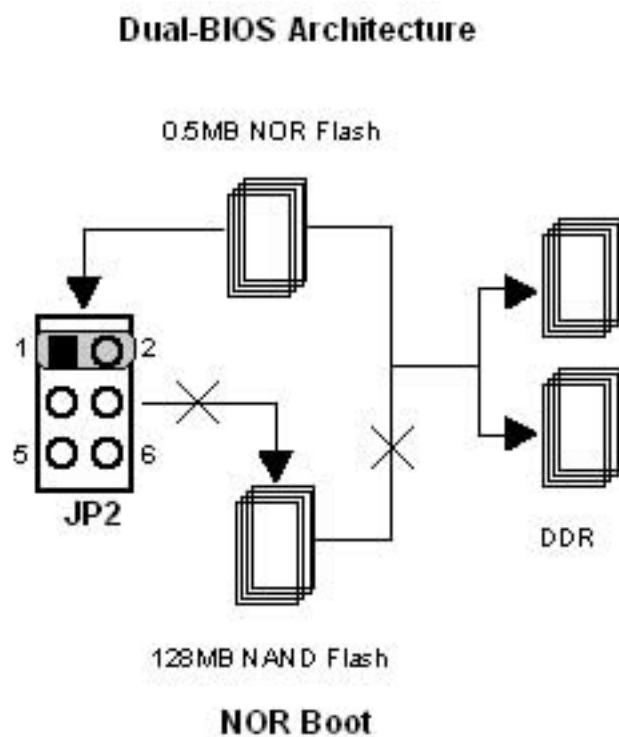
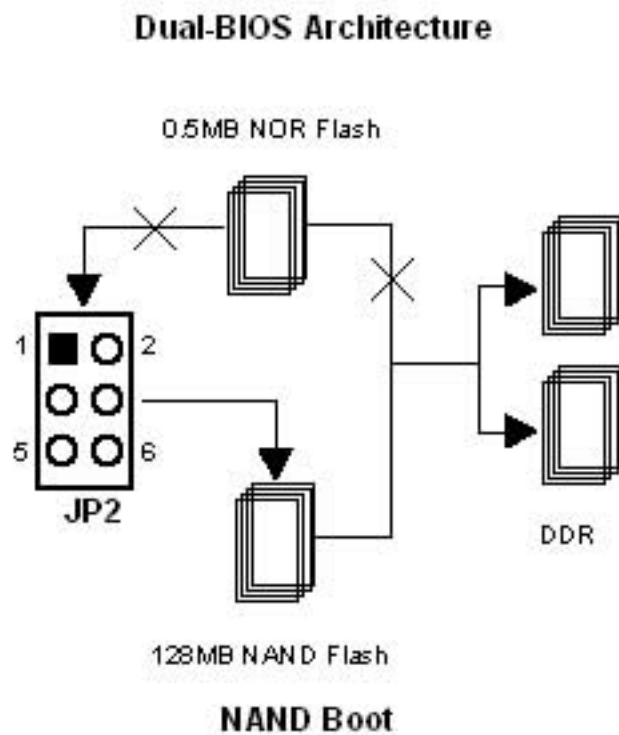
There are NOR flash (on carrier board) and NAND flash (on the module) reside in the system and play different roles. The firmware in NAND includes stepldr.nb0 (BootStrap Loader), eboot.bin and NK.bin. The system is booting from NAND flash by default. The firmware in NOR flash will not be used during normal operation. It stores some utilities like writing MAC address, checking bad blocks of NAND flash or restoring/upgrading the firmware to NAND when the eboot is gone for somehow. The firmware restoring is especially important in this kind of NAND boot device. All firmware will be factory pre-loaded.

## **2.2 Switching boot option from NOR or NAND**

The NAND boot or NOR boot is determined by JP1 jumper setting on Embedian 3.5-inch APC-6410 series single board computers. The default setting (JP1 1-2 open) is NAND boot. And shunt the 1-2 of JP1 will switch to NOR boot. Always power off when changing the jumpers.

Following figure shows the jumper setting of NAND boot and NOR boot.

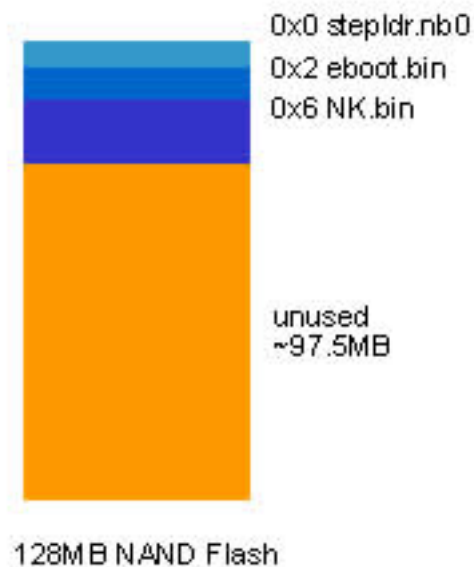
**Figure 2.1 Jumper Settings of NOR Boot and NAND Boot**



## 2.3 Firmware Architecture in NAND flash

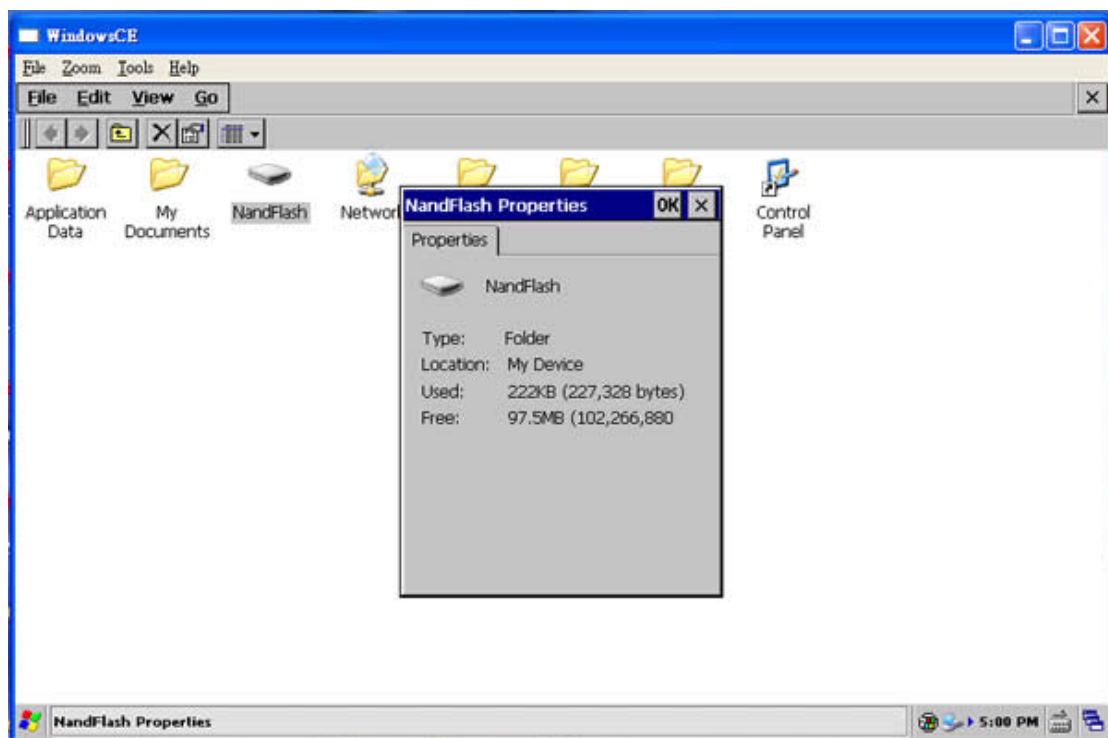
Figure 2.2 shows the firmware architecture in NAND flash.

**Figure 2.2** Firmware Architecture in NAND Flash



When power on, the processor will copy the first 4K of BootStrap Loader (stepldr.nb0) to internal RAM. The stepldr will initialize the memory mapping and load the eboot from the 2<sup>nd</sup> block (0x2, 1 block = 128K) of NAND flash. The WinCE 6.0 kernel (NK.bin) starts from the 6th block (0x6). There are about 97.5MB un-used in NAND for users. User can see the flash information at My Device\NandFlash when booting up. Click the mouse or touch on the icon for a few seconds and Tab the “Properties” as Figure 2.3.

**Figure 2.3** Flash Information



The purposes of this document are to tell users how to restore or upgrade the firmware in NAND flash. The next chapter will detail that.



# Chapter

# 3

## **Restore the Firmware in NAND flash**

This Chapter details how to restore the firmware in NAND flash of MXM-6410 computer on module.

Section include :

- Restore Stepldr.nb0 and EBOOT.bin from NOR flash
- Restore NK image from EBOOT
- Restore firmware in NAND flash from SD boot

# Chapter 3 Restore the firmware in NAND flash

This chapter first gives two steps to restore the firmware in NAND flash. If the EBOOT of the system is gone, users need to follow the “Restore Stepldr.nb0 and EBOOT.bin from NOR flash “ that described in section 3.1. If the EBOOT of the system is still alive, users can go to the section 3.2 directly. And in the last section of this chapter, we will introduce how to restore the firmware in NAND flash from SD boot.

Before going on, users need to install two kinds of USB drivers that Embedian provided with on your Windows PC first. The “secusb2” is for the USB download during the NOR boot configuration and the “wceusbsh” is the Windows CE USB RNDIS driver. (When plug the USB cable to the Windows PC at first time, Windows will ask you to install the driver. Just point to the directory where your USB driver placed and the installation will be done.)

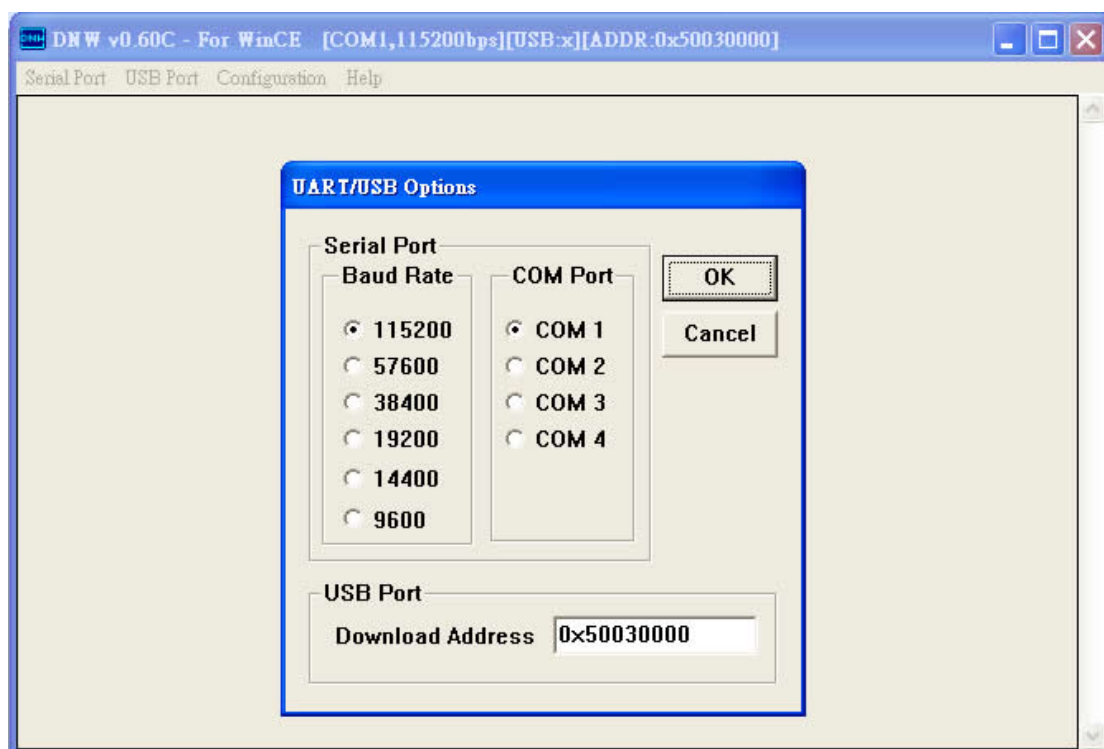
## ***3.1 Restore Stepldr and EBOOT from NOR flash***

User will need this chapter in case that your EBOOT is erased by accident or gone for somehow. To write Stepldr and EBOOT images to NAND flash using NOR boot, first, power off device and set the jumper JP1 to NOR flash configuration. (Be sure to power off the system before you changing the jumper.)

Install the USB host driver to your Windows system and DNW v0.6C programs that Embedian provided in your host Windows PC. Connect the serial console cable from serial console port (UART 0 in CN20 of Embedian SBC) of device to the COM port of your Windows PC. And connect a USB cable from USB device port (CN19 of Embedian SBC) to USB host port of your Windows PC.

In "**Serial Port**" of your dnw program, click on "**Connect**" and power on device. In "**Configuration**" of dnw program, at "**Options**" set the COM port as the following setting of figure 3.1. And the USB Port Download Address is "**0x50030000**", this is the DDR DRAM address where the program will be executed. The baud rate is 115200 and the host COM port is this example is "**COM 1**"

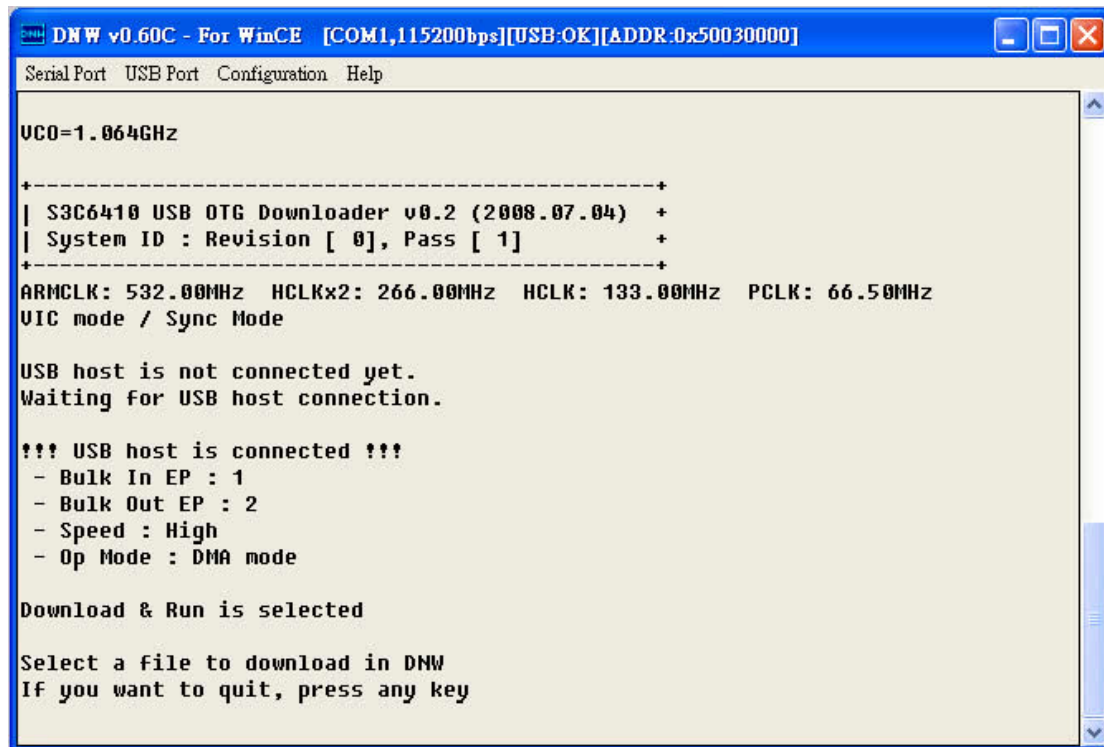
**Figure 3.1 COM and USB Port Setting of DNW Program**



## **Step 1**

Power on the device and you should see the following screen in your DNW programs as shown in figure 3.2.

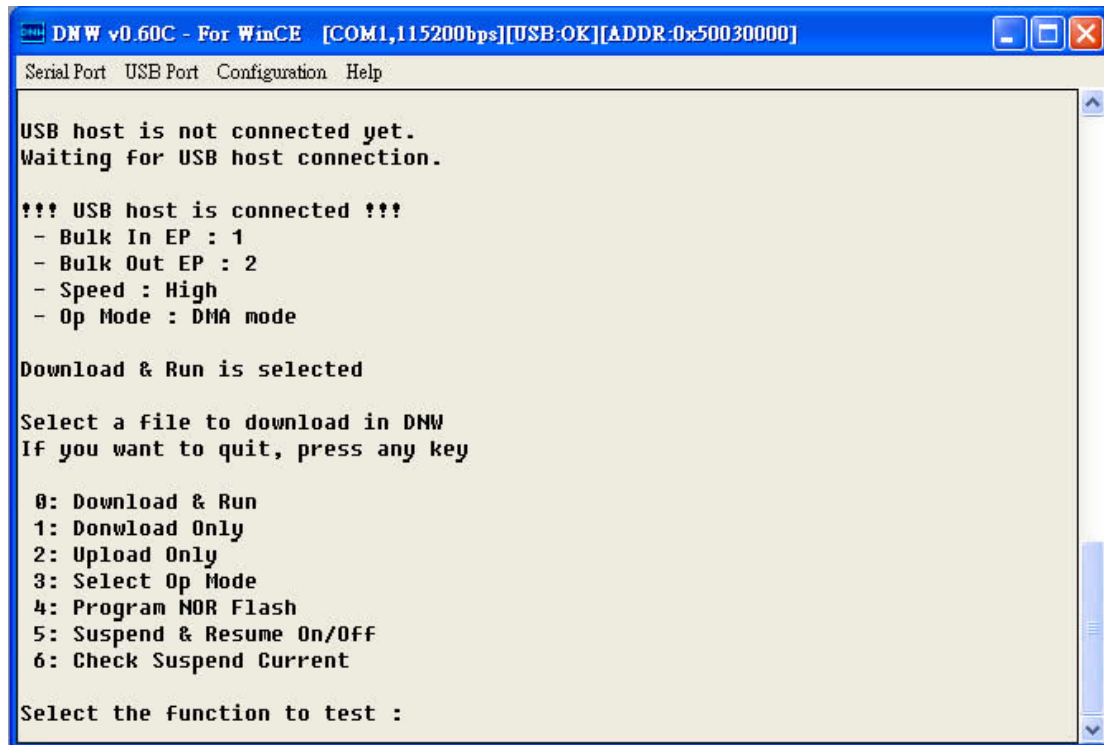
**Figure 3.2 NOR Boot Splash Screen**



## **Step 2**

Press any key and you will enter the main menu as shown in figure 3.3.

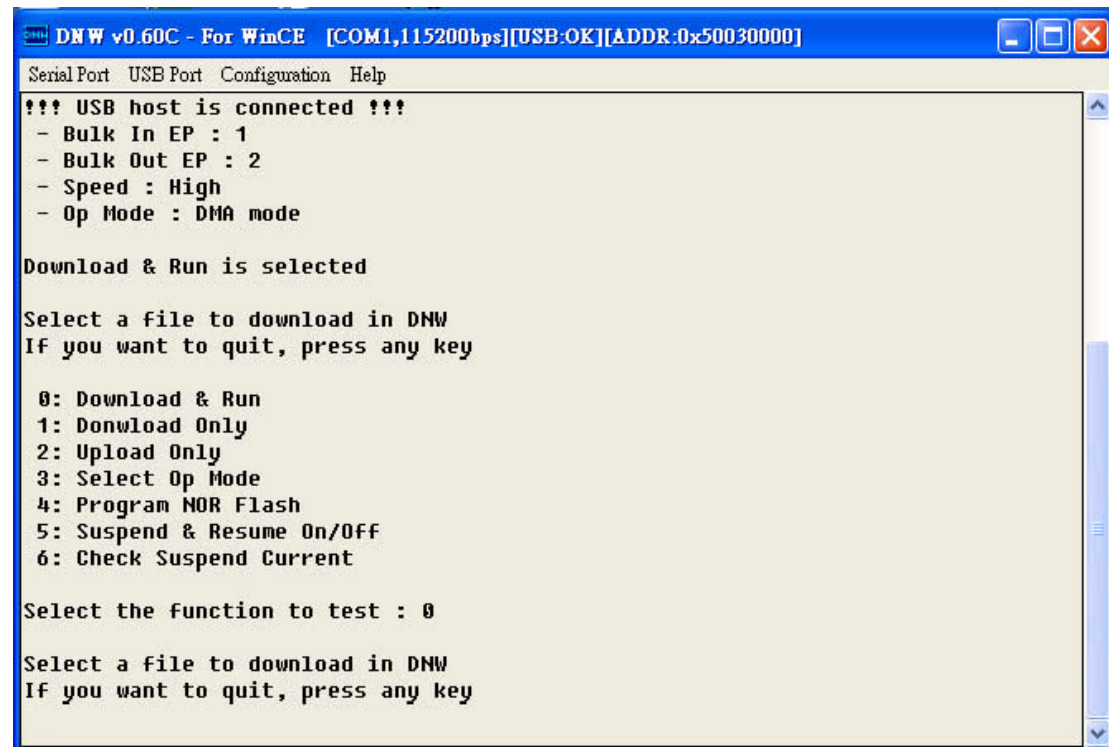
**Figure 3.3 NOR Boot Menu**



### Step 3

Select the function "**0: Download & Run**" and press "**Enter**". You will see the following screen.

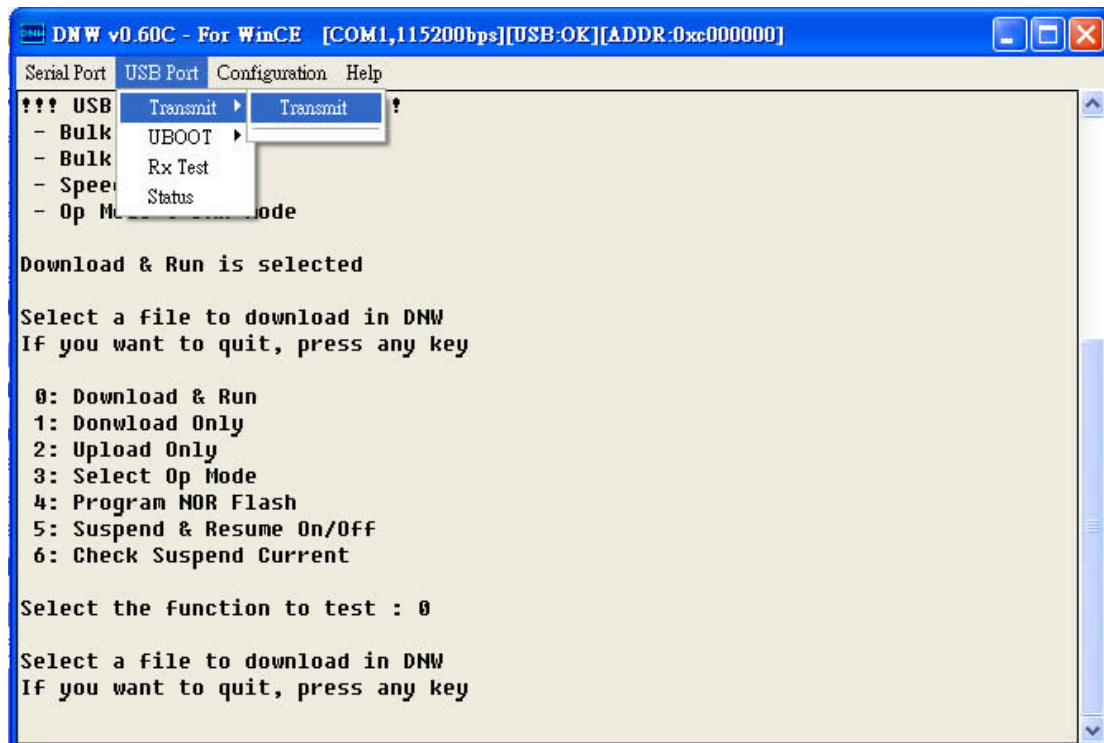
**Figure 3.4 Download & Run**



## Step 4

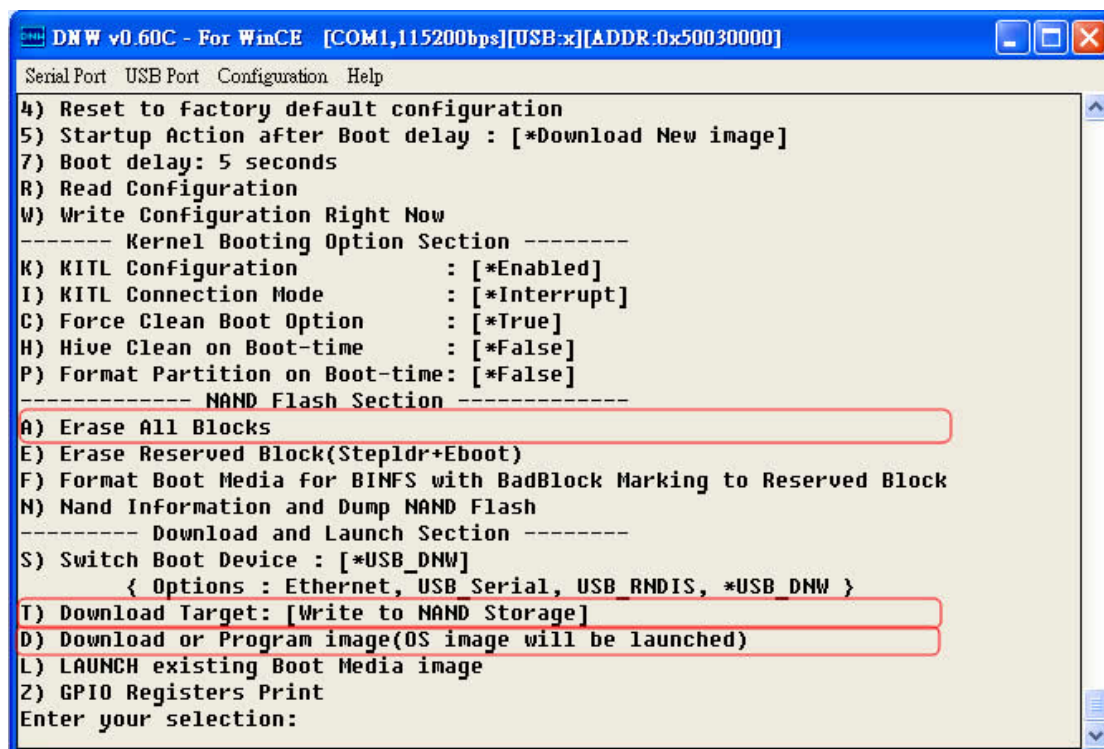
At “USB Port” Tab, Select “Transmit” → “Transmit” as figure 3.5 shown.

**Figure 3.5 USB Transmit for Download & Run**



A file browser will pop up and select the folder where you put the **EBOOT.nb0** file. Then the EBOOT will be download the DDR RAM and run. You will see the EBOOT “initiating image download in 5 seconds” messages. Press **[Space]** bar to enter the EBOOT menu during these 5 seconds as shown in figure 3.6.

**Figure 3.6 EBOOT Menu**



### **Step 5**

First of all, we recommend you press **A) Erase All Blocks** to erase everything in NAND flash.

Next, press **T) Download Target: [\*Download to RAM]** and change to **T) Download Target: [Write to NAND Storage]**. (By pressing "T" and you can change back and forth.) This is to tell EBOOT that we are going to write image to NAND flash instead of DDR RAM. Press "W" to save this EBOOT configuration.

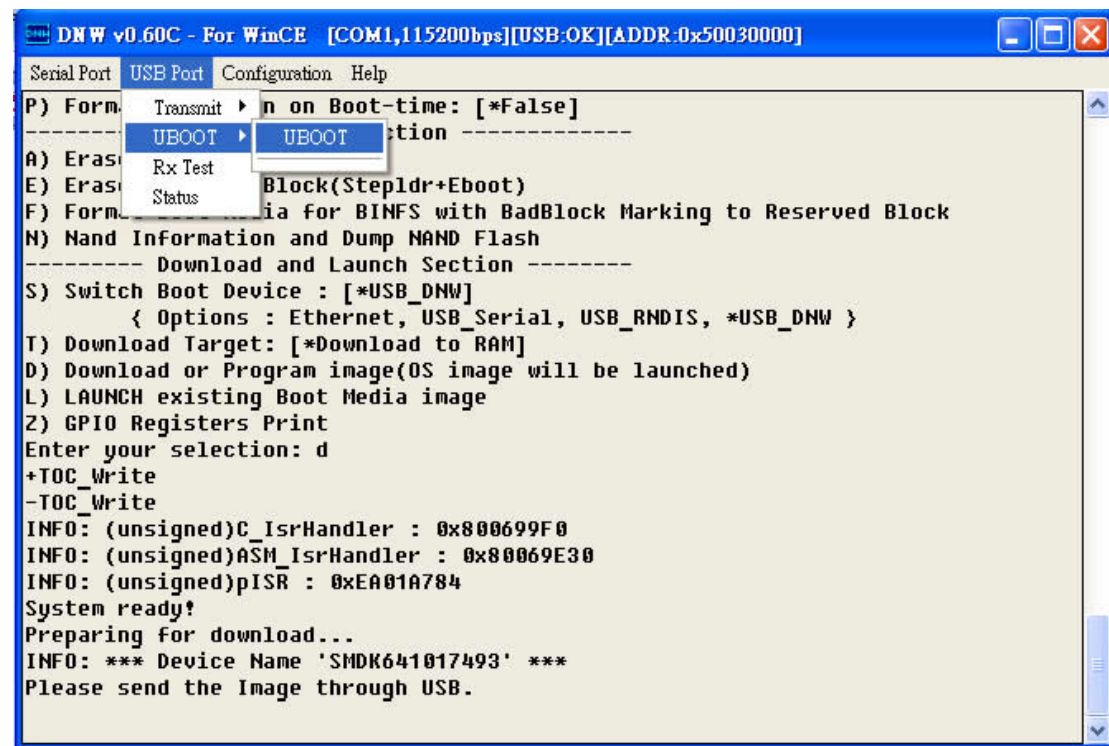
And press **D) Download or Program image (OS image will be launched)**

You will see the following screen shown as figure 3.7.



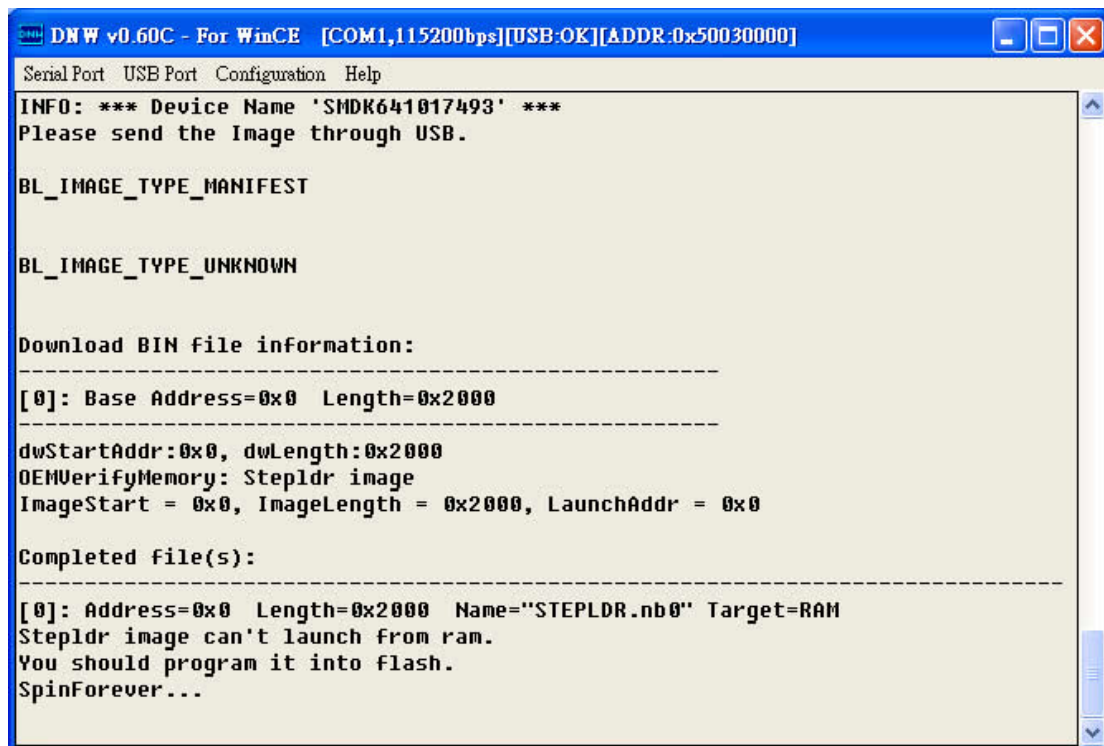
## Step 6

**Figure 3.7 Writing image to NAND flash**



At “USB Port” Tab, select **UBOOT** → **UBOOT** as shown in figure 3.7. (Note: because we are going to write image to NAND flash, choose UBOOT instead Transmit. Here is different from that in step 4.) A file browser will ask you to select a file that you would like to write to NAND flash. Find the file “**STEPLDR.nb0**” in your PC and click. And you will see the following screen as shown in figure 3.8.

**Figure 3.8 Write STEPLDR.nb0 to NAND**



Now you have successfully write the STEPLDR.nb0 file to NAND flash.

Next, we would like to write **EBOOT.bin** to NAND flash.

### **Step 7**

Repeat steps 1~6, but **DON'T** erase all blocks at step 5 because you have already written the STEPLDR.nb0 to NAND flash. And at step 6 choose the **EBOOT.bin** file. (Note: It is EBOOT.bin instead of EBOOT.nb0.) After writing EBOOT.bin to NAND flash you should be able to see the screen as shown in figure 3.9.

**Figure 3.9 Write EBOOT.bin to NAND**

```
DNW v0.60C - For WinCE [COM1,115200bps][USB:OK][ADDR:0x50030000]
Serial Port  USB Port  Configuration  Help
dwTtlSectors: 0x8A
dwLoadAddress: 0x80030000
dwJumpAddress: 0x80060C04
dwStoreOffset: 0x0
sgList[0].dwSector: 0x80
sgList[0].dwLength: 0x8A
}
ID[1] {
  dwVersion: 0x1
  dwSignature: 0x43465348
  String: ''
  dwImageType: 0x2
  dwTtlSectors: 0x0
  dwLoadAddress: 0x0
  dwJumpAddress: 0x0
  dwStoreOffset: 0x0
}
!!!Invalid Image Descriptor: id[2]=0x0
chainInfo.dwLoadAddress: 0X00000000
chainInfo.dwFlashAddress: 0X00000000
chainInfo.dwLength: 0X00000000
}
INF0: Eboot image stored to Smart Media.  Please Reboot.  Halting...
```

As of now you have successfully written the STEPLDR.nb0 and EBOOT.bin files to NAND flash.

You can turn the power off and set the JP1 jumper to NAND boot and turn the power on again. You should be able to hear a short beep sound and see the splash screen on the LCD as shown in figure 3.10.

**Figure 3.10 EBOOT Splash Screen**



Next section, we are going to introduce how to restore/upgrade the NK image from NAND flash by using EBOOT.

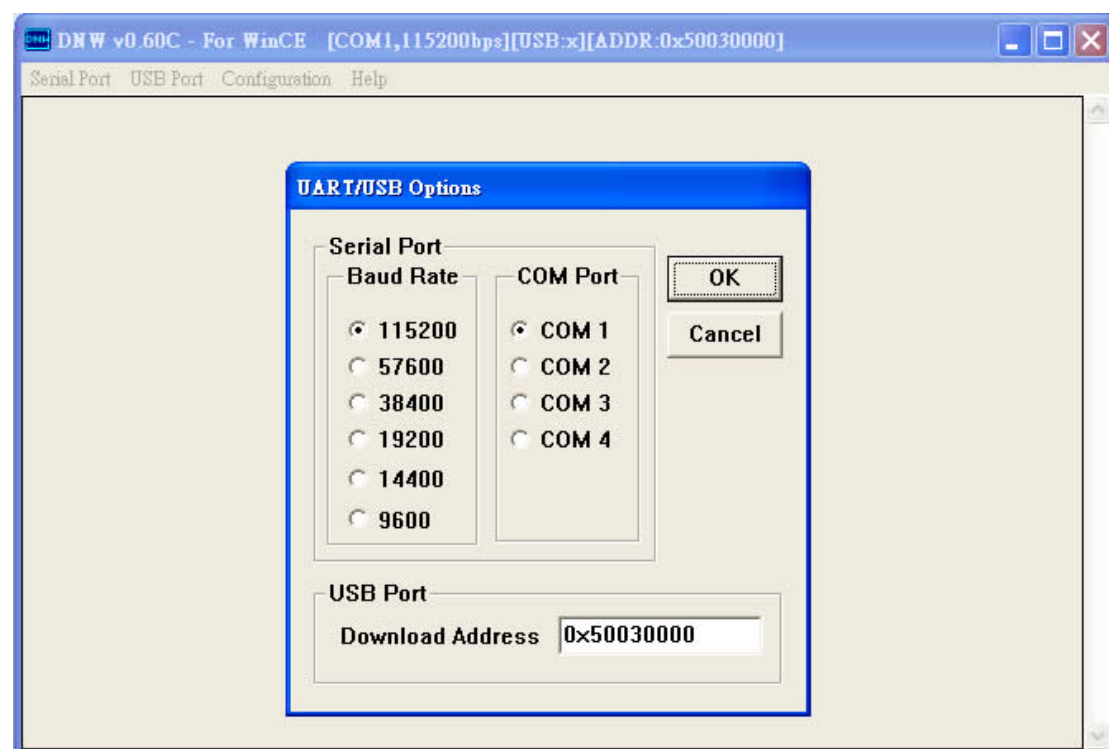
### 3.2 Restore NK image from EBOOT

In previous section, we detailed how to restore/upgrade the steploader and EBOOT from NOR flash utilities. Once you have steploader and eboot up and running in NAND flash. You can use the EBOOT to restore or upgrade the NK image.

Same as section 3.1, first, you need to connect the serial console cable from serial console port (UART 0 in CN20 of Embedian SBC) of device to the COM port of your Windows PC. And connect a USB cable from USB device port (CN19 of Embedian SBC) to USB host port of your Windows PC.

In "**Serial Port**" of your dnw program, click on "**Connect**" and power on device. In "**Configuration**" of dnw program, at "**Options**" set the COM port as the following setting of figure 3.1. And the USB Port Download Address is "**0x50030000**", this is the DDR DRAM address where the program will be executed. The baud rate is 115200 and the host COM port is this example is "**COM 1**"

**Figure 3.11 COM and USB Port Setting of DNW Program**

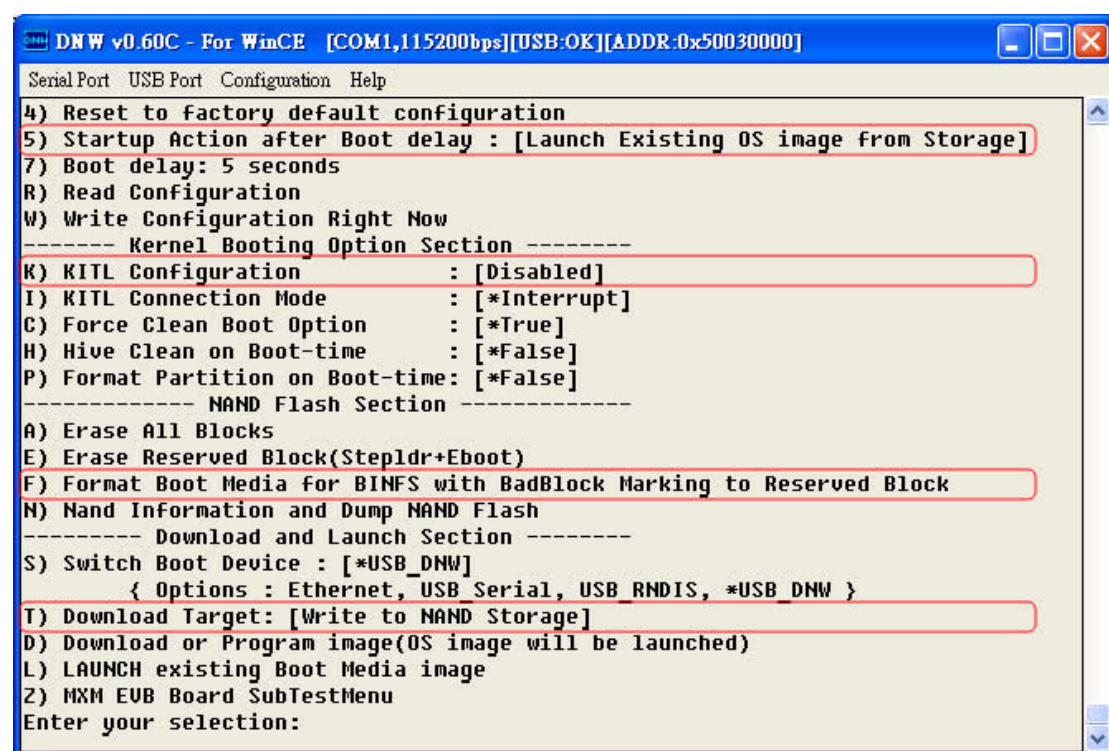


Following is a step-by-step guide.

## **Step 1**

Set the JP1 to NAND boot (open 1-2 pin of JP1) and power up the devices. You should be able to hear a short beep sound and splash screen in the LCD. You will see the EBOOT “initiating image download in 5 seconds” messages. Press [**Space**] bar to enter the EBOOT menu during these 5 seconds as shown in figure 3.12.

**Figure 3.12 EBOOT Menu Setting**



## **Step 2**

First of all, press **5) Startup Action after Boot delay: [Launch Existing OS image from Storage]** to tell EBOOT to load the NK from NAND flash because we are going to write NK to NAND flash later. (The default setting should be 5) Startup Action after Boot delay : [\*Download New image]. Press “**5**” to change it.)

Next, press **K) KITL Configuration : [Disabled]** to disable the KITL.

Press “**W**” to save this configuration first.

And next, press **F) Format Boot Media for BINFS with BadBlock Marking to Reserved Block**. This is to format the NK area as BinFS file system and mark the bad blocks in NAND flash.

You will see the following message shortly and then enter into the EBOOT menu again.

Enter your selection: f

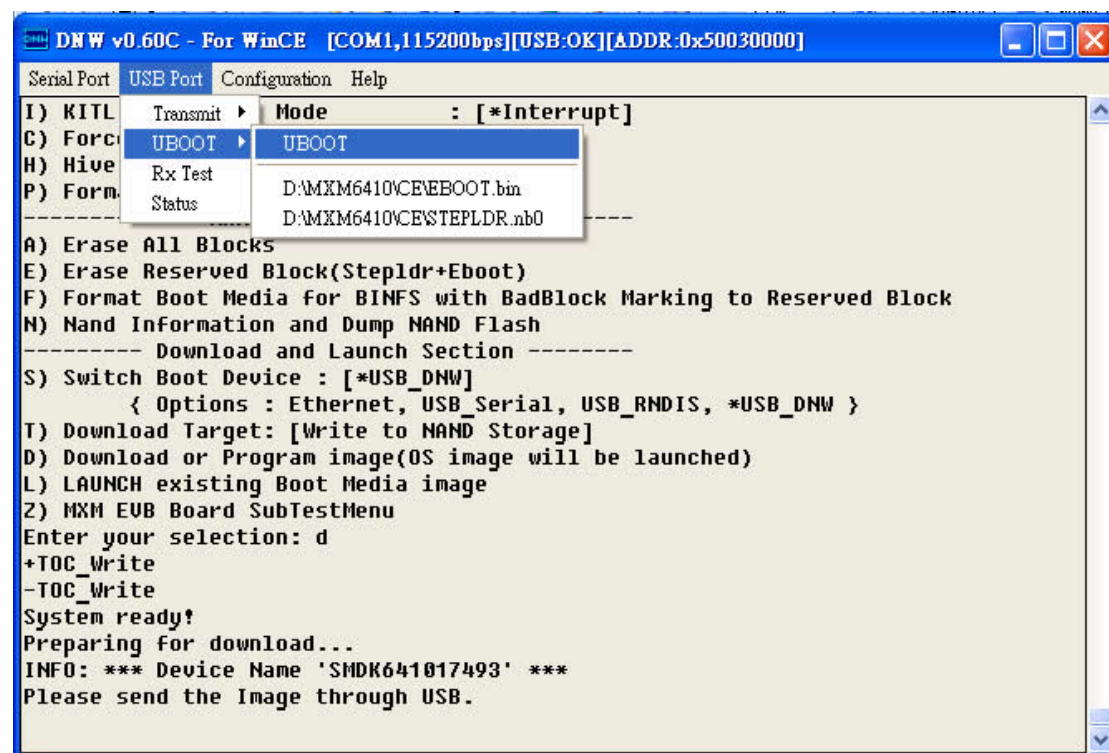
Reserving Blocks [0x0 - 0x5] ... Wait for completion

Reserving is completed.

The last step is to writing **NK.bin** image into NAND flash by pressing **D) Download or Program image (OS image will be launched)**

And you will see the following screen as shown in figure 3.13.

**Figure 3.13 Writing NK.bin to NAND flash**

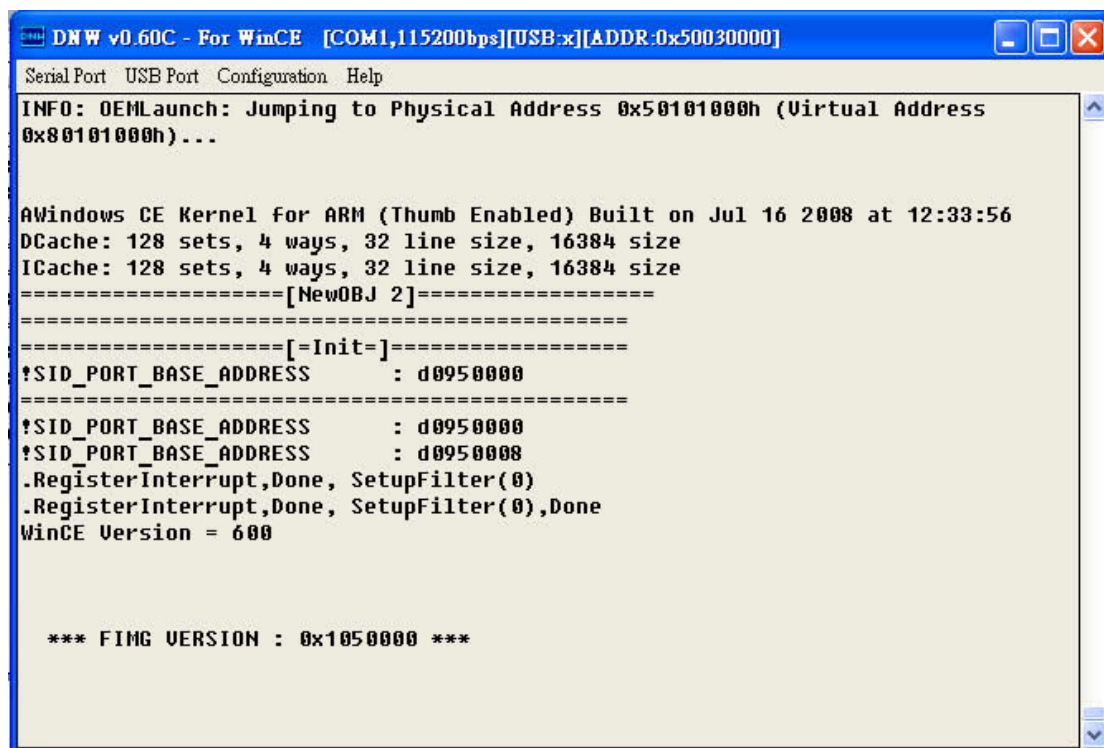




### Step 3

At “**USB Port**” Tab, select **UBOOT** → **UBOOT** as shown in figure 3.13. (Note: because we are going to write image to NAND flash, choose UBOOT instead Transmit.) A file browser will ask you to select a file that you would like to write to NAND flash. Find the file “**NK.bin**” in your PC and click. Wait for about 30 seconds to let the NK.bin writing into NAND flash. And you will see the following screen as shown in figure 3.14.

**Figure 3.14 Done with Writing NK.bin to NAND**

The image shows a screenshot of a serial terminal window titled "DNW v0.60C - For WinCE". The window has a menu bar with "Serial Port", "USB Port", "Configuration", and "Help". The status bar at the top right shows "[COM1,115200bps][USB-x][ADDR:0x50030000]". The main text area displays the following boot logs:

```
INFO: OEMLaunch: Jumping to Physical Address 0x50101000h (Virtual Address 0x80101000h)...\n\nAWindows CE Kernel for ARM (Thumb Enabled) Built on Jul 16 2008 at 12:33:56\nDCache: 128 sets, 4 ways, 32 line size, 16384 size\nICache: 128 sets, 4 ways, 32 line size, 16384 size\n===== [NewOBJ 2] =====\n\n===== [-Init=] =====\n!SID_PORT_BASE_ADDRESS      : d0950000\n\n!SID_PORT_BASE_ADDRESS      : d0950000\n!SID_PORT_BASE_ADDRESS      : d0950000\n.RegisterInterrupt,Done, SetupFilter(0)\n.RegisterInterrupt,Done, SetupFilter(0),Done\nWinCE Version = 600\n\n*** FING VERSION : 0x1050000 ***
```

If you have ActiveSync program (user can download this program for free from Microsoft’s website) installed in your Windows PC and the USB cable is connected to your device, you should be able to see the ActiveSync program pop out and ask you to set up a partnership as shown in figure 3.15.

**Figure 3.15 ActiveSync Program**

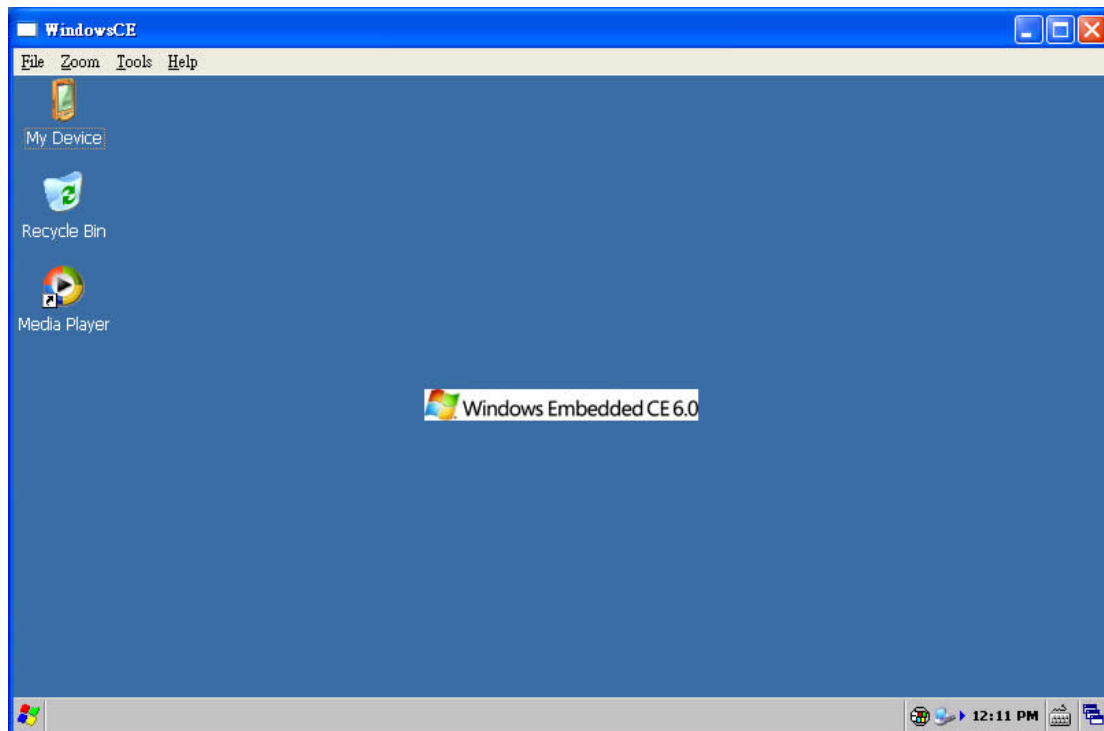


Select **"No"** and click **"Next"** of your ActiveSync program.



If you have LCD connected to the device, you should be able to see the Windows CE 6.0 desktop screen as following now. You can also use the remote desktop tool to see the desktop.

**Figure 3.16 Windows CE 6.0 Desktop**



Now, we have done the firmware restore/upgrade of the Windows CE system.

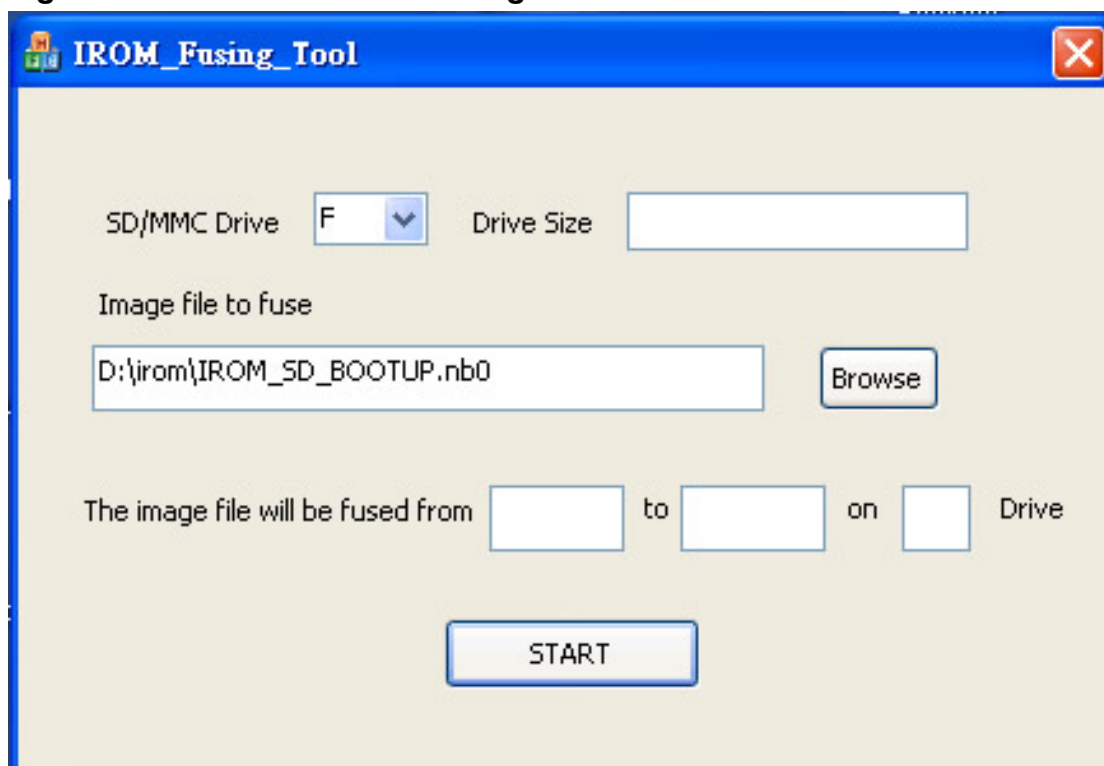
### 3.3 Restore firmware in NAND flash from SD Boot

Embedian also provides a very useful way to recover the firmware in NAND flash from SD card. To brief how this be done, use needs to use the PC tool to write the EBOOT bootable file to a SD card first and then plug that SD card into the device. Set the hardware configuration to SD boot and user will see the EBOOT menu. Details will be described in the following sections.

#### 3.3.1. Using PC Tool to Fusing the SD/SDHC card

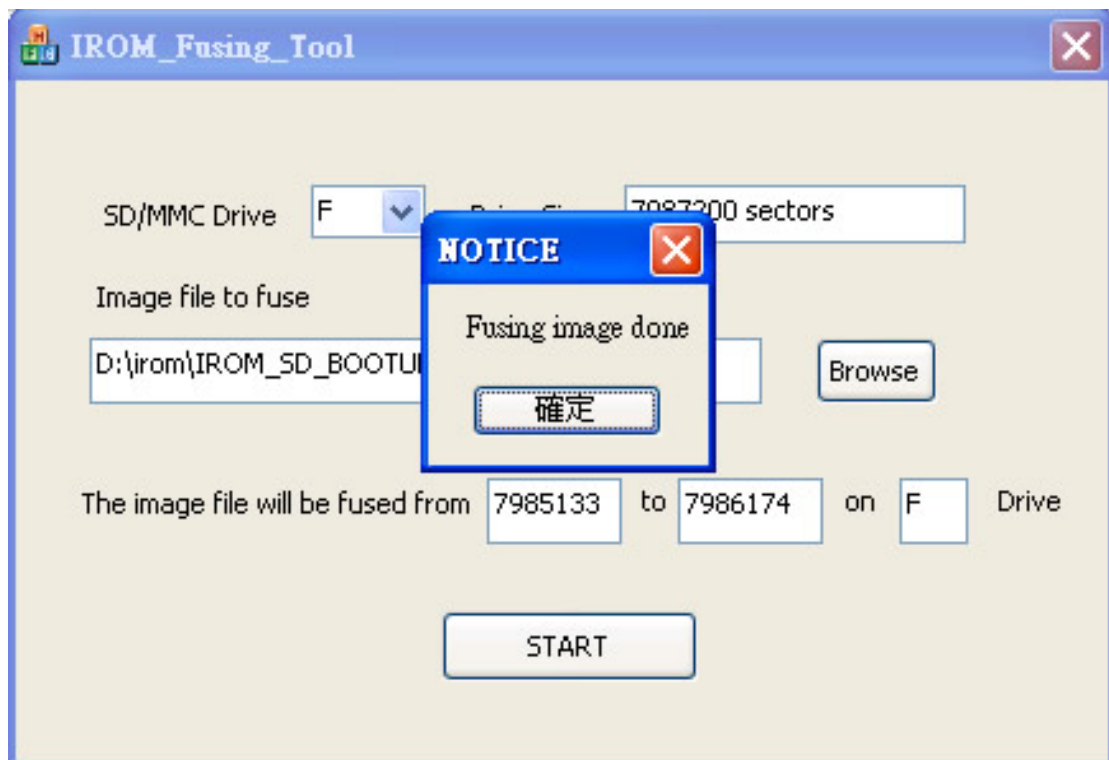
1. Users should format the SD/SDHC card as FAT32 file systems.
2. Run IROM\_Fusing\_Tool.exe (Note: for only SD, MMC, HSMMC card only, not SDHC card. Using IROM\_Fusing\_Tool\_SDHC.exe instead if SDHC cards.)
3. Click the browse button to choose IROM\_SD\_BOOTUP.nb0. (Note: this file already combined the stepldr.nb0, just fusing this file will be fine enough.)
4. Choose the storage drive that SD card is mounted on. **If you choose **\*\*NOT\*\*** SD card storage drive like HDD drive, It might make a serious problem on your HDD. Please Make sure that storage drive is right.**

Figure 3.17 Use PC Tool to Fusing SD



5. Click "START" button.

**Figure 3.18 Use PC Tool to Fusing SD Done**



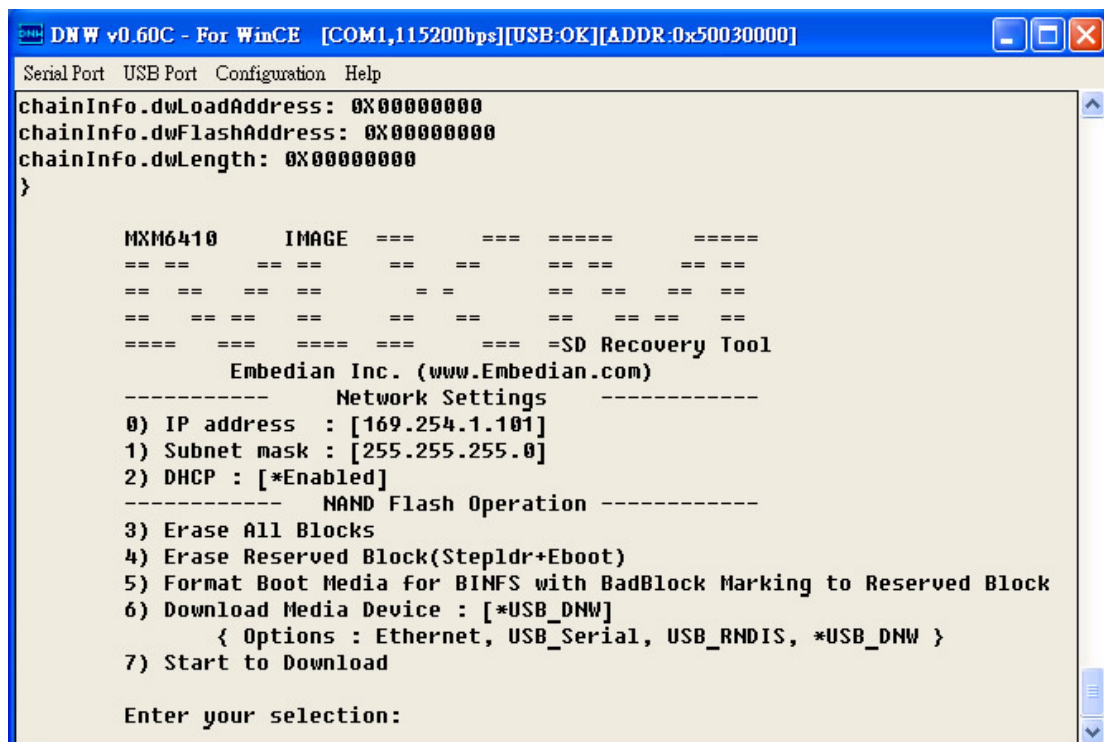
6. If there is the message box like that shown in figure 3.18, it's done.
7. Remove the SD/MMC card on you PC and put it to APC-6410's SD card slot.
8. Set booting mode as iROM SD booting, and turn on the power and you should see the system boot directly from SD now.

Next section, we will detail how to fusing NAND flash using SD boot.

### **3.3.2. Using SD boot fusing NAND flash**

After setting the device to SD boot, user should be able to see the following screen after power up.

**Figure 3.19 SD Boot Up Menu**



Once you saw the menu shown in figure 3.19. The fusing procedure will be exactly the same as described in section 3.1 to restore the NAND flash firmware from NOR flash. The following are the detail step-by-step procedures.

### **Step 1**

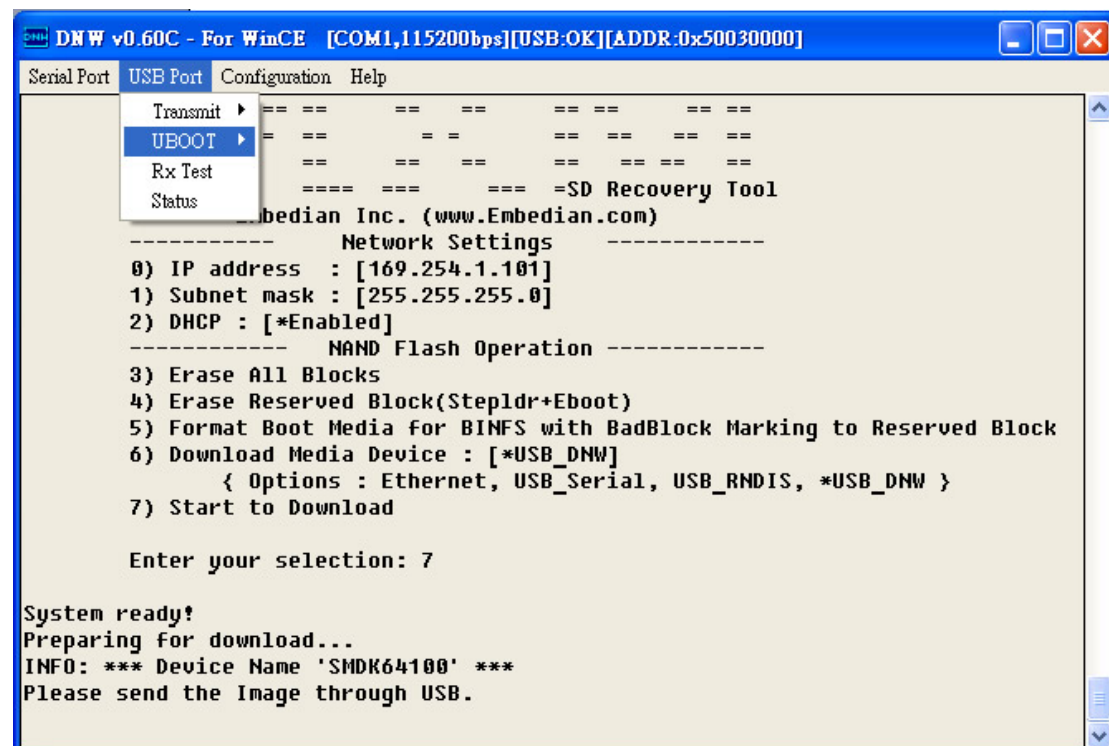
First of all, we recommend you press **3) Erase All Blocks** to erase everything in NAND flash.

Next, press **6) Download Media Device : [\*USB\_DNW]** to choose "USB\_DNW" and press **7) Start to Download**.

You will see the following screen shown as figure 3.20.

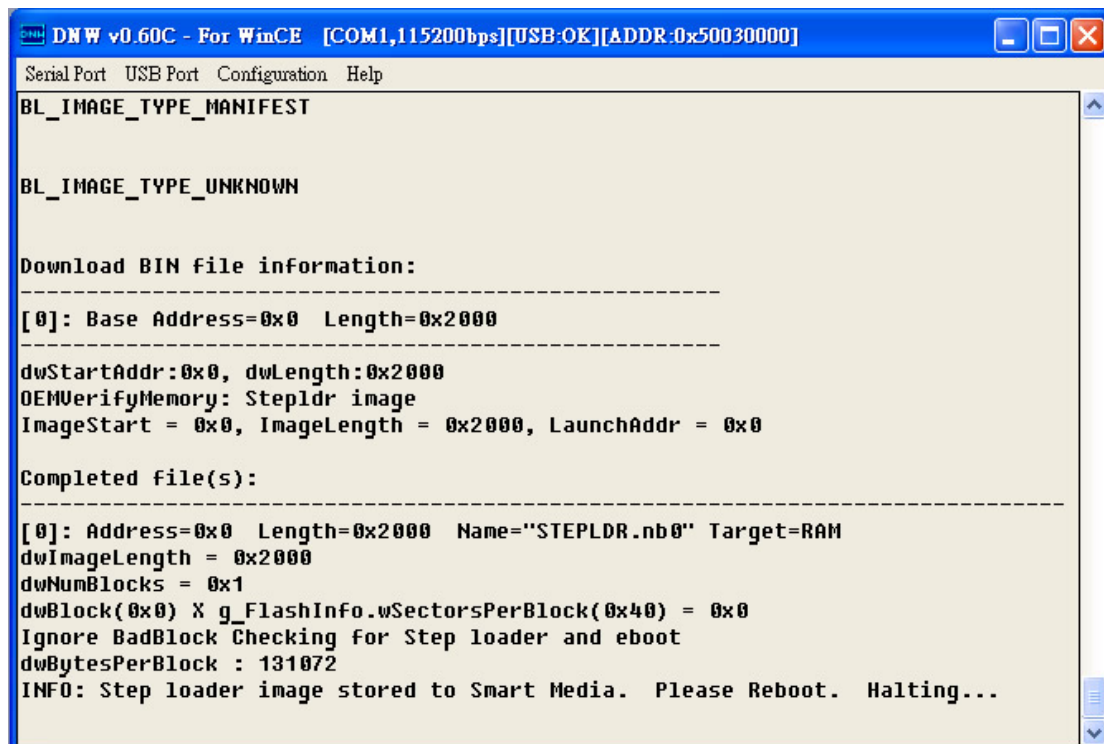
## Step 2

**Figure 3.20 Writing image to NAND flash at SD Boot**



At “USB Port” Tab, select **UBOOT** → **UBOOT** as shown in figure 3.20. A file browser will ask you to select a file that you would like to write to NAND flash. Find the file "**STEPLDR.nb0**" in your PC and click. And you will see the following screen as shown in figure 3.21.

**Figure 3.21 Write STEPLDR.nb0 to NAND at SD Boot**



```
DNW v0.60C - For WinCE [COM1,115200bps][USB:OK][ADDR:0x50030000]
Serial Port  USB Port  Configuration  Help
BL_IMAGE_TYPE_MANIFEST

BL_IMAGE_TYPE_UNKNOWN

Download BIN file information:
-----
[0]: Base Address=0x0  Length=0x2000
-----
dwStartAddr:0x0, dwLength:0x2000
OEMVerifyMemory: Stepldr image
ImageStart = 0x0, ImageLength = 0x2000, LaunchAddr = 0x0

Completed file(s):
-----
[0]: Address=0x0  Length=0x2000  Name="STEPLDR.nb0" Target=RAM
dwImageLength = 0x2000
dwNumBlocks = 0x1
dwBlock(0x0) X g_FlashInfo.wSectorsPerBlock(0x40) = 0x0
Ignore BadBlock Checking for Step loader and eboot
dwBytesPerBlock : 131072
INFO: Step loader image stored to Smart Media.  Please Reboot.  Halting...
```

Now you have successfully write the STEPLDR.nb0 file to NAND flash.

Next, we would like to write **EBOOT.bin** to NAND flash.

### **Step 3**

Repeat steps 1~2, but **DON'T** erase all blocks at step 1 because you have already written the STEPLDR.nb0 to NAND flash. And at step 2 choose the **EBOOT.bin** file. (Note: It is EBOOT.bin instead of EBOOT.nb0.) After writing EBOOT.bin to NAND flash you should be able to see the screen as shown in figure 3.22.

**Figure 3.22 Write EBOOT.bin to NAND at SD boot**

```
DNW v0.60C - For WinCE [COM1,115200bps][USB:OK][ADDR:0x50030000]
Serial Port  USB Port  Configuration  Help
dwTtlSectors: 0x8A
dwLoadAddress: 0x80030000
dwJumpAddress: 0x80060C04
dwStoreOffset: 0x0
sgList[0].dwSector: 0x80
sgList[0].dwLength: 0x8A
}
ID[1] {
  dwVersion: 0x1
  dwSignature: 0x43465348
  String: ''
  dwImageType: 0x2
  dwTtlSectors: 0x0
  dwLoadAddress: 0x0
  dwJumpAddress: 0x0
  dwStoreOffset: 0x0
}
!!!Invalid Image Descriptor: id[2]=0x0
chainInfo.dwLoadAddress: 0X00000000
chainInfo.dwFlashAddress: 0X00000000
chainInfo.dwLength: 0X00000000
}
INFO: Eboot image stored to Smart Media. Please Reboot. Halting...
```

As of now you have successfully written the STEPLDR.nb0 and EBOOT.bin files to NAND flash.

You can turn the power off and set the jumper to NAND boot and turn the power on again. You should be able to hear a short beep sound and see the splash screen on the LCD as shown in figure 3.10.

**Figure 3.10 EBOOT Splash Screen**



Users now can go back to section 3.2 to see how to restore/upgrade the NK image from NAND flash by using EBOOT at NAND.