



# **Installation Manual for SMDK6410**

## **(Windows Embedded CE 6.0 iROM SD/MMC)**

**S3C6410**

**January 29, 2009**

**(Preliminary) REV 0.0**

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## S3C6410 RISC Microprocessor Installation Manual

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Samsung Electronics Co., Ltd.  
San #24 Nongseo-Dong, Giheung-Gu  
Yongin-City Gyeonggi-Do, Korea  
446-711

Home Page: <http://www.samsungsemi.com/>

E-Mail: [mobilesol.cs@samsung.com](mailto:mobilesol.cs@samsung.com)

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Preliminary product information describe products that are in development, for which full characterization data and associated errata are not yet available. Specifications and information herein are subject to change without notice.

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NOTE: REVISED PARTS ARE WRITTEN IN BLUE.

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# 1 Overview

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This Installation Manual guides you to install the Samsung SMDK6410 Windows Embedded CE 6.0 BSP for internalROM(iROM) with SD/MMC.

The manual explains the following topics:

- Copying BSP and Setting up Platform Builder
- Creating a New OS Design
- Building OS Image - Without KITL
- Running NK.nb0 Image
- Fusing WinCE Image on NAND Flash via USB with DNW tools

The detail information of each topic is explained in the following chapters. and about connectivity to platform builder, please read "SMDK6410\_Platform\_builder\_Connectivity.doc" document. This help you how to download and connect your device with OS image to platform builder.

## 2 Copying BSP and Setting up Visual Studio 2005

In this chapter, you can understand how to copy the Samsung SMDK6410 Windows Embedded CE 6.0 BSP and setup the Platform Builder. There are two distribution types. One is MSI (MS installer) distribution, another one is old-style zip-archived distribution. With MSI, you can just run the MSI file, and then follow the instruction on installer. Here are contents only for old-style zip-archived.

1. To start the BSP installation, Extract zip-archived file into \$(WINCEROOT)\PLATFORM. See the picture describes folder structure. In archives, PLATFORM folder has two sub folders. One is SMDK6410, and another one is COMMON/SRC/SOC/S3C6410\_SEC\_V1.  
For example, copy extracted SMDK6410\_Wince60\_XX\_XX\PLATFORM BSP folder to X:\WINCE600\PLATFORM directory on your host PC. Make sure that catalog file and batch file in X:\WINCE600\PLATFORM\SMDK6410 directory has the same name as that of the BSP, i.e. SMDK6410.pbcxml and SMDK6410.bat.

**Note:** About PQOAL & SOC Folder Structure, Please refer to porting guide, If you don't know the difference between PQOAL and non-PQOAL structure, read first porting guide.

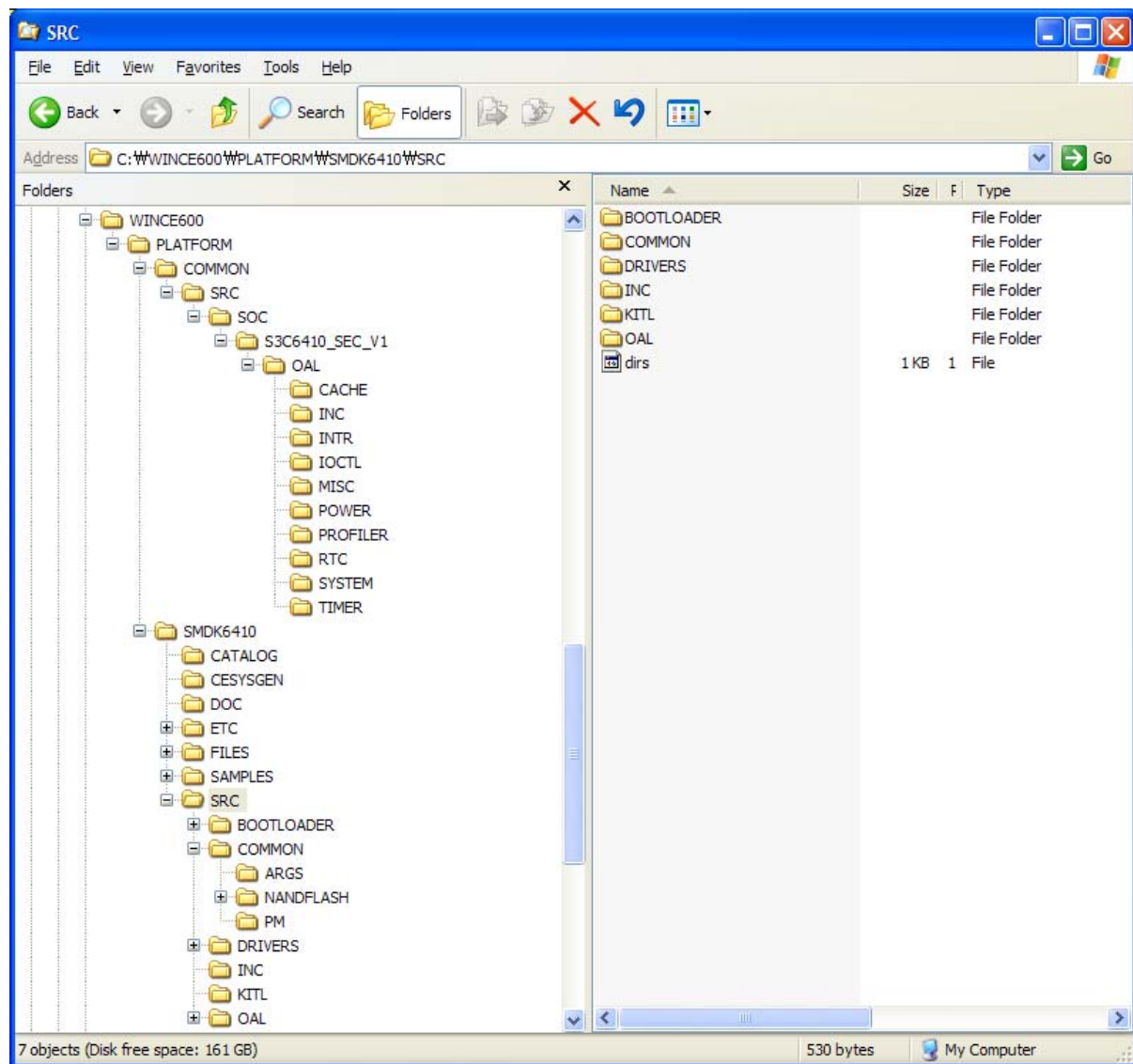


Figure 2-1 SMDK6410 BSP Files





2. To start SMDK6410 Windows Embedded CE 6.0 BSP Porting, on your host PC click **Start**, point to **All Programs**, point to **Microsoft Visual Studio 2005** and then click on **Microsoft Visual Studio 2005**. The following window appears on your screen.

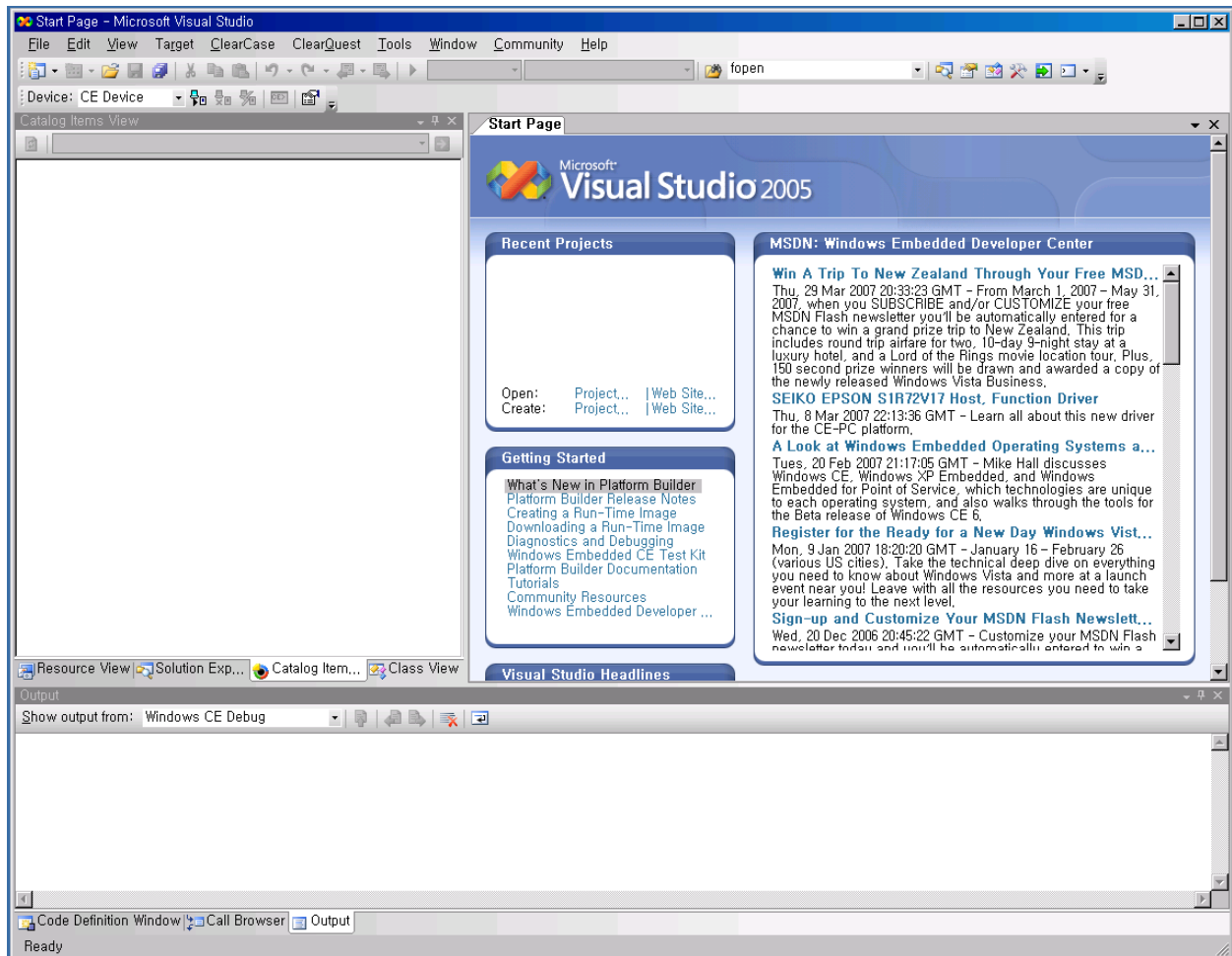


Figure 2-2 Visual Studio 2005 Window

### 3 Creating a New OS Design

In this chapter, you can understand how to create a new OS Design using the Visual Studio 2005.

1. On the File menu in the Visual Studio 2005 window, click New /Project as shown in figure 3-1.

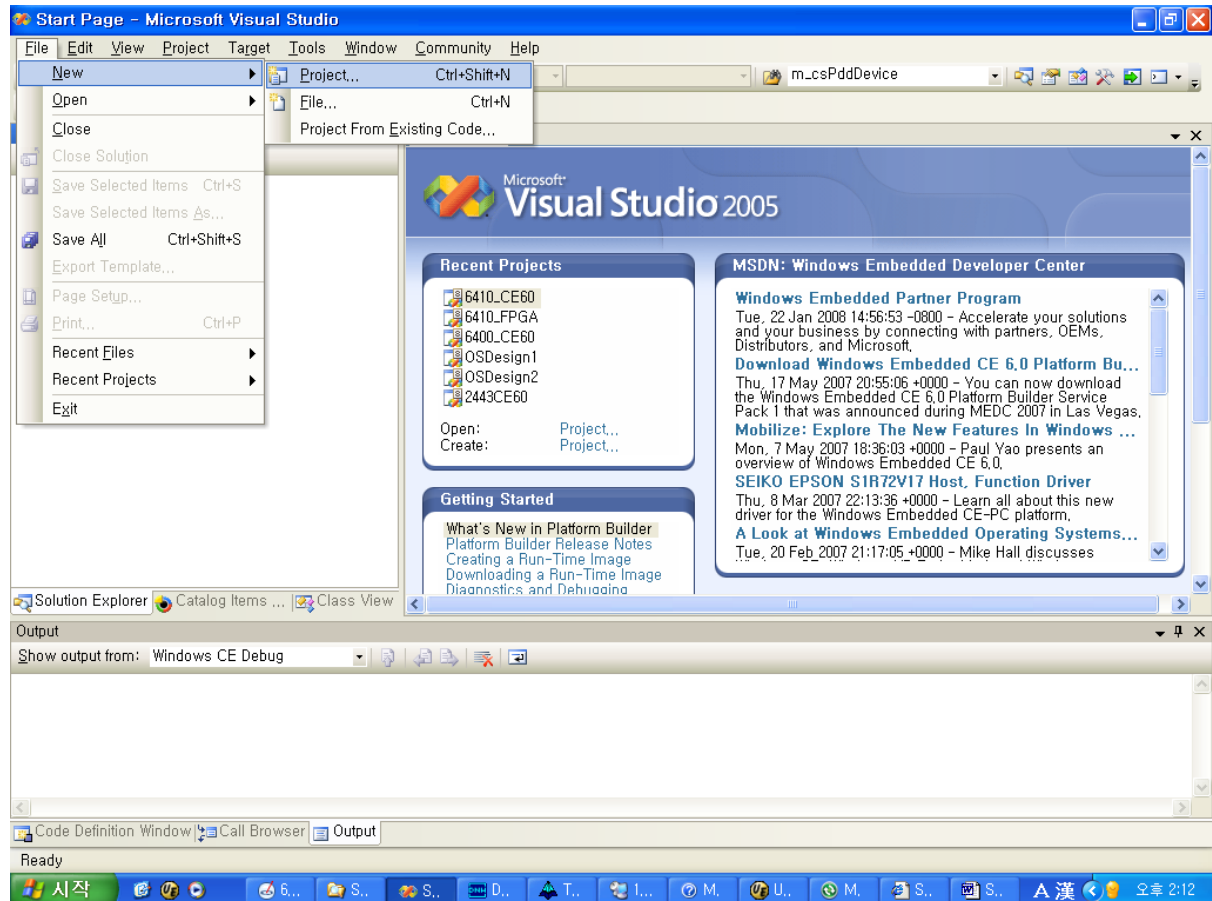


Figure 3-1 Creating New Project

- The following window appears on your screen. Click OK button to continue.

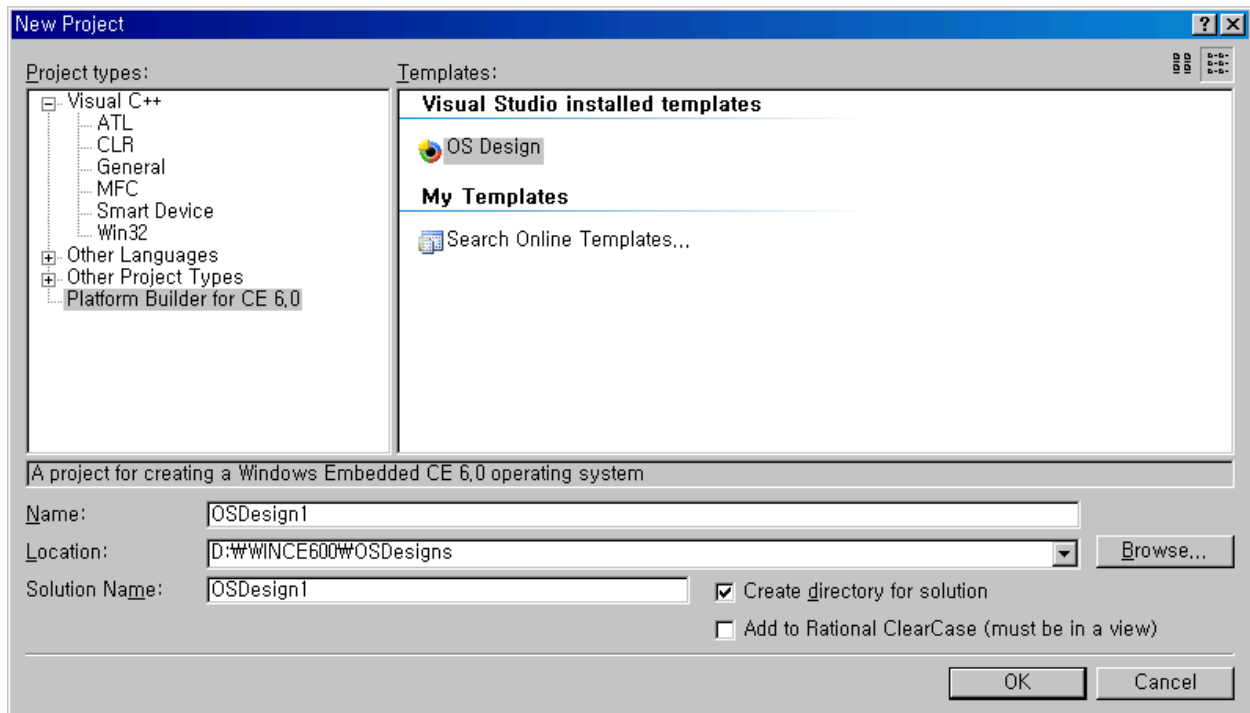


Figure 3-2 New Project for WinCE6.0

- The Windows Embedded CE 6.0 OS Design Wizard appears on your screen as below figure. Click NEXT button to continue.

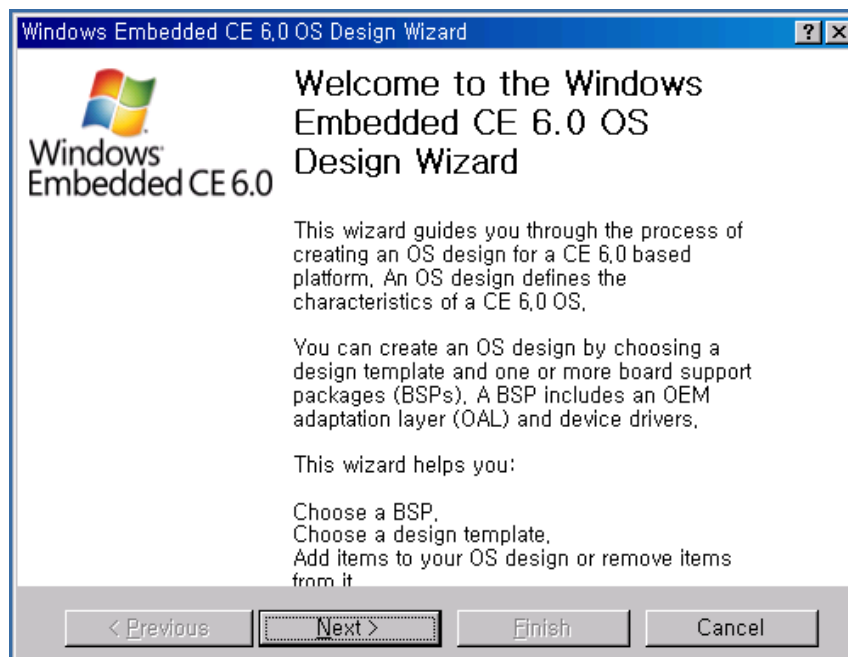


Figure 3-3 Windows Embedded CE 6.0 OS Design Wizard

4. The **Board Support Packages (BSPs)** window appears on your screen. Select **SMDK6410: ARMV4I** and then click **Next** button.

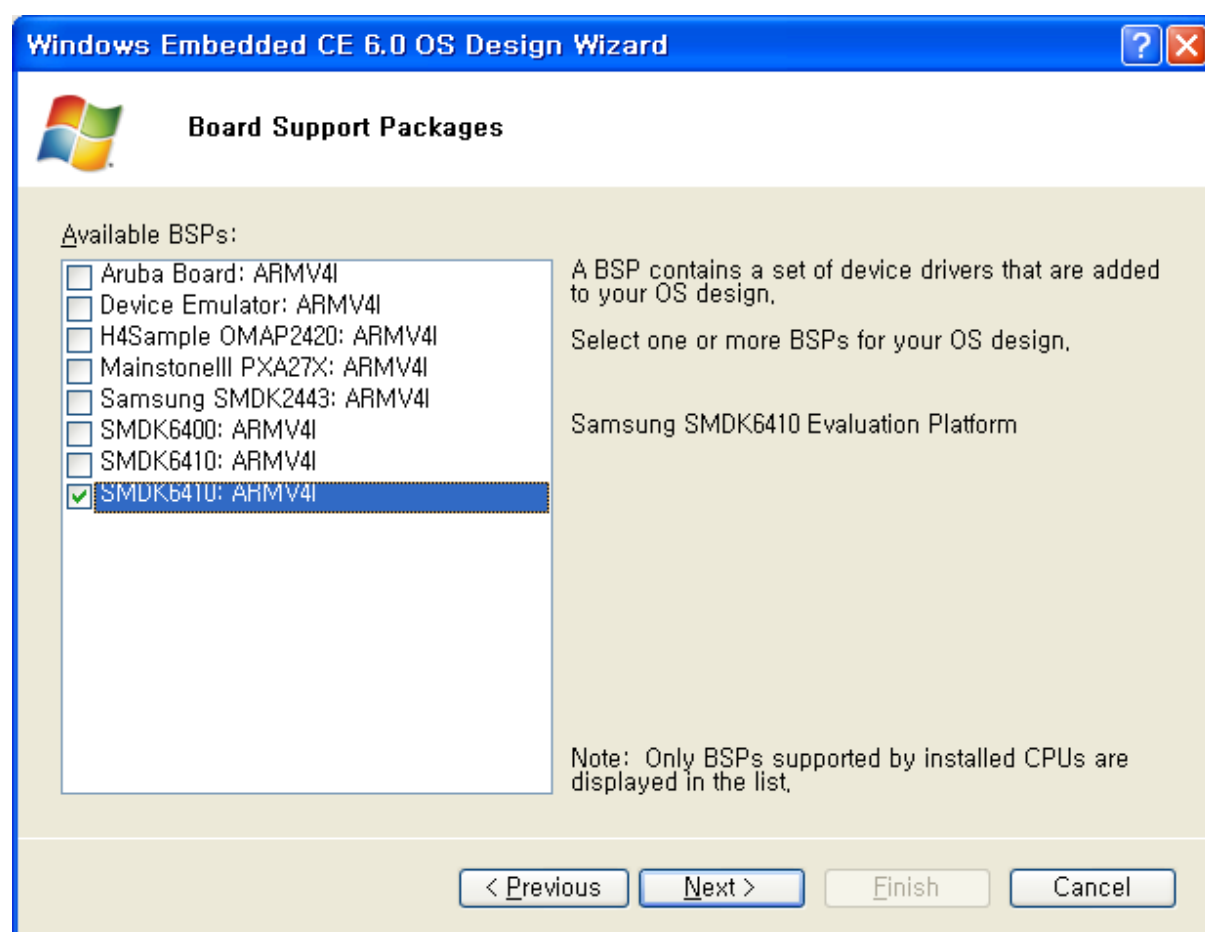


Figure 3-4 Windows Embedded CE 6.0 OS Design Wizard - Step 1

5. The Design Template Wizard window appears on your screen. Please select PDA Device from Available design templates list and then click Next button.

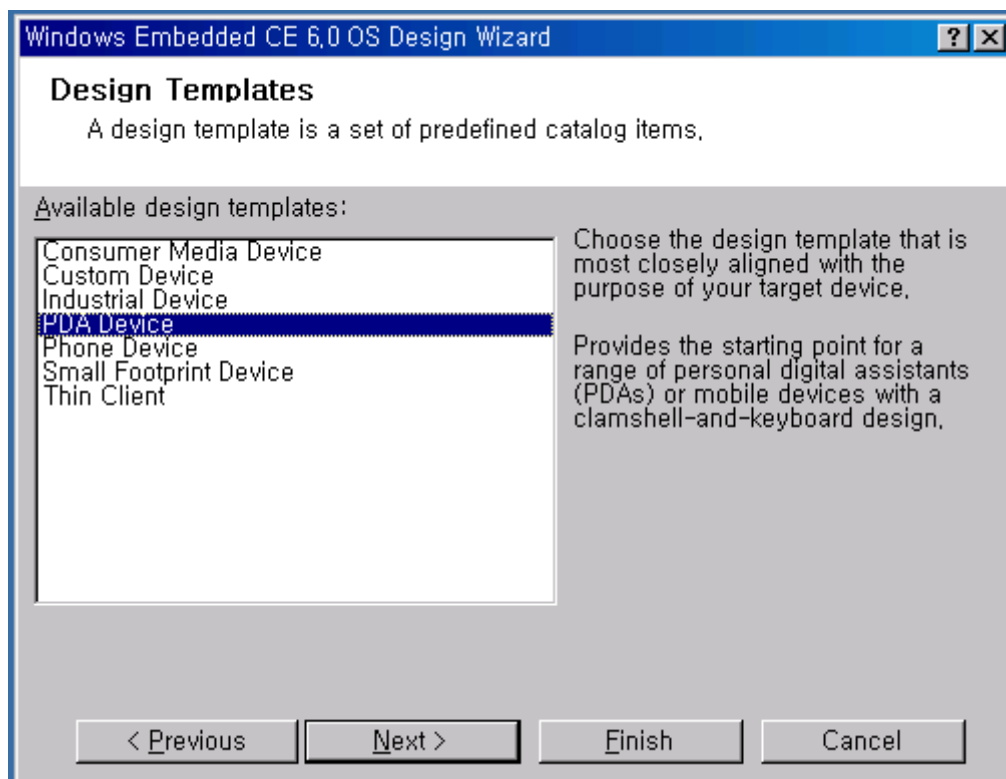


Figure 3-5 Windows Embedded CE 6.0 OS Design Wizard - Step 2

6. The Design Template Variants window appears on your screen. Please select **Mobile Handheld** from **Available design Variants** list and then click **Next** button.

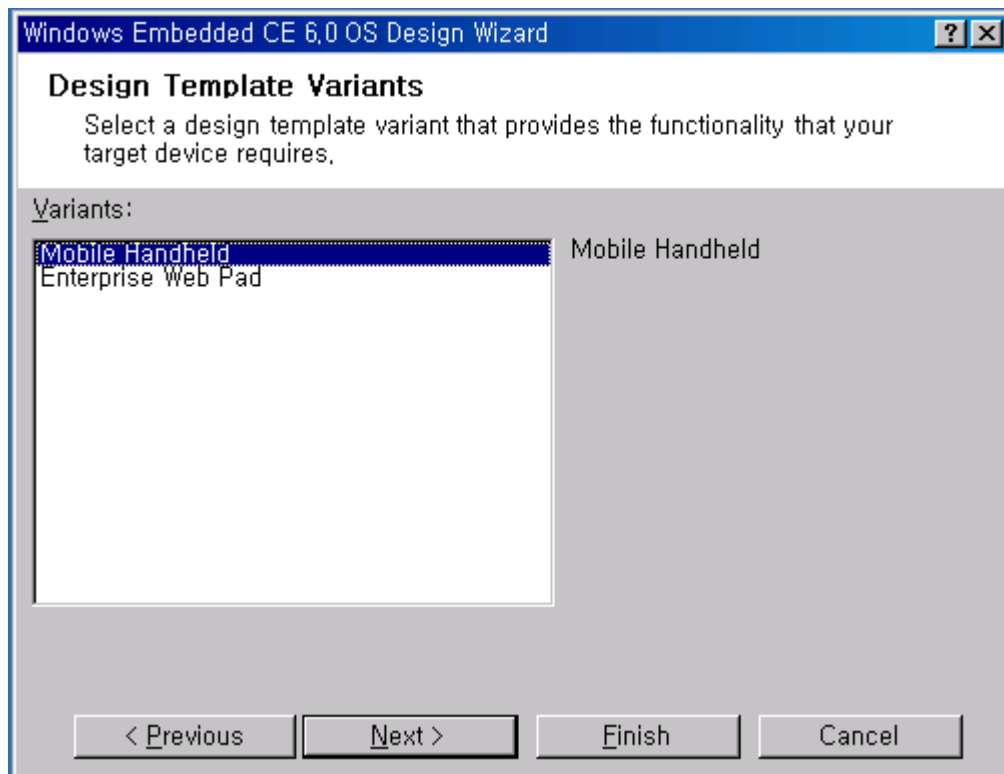


Figure 3-6 Windows Embedded CE 6.0 OS Design Wizard - Step 3

7. The following window appears on your screen. Here you can select the **Application & Media** you want to include in your platform and then click **Next** button.

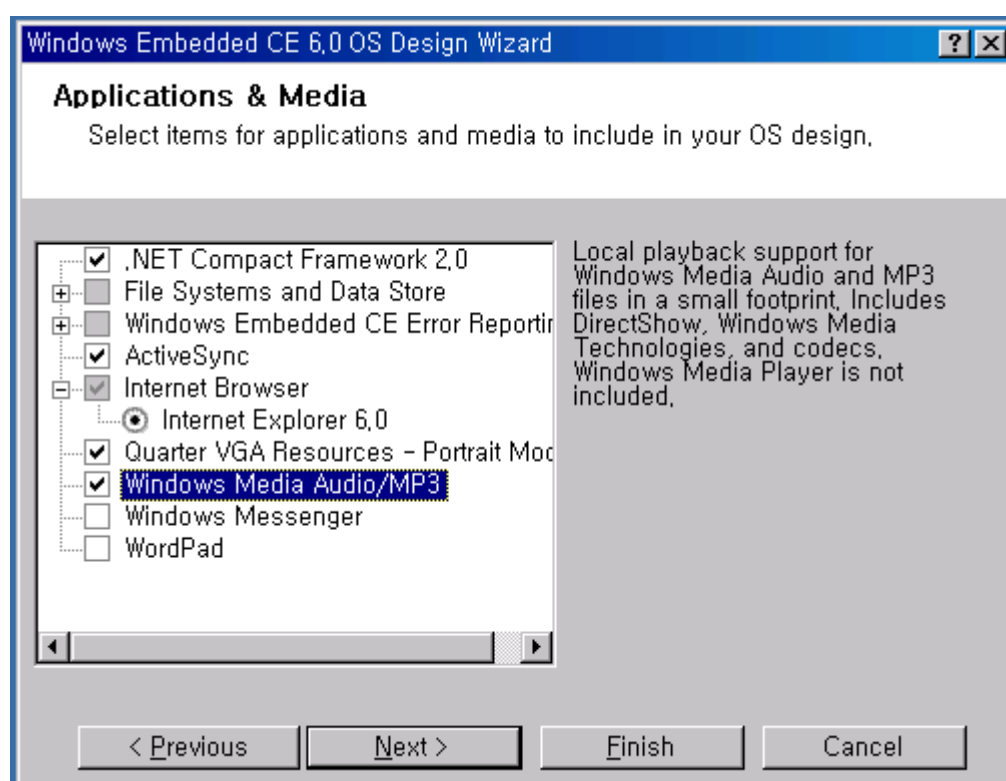


Figure 3-7 Windows Embedded CE 6.0 OS Design Wizard - Step 4



8. The Networking & Communications wizard window appears on your screen. Click Finish button.

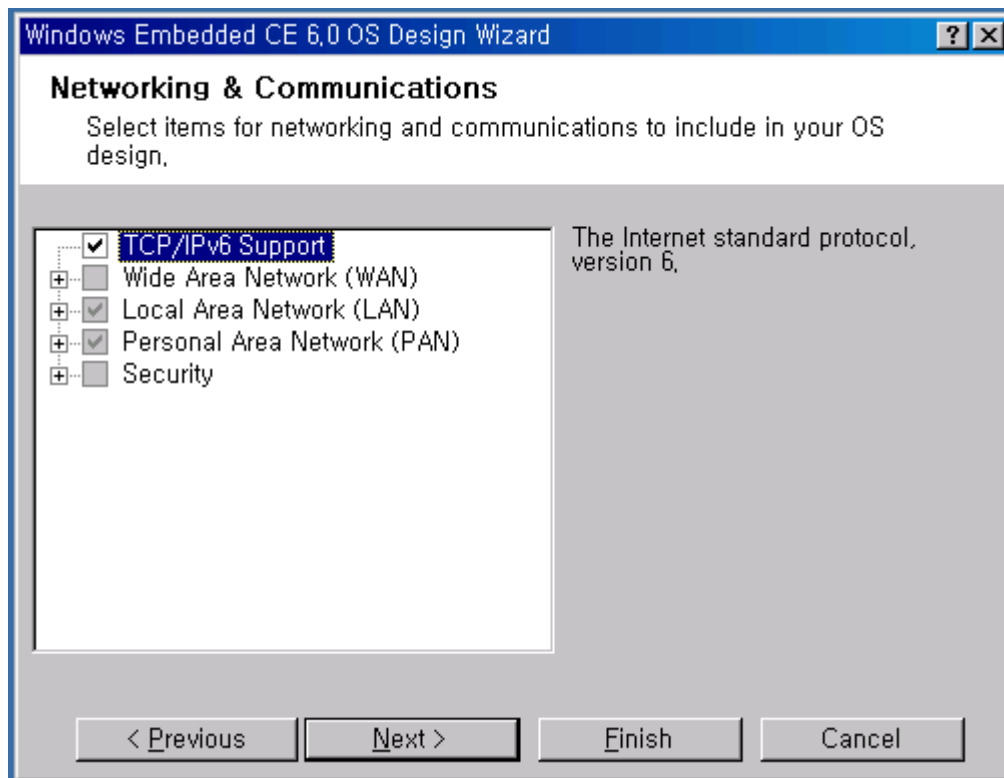


Figure 3-8 Windows Embedded CE 6.0 OS Design Wizard - Step 5

9. The following window appears on your screen. Please read all the security warnings and then click Acknowledge button.



Figure 3-9 Windows Embedded CE 6.0 OS Design Wizard - Step 6

## 4 Building OS Image - Without KITL

1. In the Visual Studio 2005 window on your host PC, you can see the new OS Design along with its various sub-directories on the left hand side Catalog Items View as shown in figure 4-1. Here, you can choose items what you want to include in your OS design. The chosen items in this instruction are only for sample purpose.

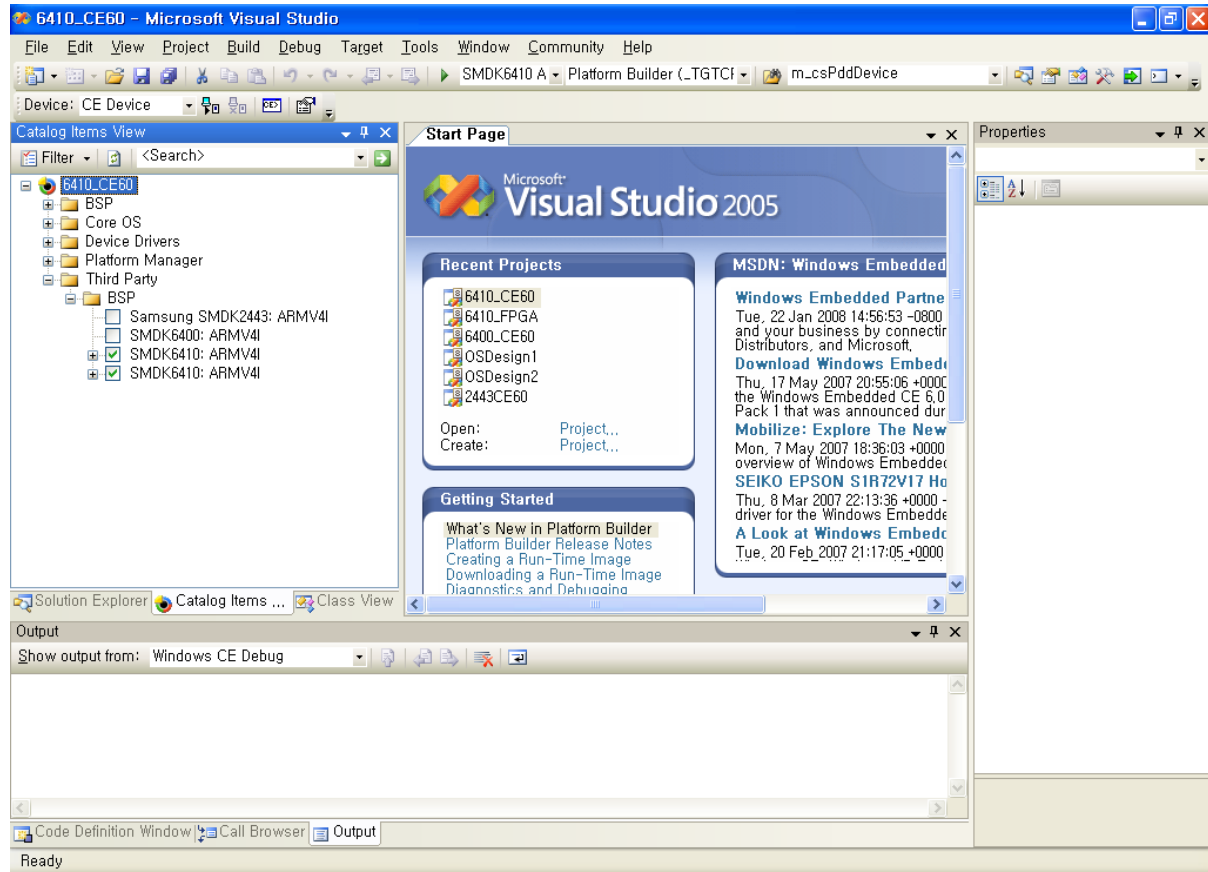


Figure 4-1 Catalog Items View

- You can change build mode (release or debug mode) as below figures. Select SMDK6410\_ARMV4I Release.

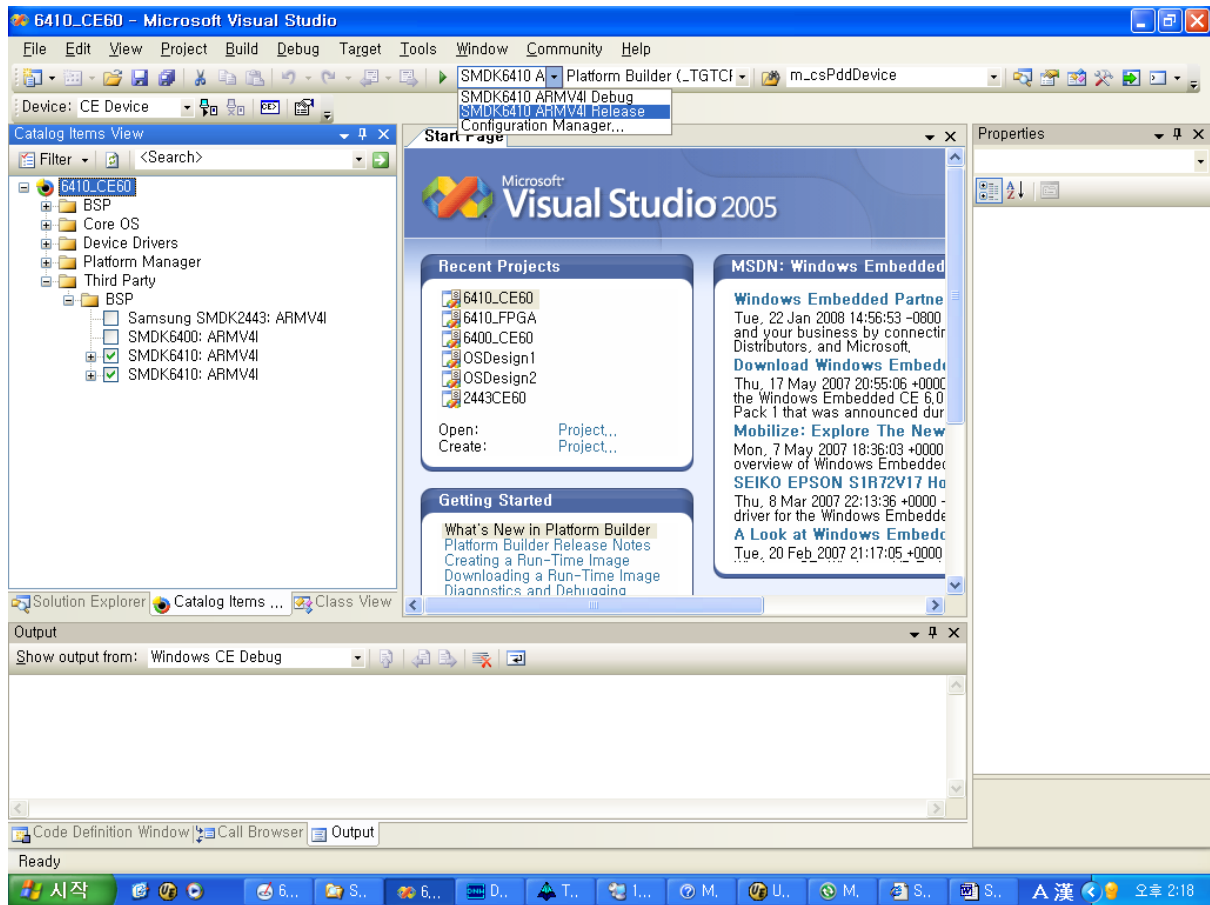


Figure 4-2 Build Mode in Visual Studio 2005

- Expand File Systems and Data Store node in the Core OS node in Catalog Items View, then select some items as shown in the figure below.

File System-RAM and ROM File System

Registry Storage-Hive-based Registry(recommended) or RAM-based Registry

Storage Manager-Binary Rom Image file System

Storage Manager-exFAT File System

Storage Manager-Storage Manager Control Panel Applet

Storage Manager-TFAT File System

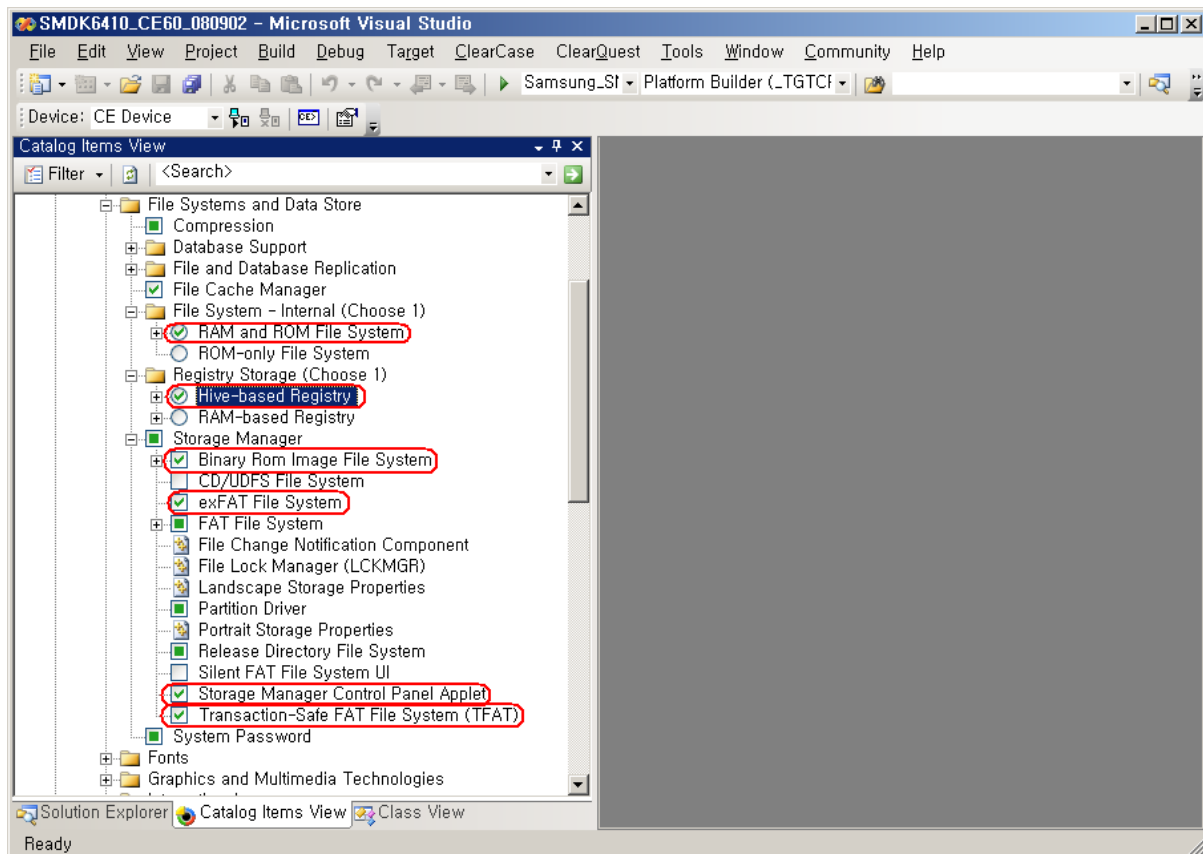


Figure 4-3 Adding File System and Data store Item to OS Design

- Expand Core OS node in Catalog Items View window, then expand Graphics and Multimedia Technologies. Select some items as shown in the figure below.

Graphics-Direct3D Mobile

Graphics-DirectDraw (Required for Display Driver)

Media-Video Codecs and Renderers-WMV/MPEG-4 Video Codec (Required for MFC)

Media-Windows Media Player (Required for MFC)

Media-DirectShow Video Capture (Required for Camera)

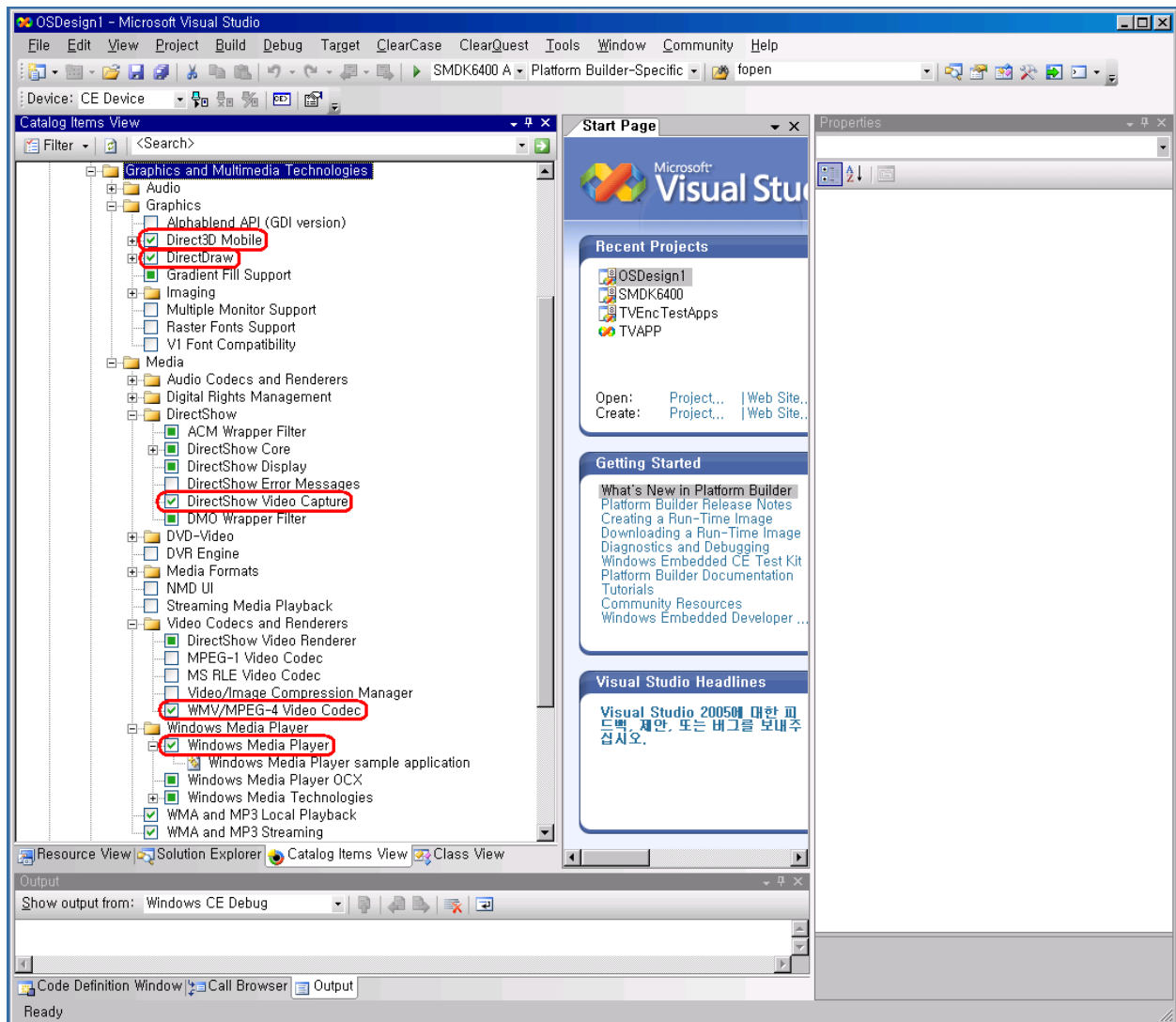


Figure 4-4 Adding Graphics and Multimedia Technologies Item to OS Design

5. Expand Core OS Services node in the Core OS node in Catalog Items View, then expand USB Host Support. Select some items as shown in the figure below.

USB Function Driver

USB Host Support

USB Human Input Device(HID) Class Driver (recommended)

USB HID Keyboard and Mouse

USB Storage Class Driver

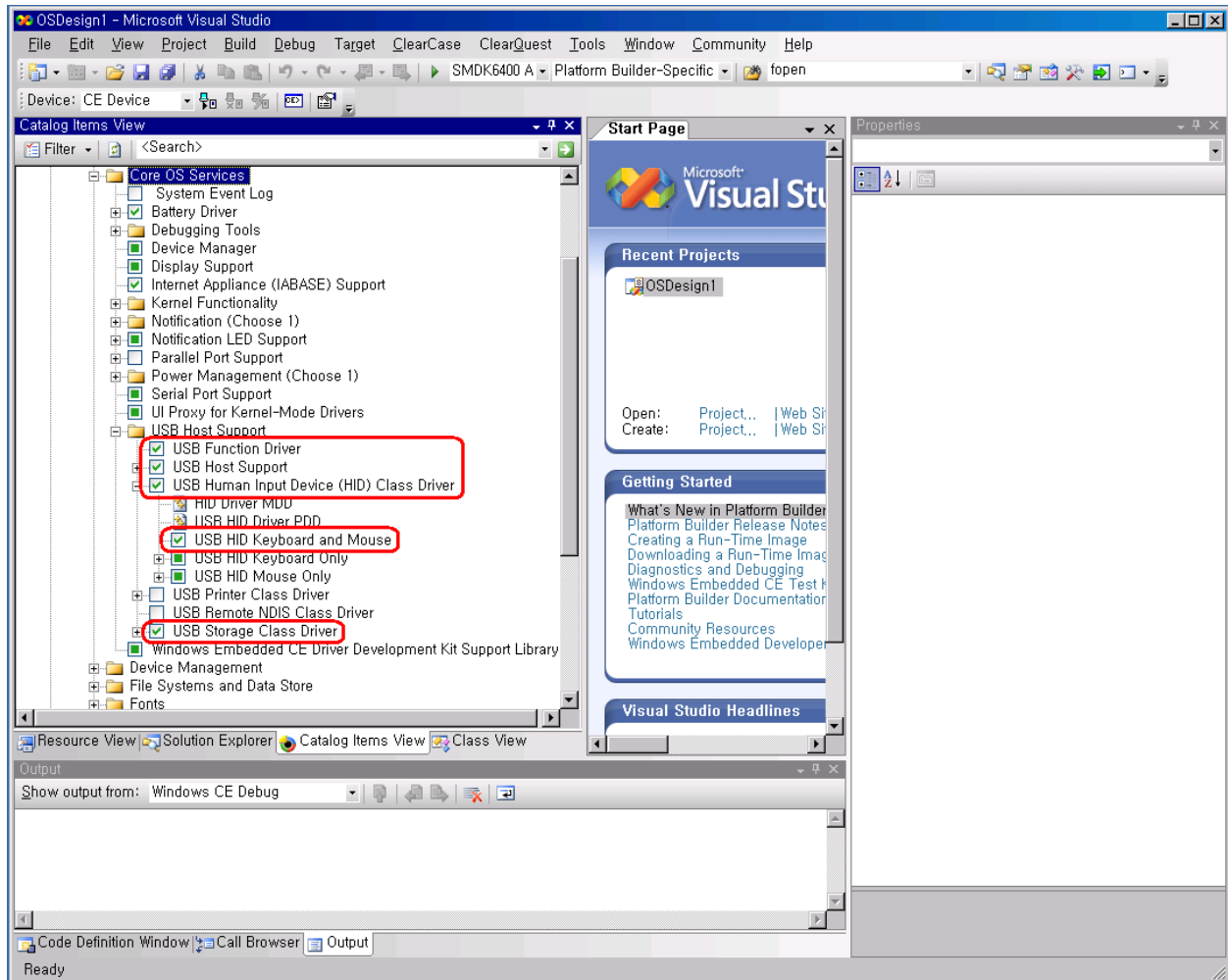


Figure 4-5 Adding Core OS Services Item to OS Design

- Expand **Applications and Services Development** node in **Catalog Items View** window, then expand **OBEX Server**.

Select **OBEX File Brower** and **OBEX Inbox**.

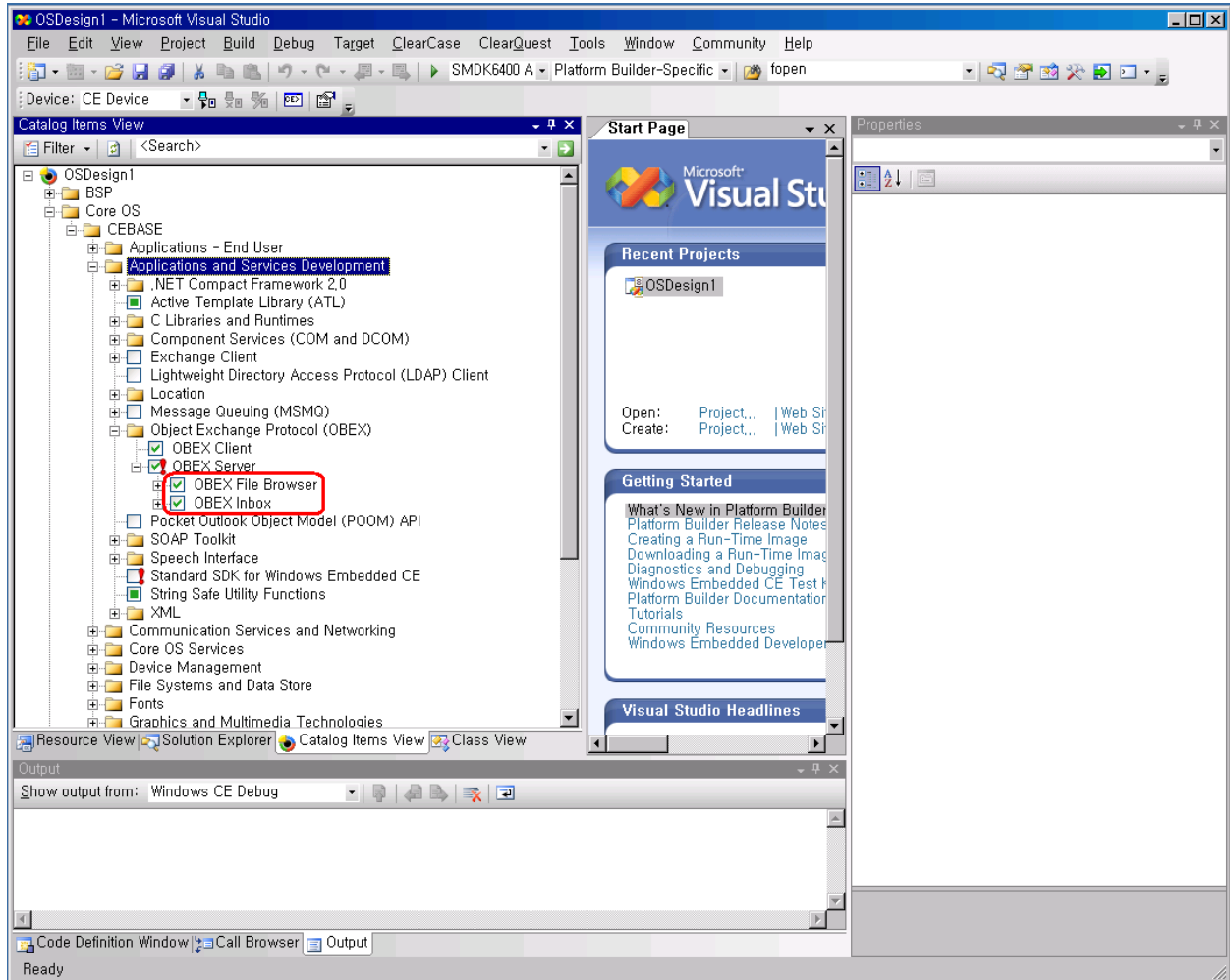


Figure 4-6 Adding Core OS Services Item to OS Design



7. Expand Device Drivers node in Catalog Items View window, then expand USB Function. Select Some Items as shown in the figure below.

USB Function Clients-Mass Storage

USB Function Clients-serial

Select SD Bus Driver in SD, SD Memory in SDIO and Windows Embedded CE Test Kit.

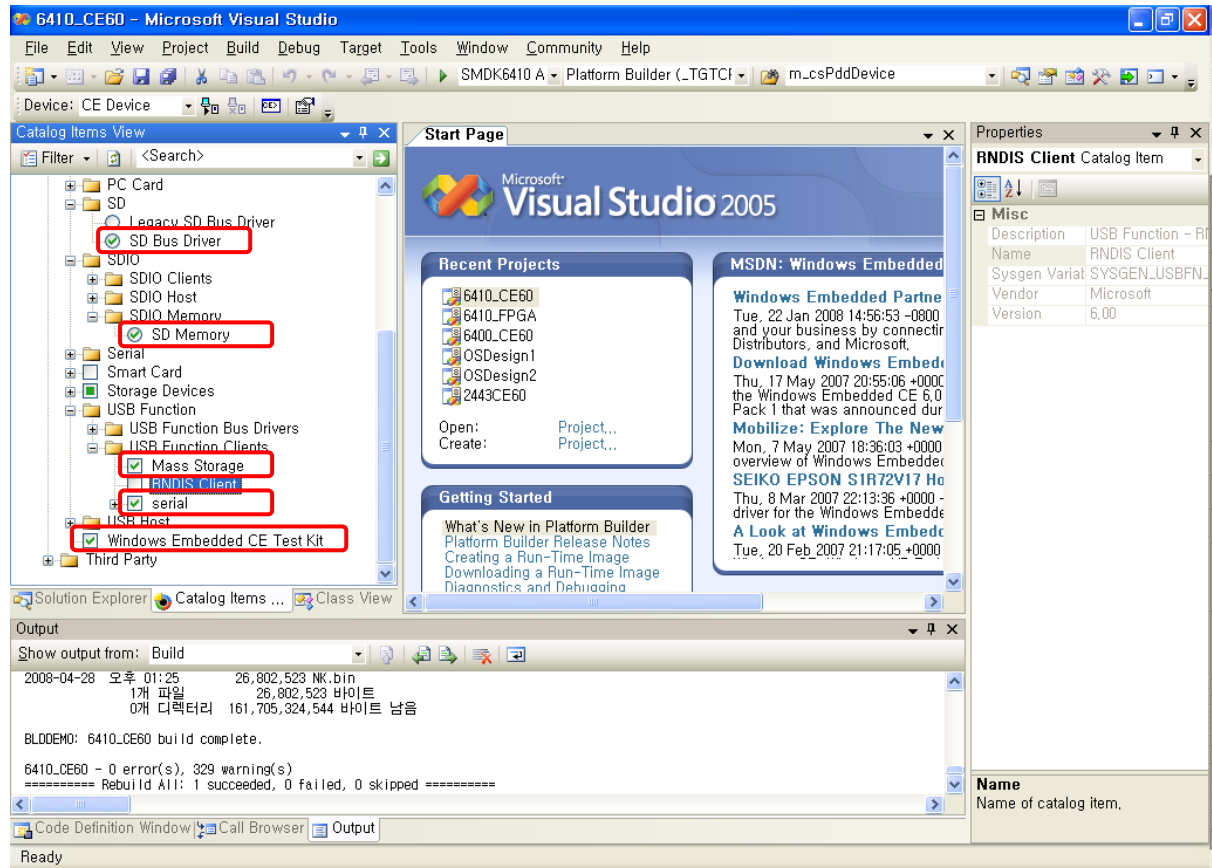


Figure 4-7 Adding Device Drivers Item to OS Design

8. Expand Device Drivers node in Catalog Items View window, then expand Networking. Select Serial Infrared (SIR) as shown in the figure below.

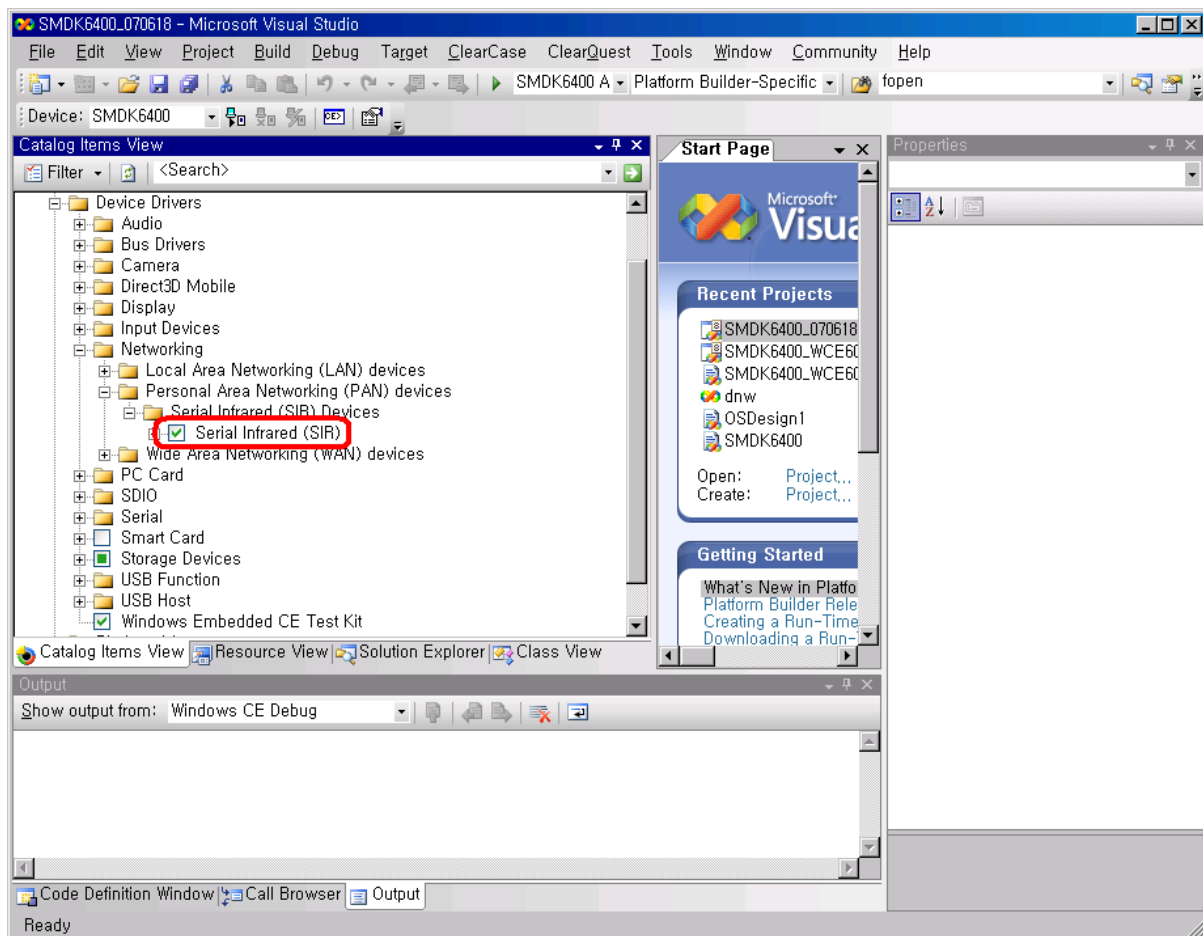


Figure 4-8 Adding Networking Item to OS Design

9. On the top of Visual Studio 2005, You can see the Project menu as below figure.  
And then select Properties...

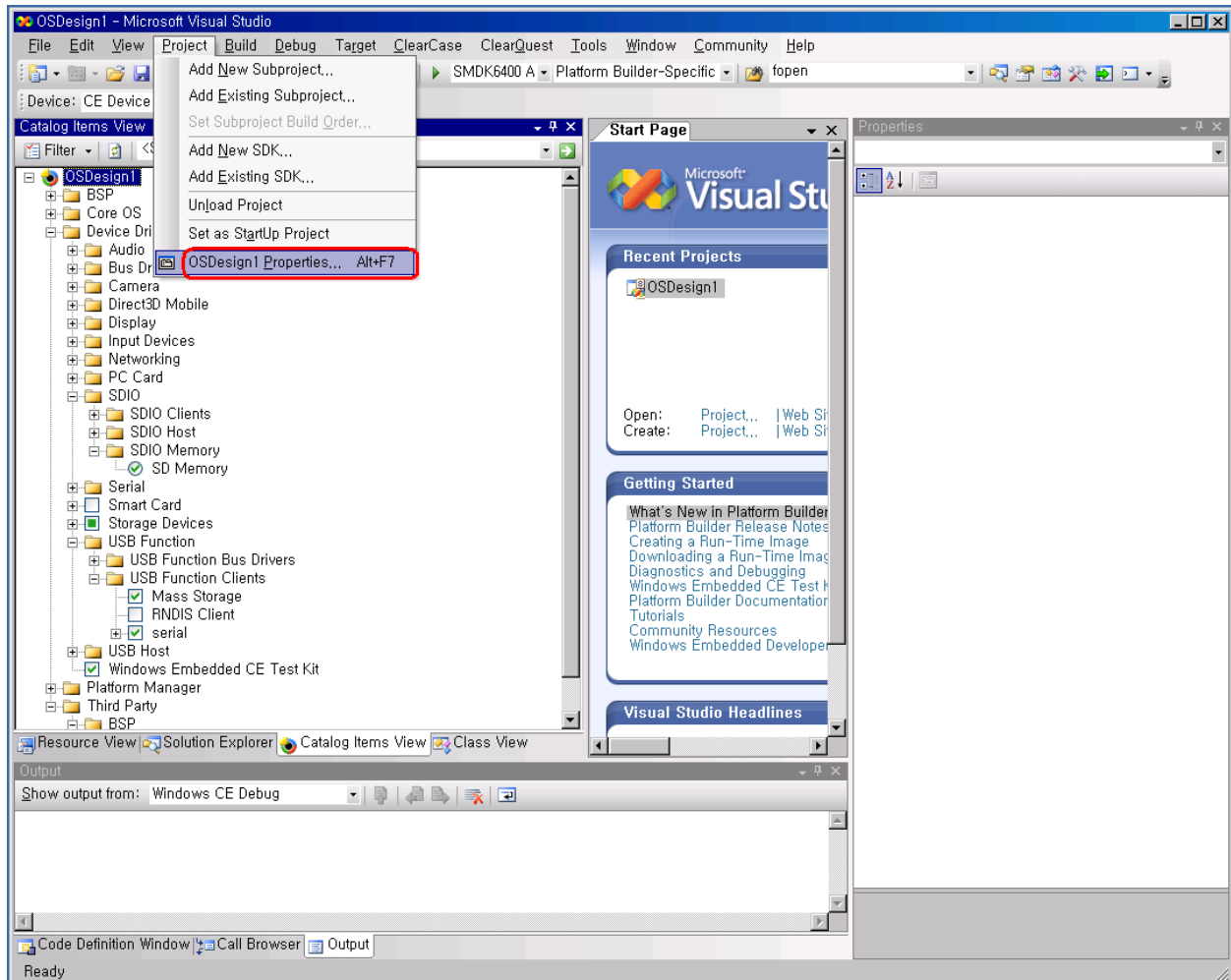


Figure 4-12 Properties of OS Design

10. The OS Design Properties Pages window appears on your screen. Select **Locale** tab and click **Clear All** button. It clears all the language settings in your platform. Now select **English (United States)** as shown in figure 4-10.

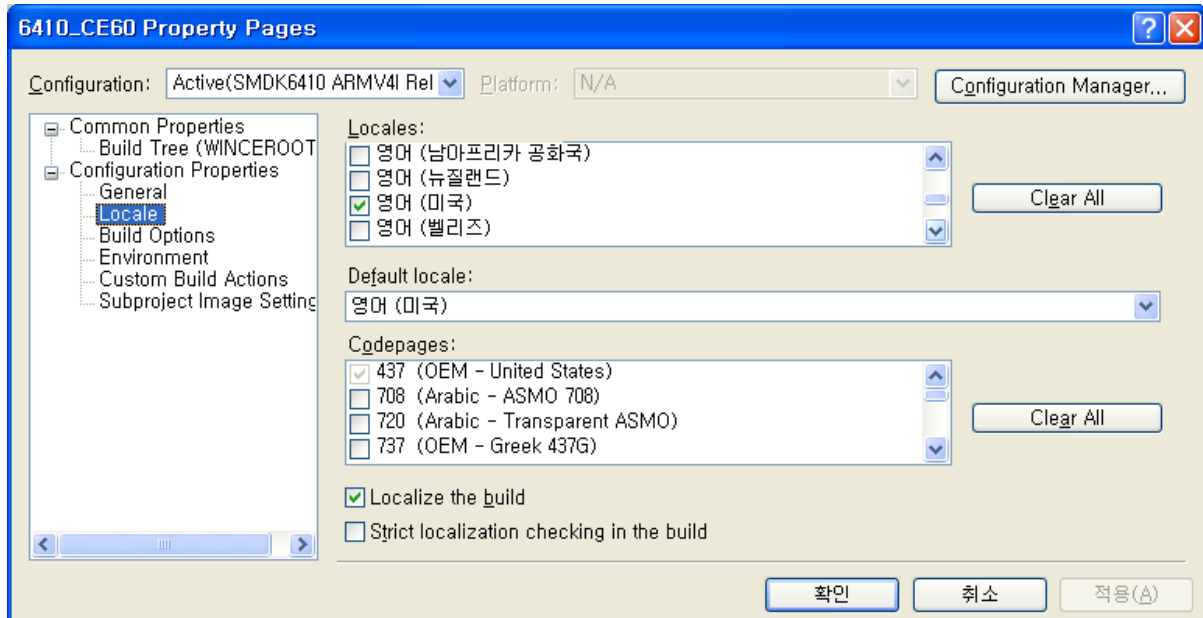


Figure 4-13 Selecting Language in the Property Pages Window

11. Now please uncheck the square boxes **Enable KITL (no IMGNOKITL=1)** in the **Build Options Properties** in OS Design Properties Pages window and then click **OK** button.

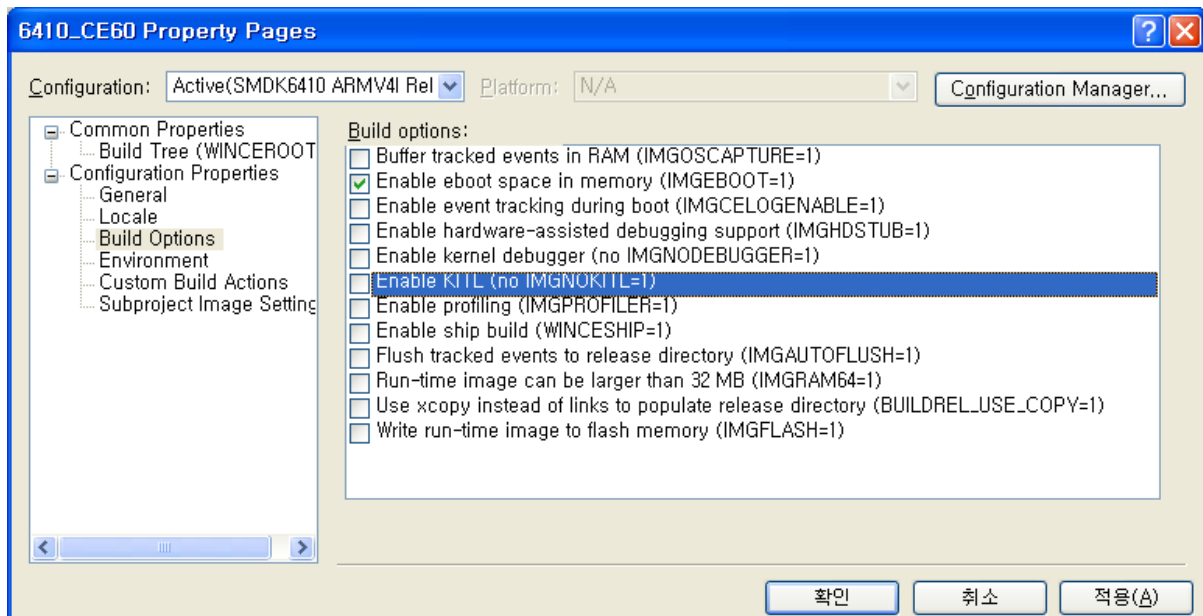


Figure 4-14 Removing KITL Setting in OS Design Properties Window

12. On the **Build** menu, click **Build OSDesign1** as shown in figure 4-12 to build the Eboot and OS image.

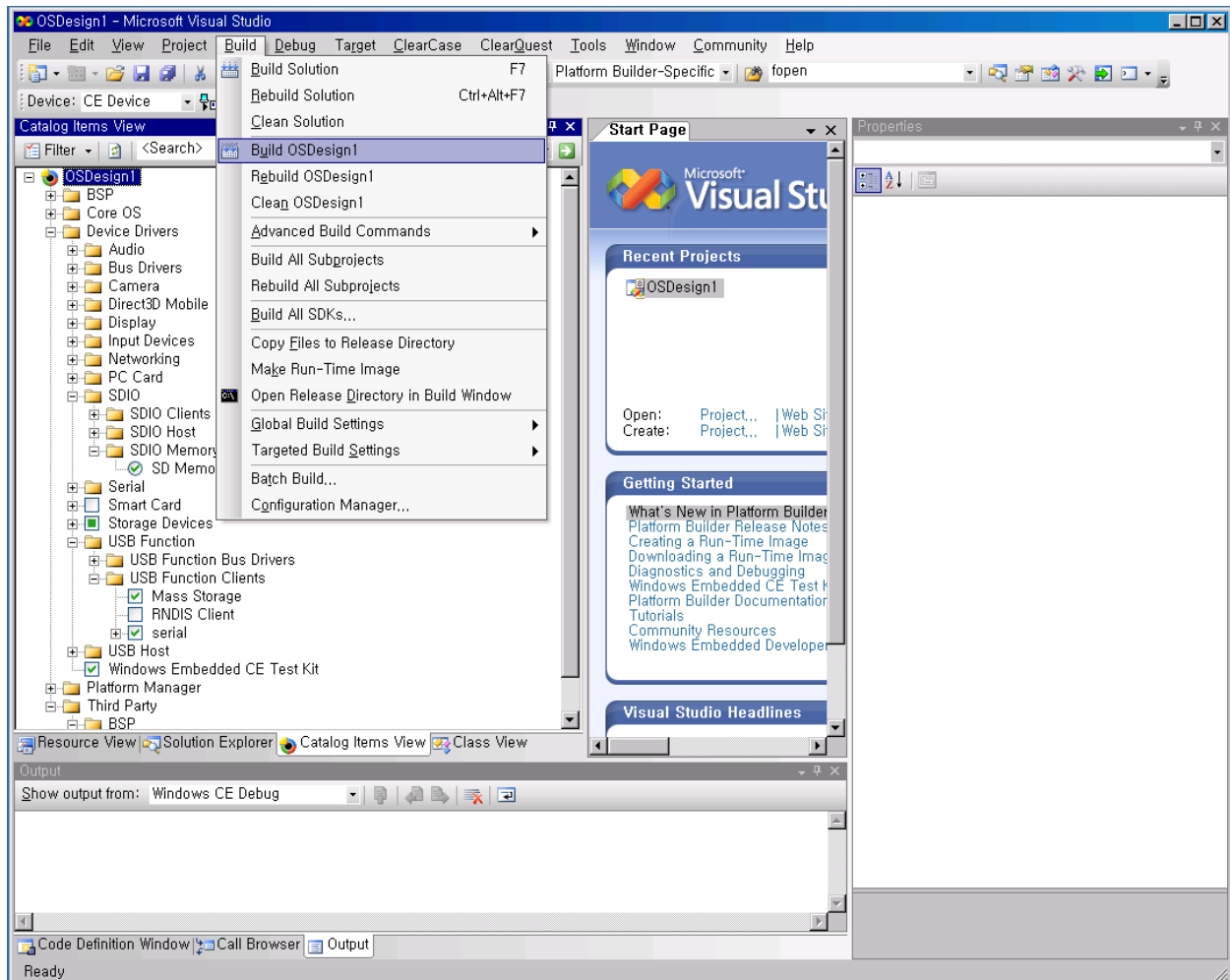


Figure 4-15 Build OS Design

13. The arrow pointing to the icon in the following figure indicates the Building process.

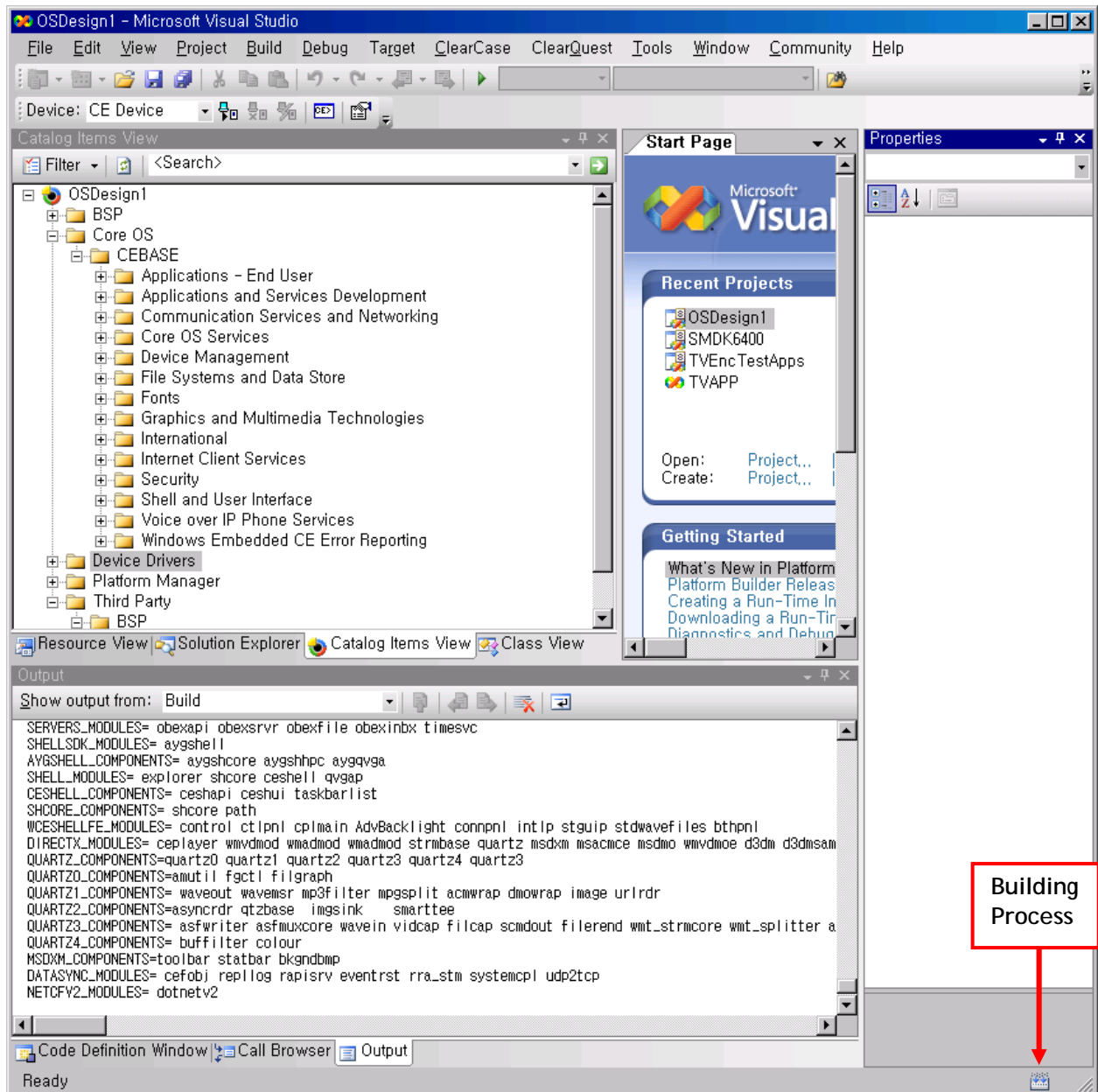


Figure 4-16 Building Process

**Note:** Building process may take some time depending on your system capability. So, please wait for the build process to be completed. It might take around 1 hour.

14. After completion of build process, following messages appear as shown in figure 4-12. EBOOT.nb0, EBOOT.bin, STEPLDR.nb0, NK.bin and NK.nb0 are now available in X:\WINCE600\OSDesigns \[OS Design Name] \[OS Design Name]\ReIDir\SMDK6410\_ARMV4I\_Release directory.

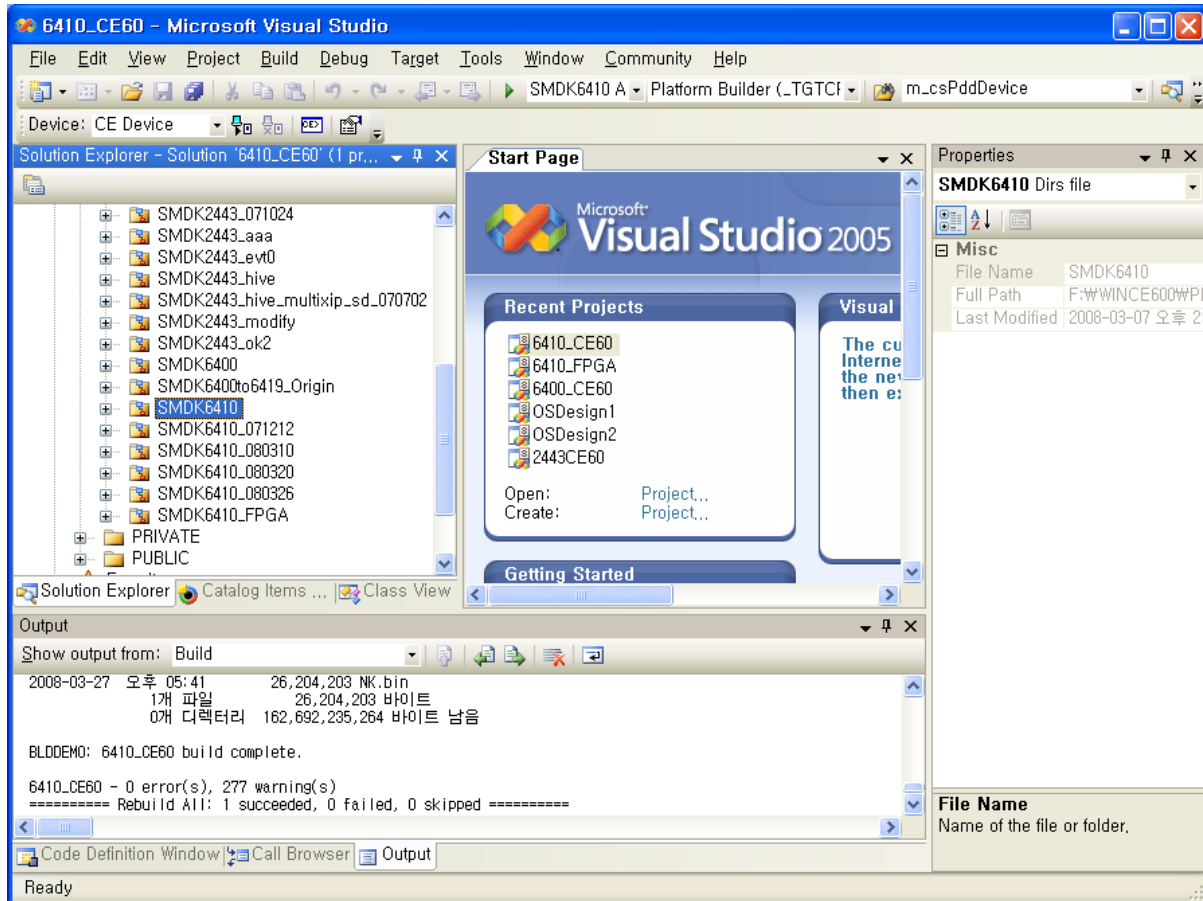


Figure 4-17 After Building the OS Image

## 5 Running NK.nb0 Image (Available on the Single-XIP only)

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In this chapter, you can understand how to download and run the NK.nb0 image.

1. Before you download the WinCE Image through the USB, you must have **6410\_OtgMon.bin** image on your AMD Flash. (The image was already fused on your AMD Flash in the board before release)
2. Configure DIP switch CFG0 on the CPU Board and CFGB1 on the CPU board properly for booting from AMD Flash. (For more information, Read SMDK6410 Board User's Manual in Document folder...)
3. Please install the USB Driver and DNW application on your host PC.
4. After installing the USB driver, run **dnw.exe** on the host PC. The following window appears on your screen.

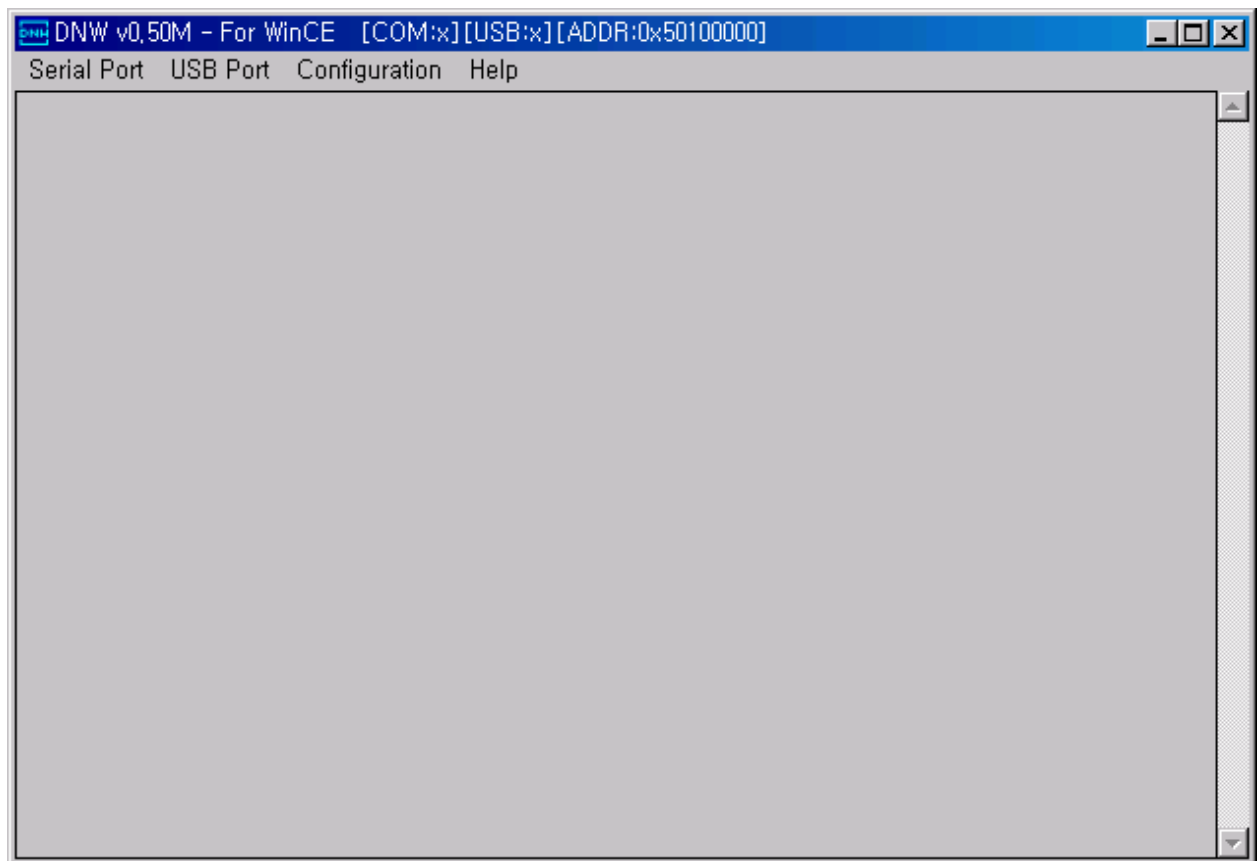


Figure 5-1 DNW Window



5. On the **Configuration** menu, click **Options** to set the UART/USB options. The following window appears on your screen. Select Baud Rate and COM Port as shown in figure 5-2, enter the download address as (S3C6410 Single:0x50100000, S3C6410 XD POP: 0x60100000) and then click **OK** button.

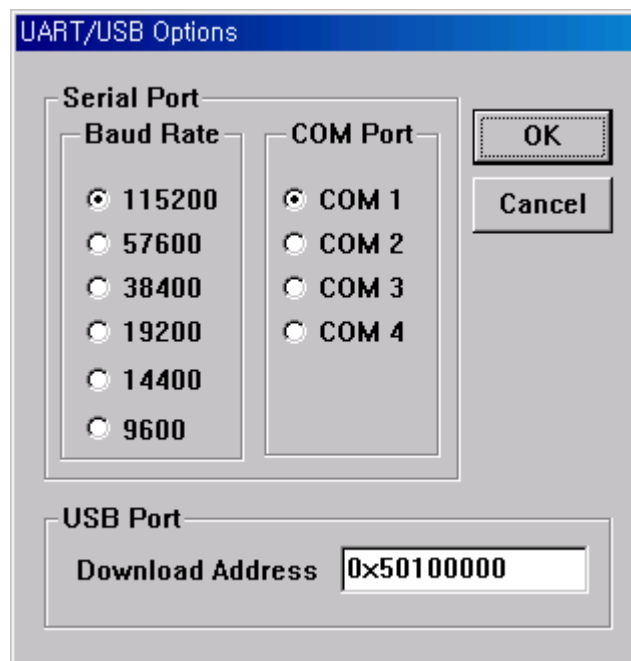


Figure 5-2 UART/USB Options

- On the Serial Port menu, click Connect. Switch ON the board and then press any key. The DNW window appears as shown in figure 5-3.

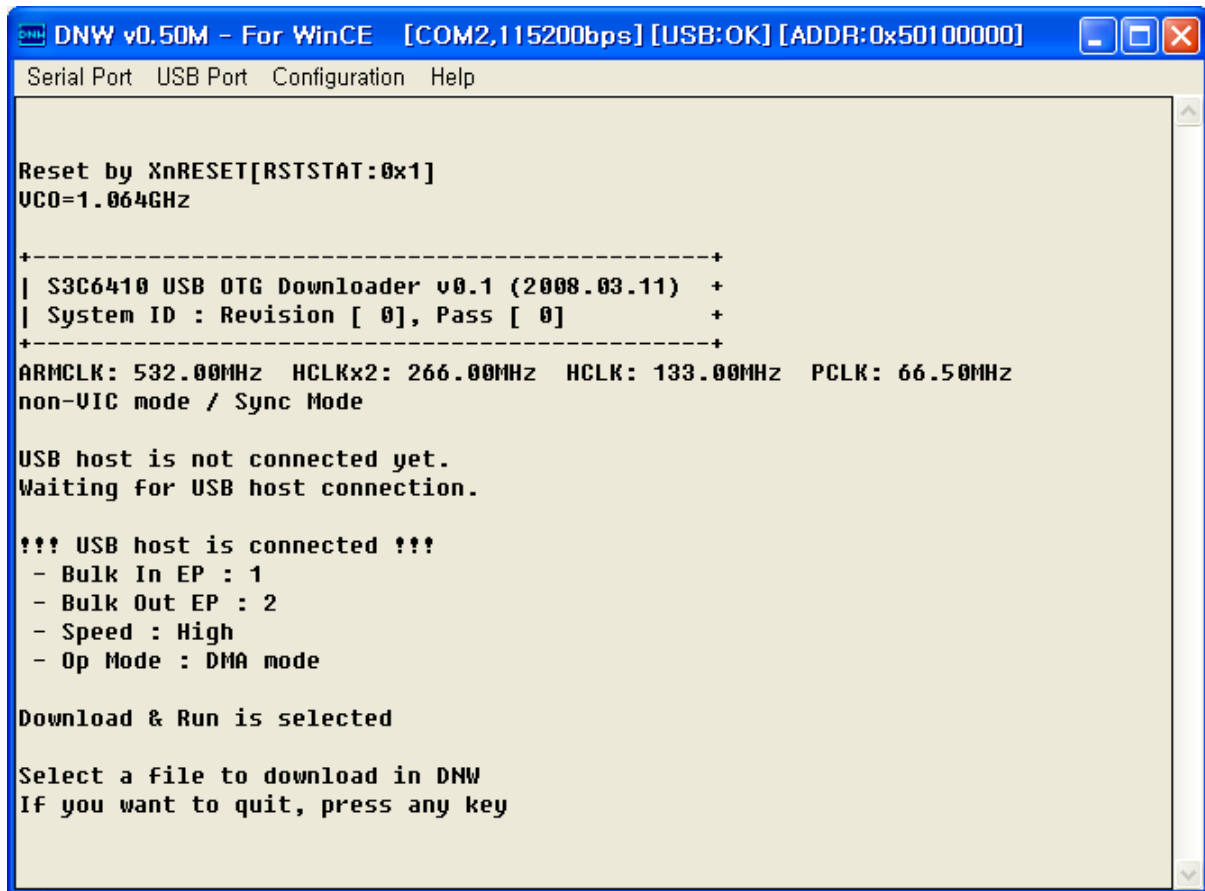


Figure 5-3 DNW Window after Board Power ON

7. Press any key to see USB OTG Mon menu. Now DNW window appears as shown below.

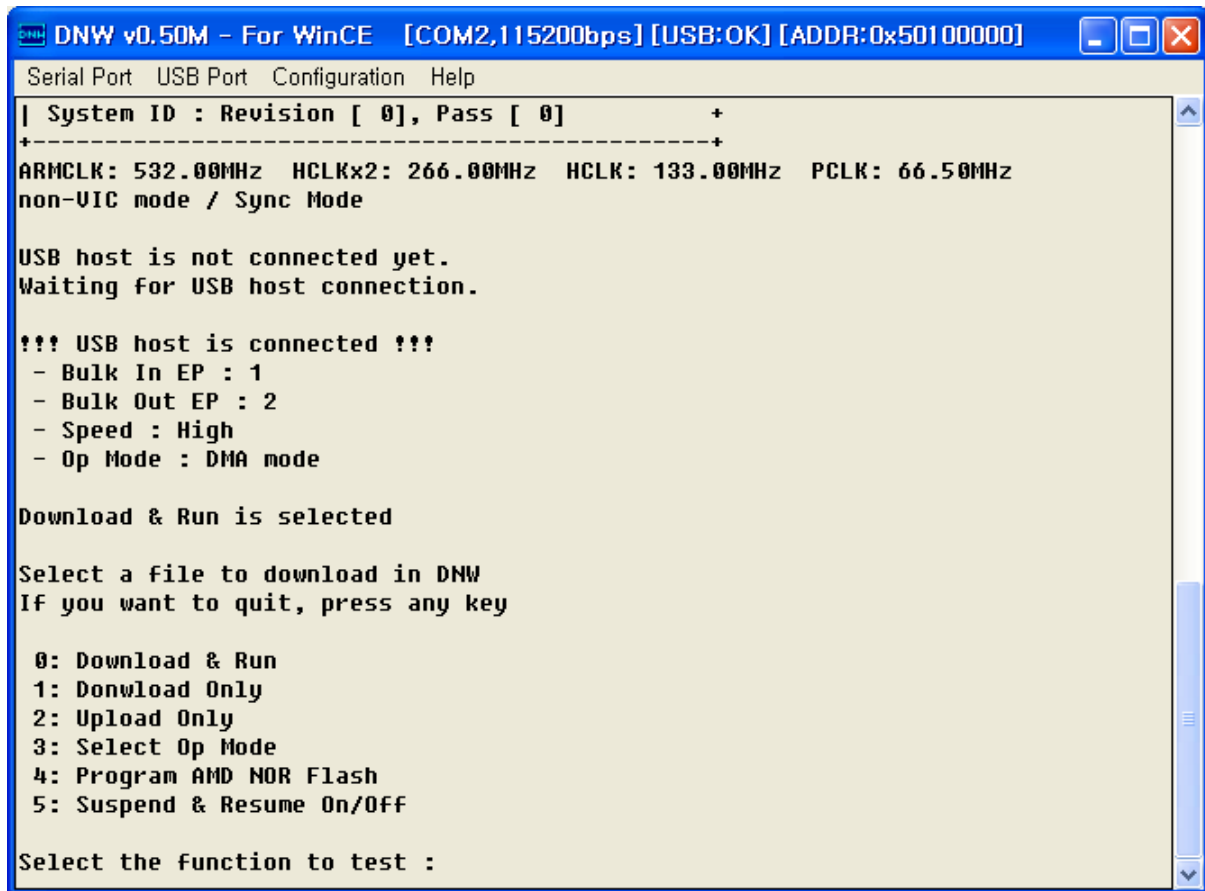


Figure 5-4 USB OTG Mon Menu

8. Enter 0 to download and run the Image on the board. DNW window appears as shown in figure 5-5.

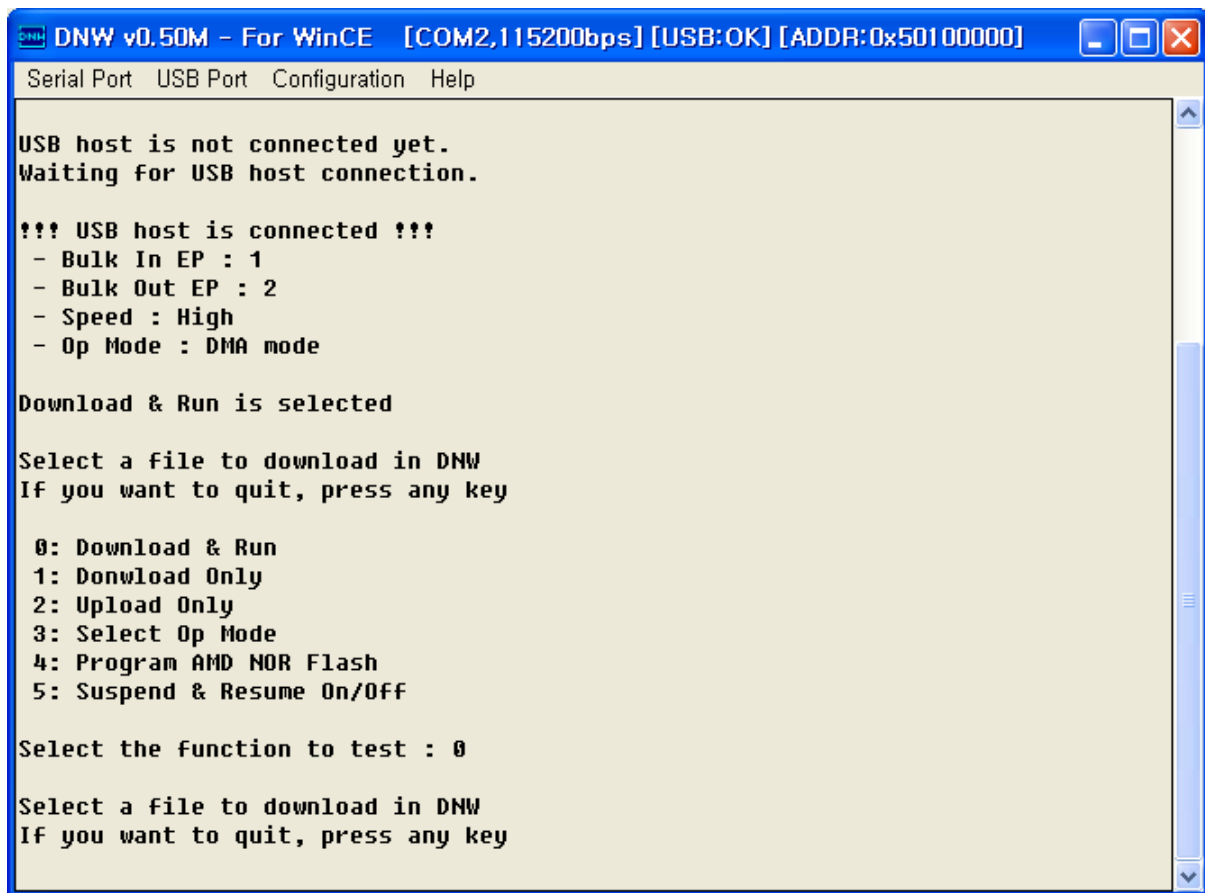


Figure 5-5 Download & Run

9. On the USB Port menu, click Transmit and the following window appears on your screen. Select NK.nb0 from X:\WINCE600\OSDesins\[OS Design name]\[OS Design name]\ReIDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

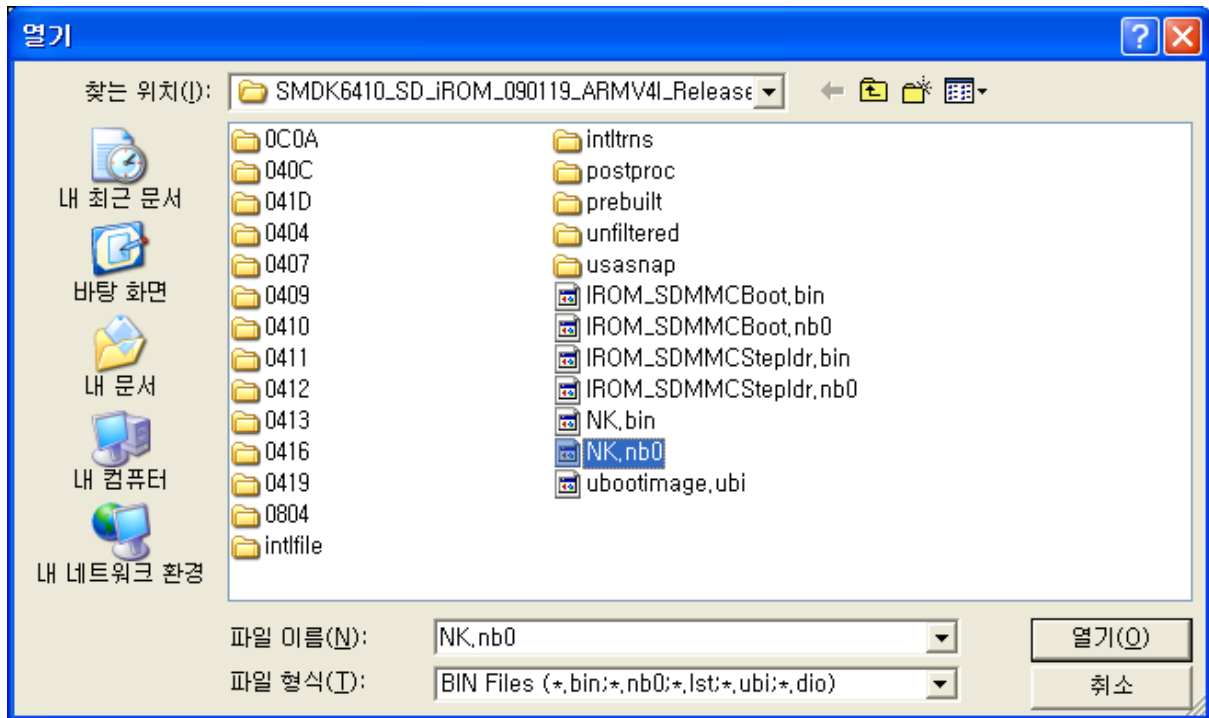


Figure 5-6 Selecting NK.nb0 for Download

10. Once download begins, a download status bar appears on your screen as shown in figure 5-7. After NK.nb0 download is over, Windows Embedded CE 6.0 boots on the target Board

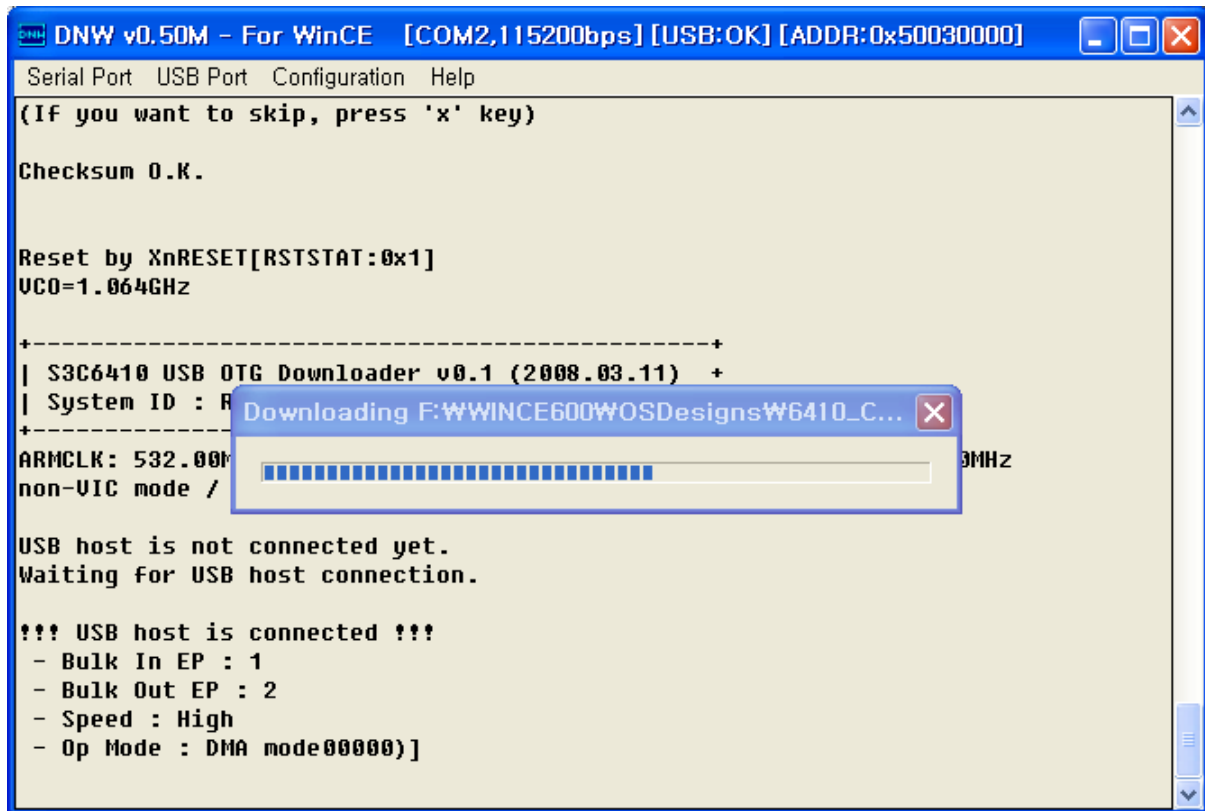


Figure 5-7 Downloading Status of NK.nb0

## 6 Fusing WinCE Image to SD/MMC via USB with DNW

---

In this chapter, you can understand how to fuse WinCE image to NAND Flash via USB with DNW

1. First of all, a SD card or MMC should be inserted in the SDMMC slot.
2. Before you download the WinCE Image through the USB, you must have **6410\_OtgMon.bin** image on your AMD Flash. (The image was already fused on your AMD Flash in the board before release)
3. Configure switches on the SMDK Board properly for booting from AMD Flash. (For more information, Read SMDK6410 Board User's Manual in Document folder...)
4. Please install the USB Driver and DNW application on your host PC.
5. Run **dnw.exe** on the host PC. The following window appears on your screen.

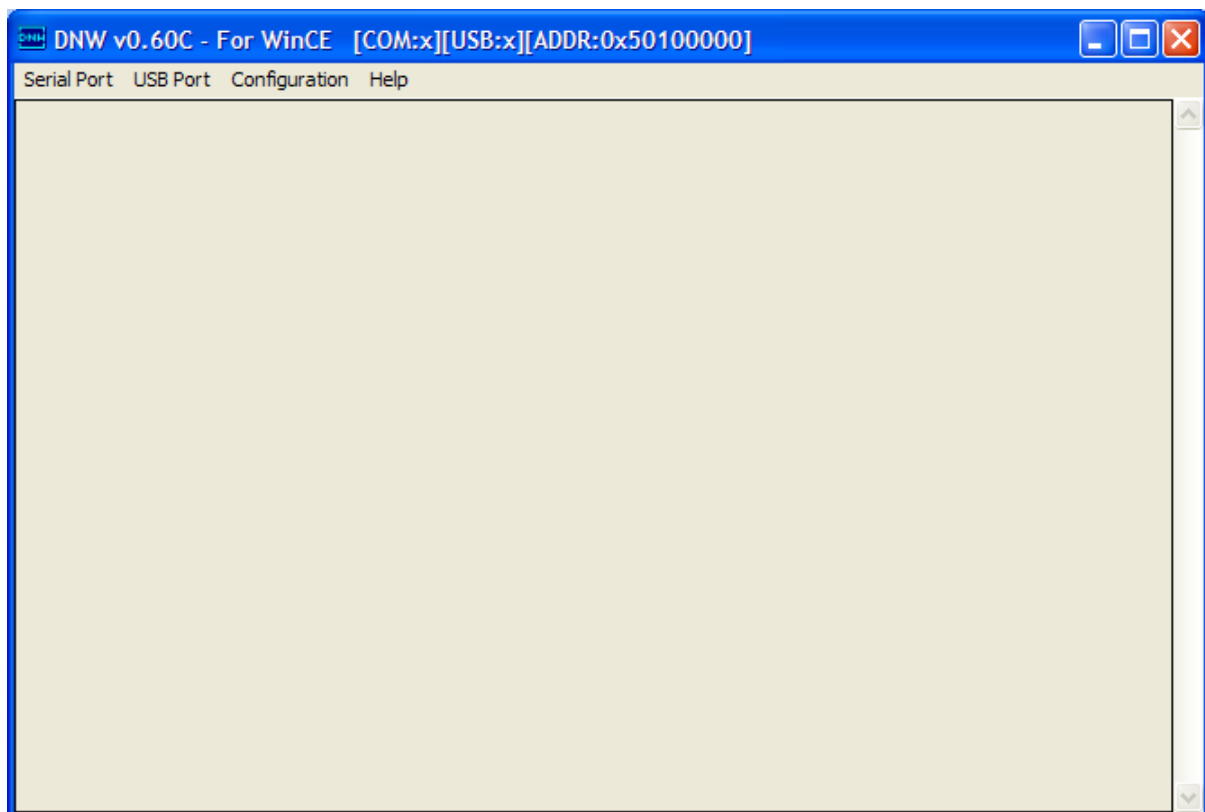


Figure 6-1 DNW Window

6. On the **Configuration** menu in the DNW window, click **Options** to set the UART/USB options. The following window appears on your screen. Select Baud Rate and COM Port as shown in figure 7-4, enter the download address as (S3C6410 Single:0x50030000, S3C6410 XD POP:0x60030000) that is preconfigured address in SMDK6410\inc\image\_cfg.h, SMDK6410\inc\image\_cfg.inc, EBOOT\ebboot.bib for Bootloader and then click OK button.

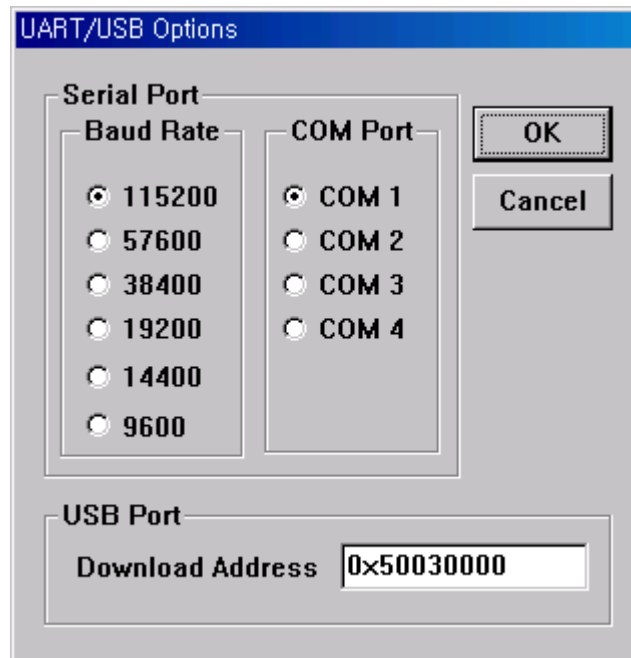


Figure 6-2 UART/USB Options



7. On the Serial Port menu, click Connect. Switch ON the board and then press any key. The DNW window appears as shown in figure 6-3.

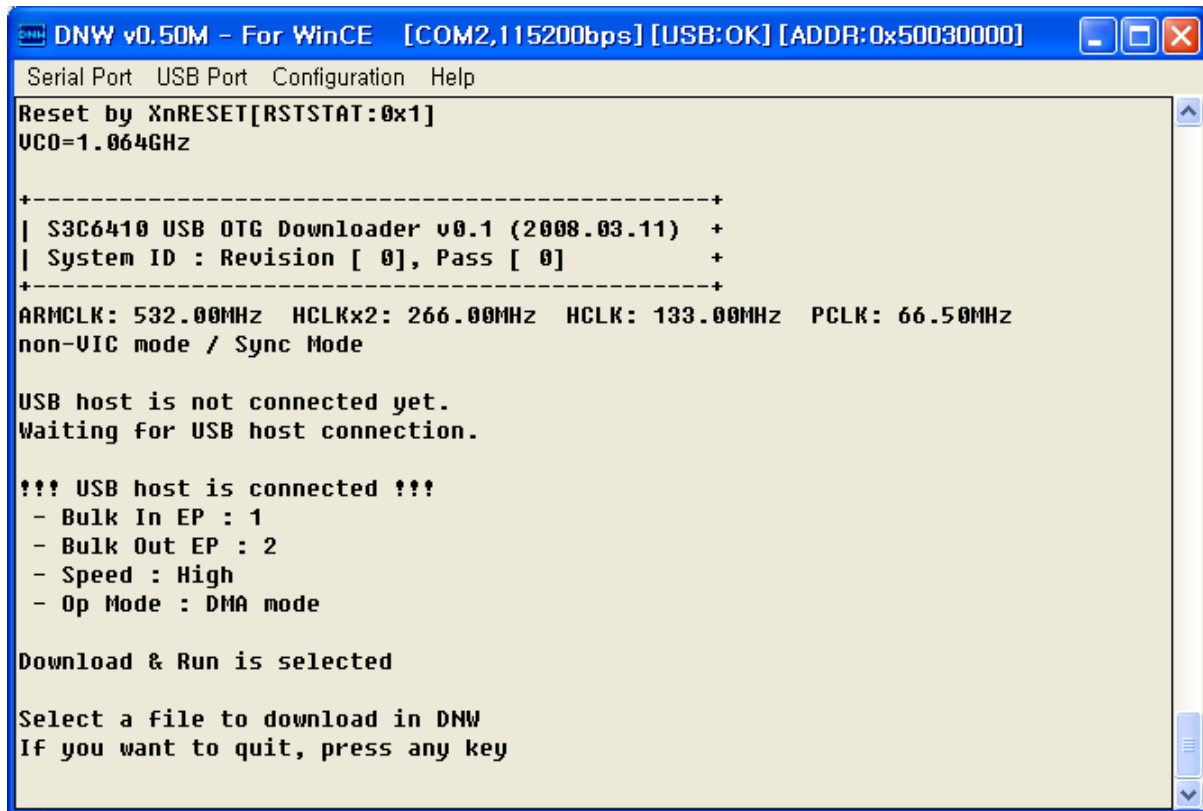


Figure 6-3 DNW Window after Board Power ON

8. Press any key to see USB OTG Mon menu. Now DNW window appears as shown below.

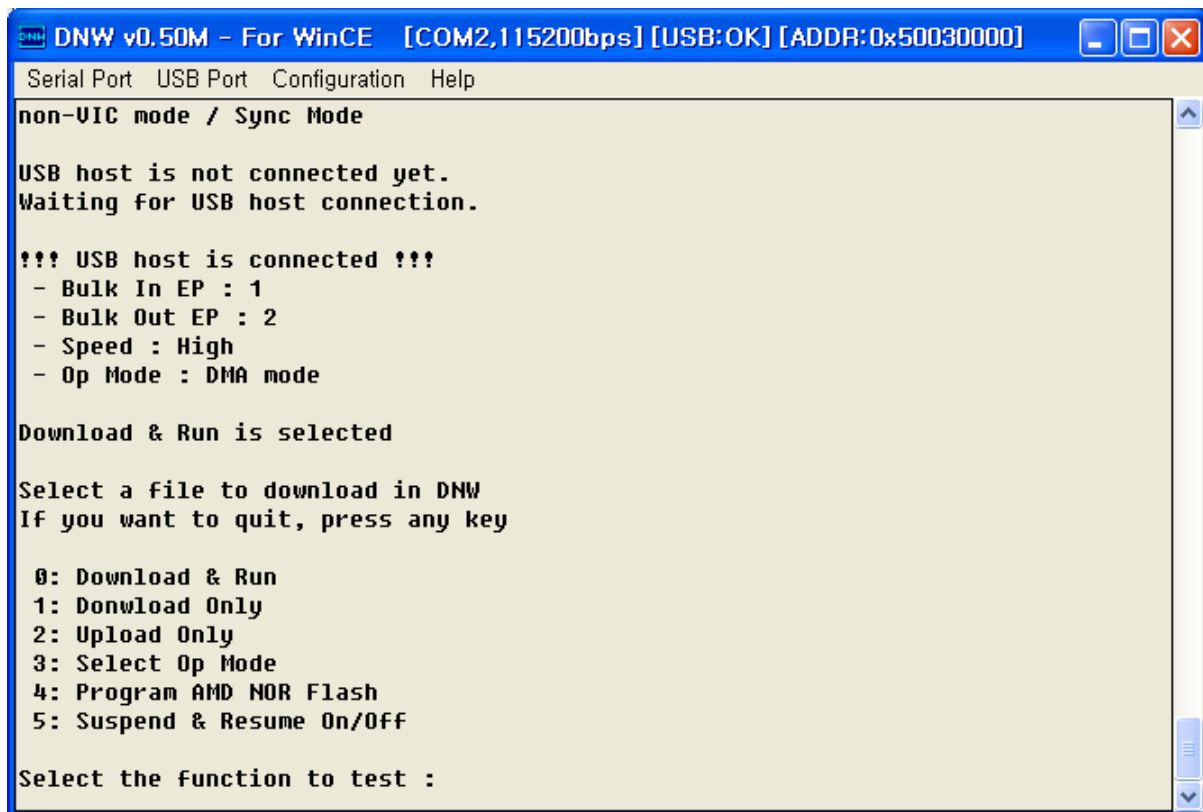


Figure 6-4 usb OTG Mon menu

9. Enter 0 to download and run the Image on the board. DNW window appears as shown in figure 6-5.

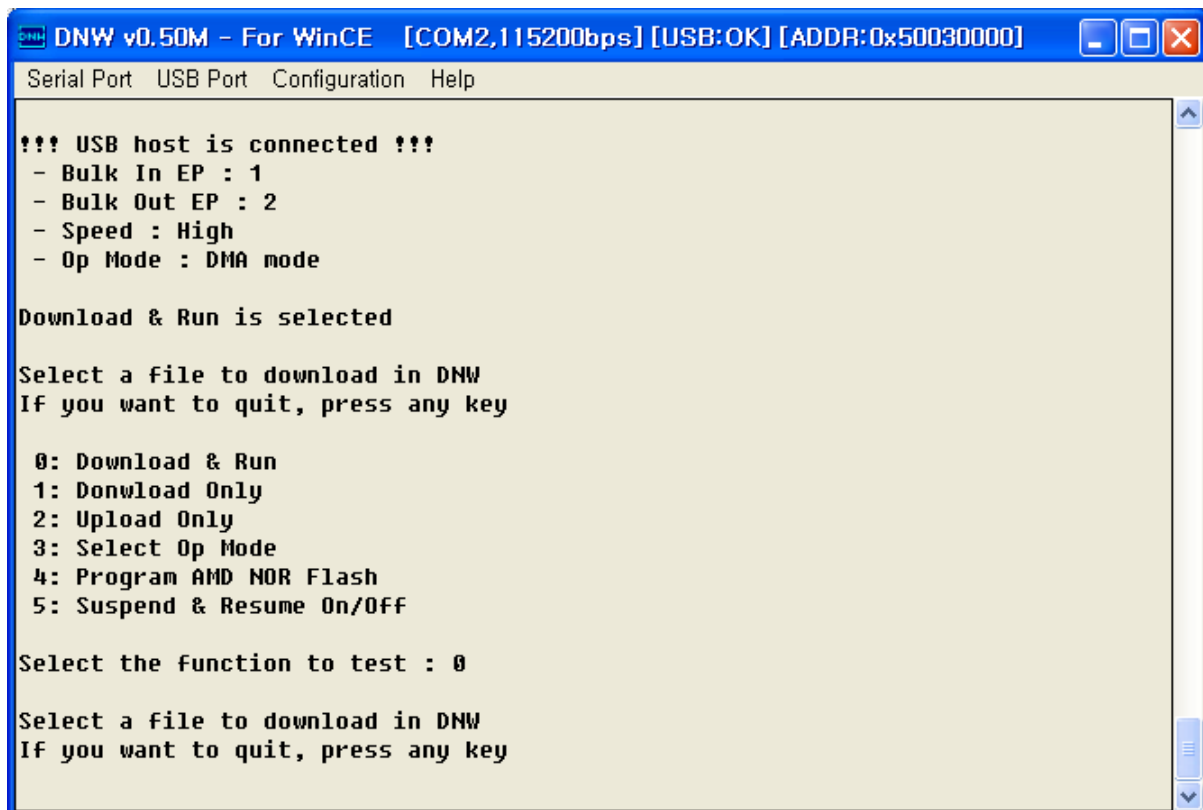


Figure 6-5 Download & Run

10. On the USB Port menu, click Transmit and the following window appears on your screen. Select IROM\_SDMMCBoot.nb0 file from X:\WINCE600\OSDesigns\[OSDesign name] \[OSDesign name]\ReIDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

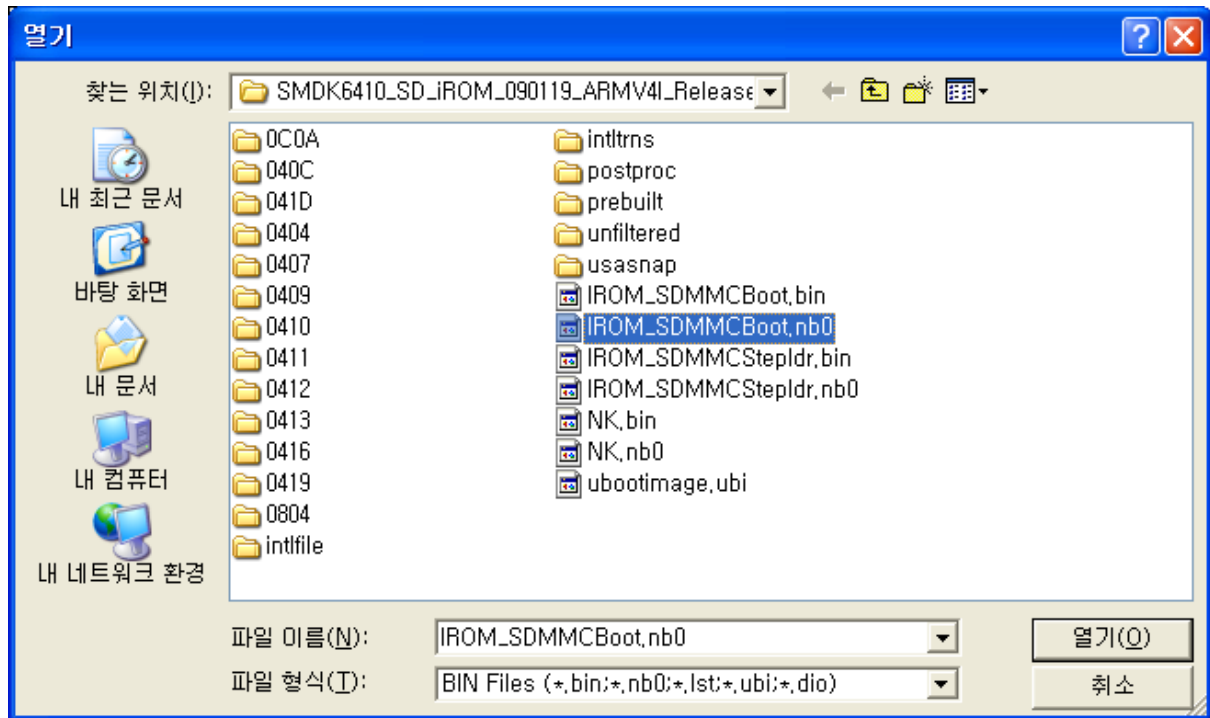
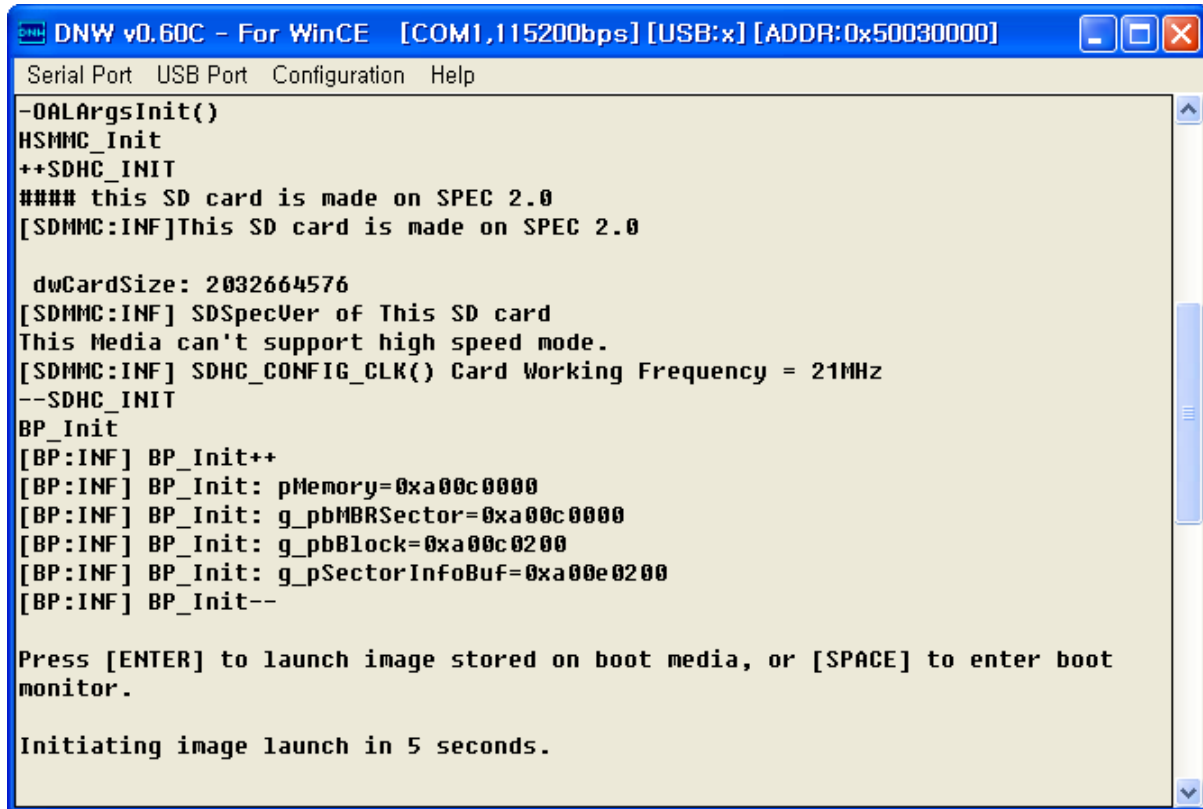


Figure 6-6 Selecting IROM\_SDMMCBoot.nb0 for Download

11. As soon as IROM\_SDMMCBoot.nb0 download is over, the following messages appear in the DNW window. This message can differ from yours, if you had changed some message option in EBOOT code. and different Bootloader version also can show you different messages.



The screenshot shows a window titled "DNW v0.60C - For WinCE" with a menu bar containing "Serial Port", "USB Port", "Configuration", and "Help". The window displays the following text:

```
-DALArgsInit()
HSMC_Init
++SDHC_INIT
#### this SD card is made on SPEC 2.0
[SDMMC:INF]This SD card is made on SPEC 2.0

dwCardSize: 2032664576
[SDMMC:INF] SDSpecVer of This SD card
This Media can't support high speed mode.
[SDMMC:INF] SDHC_CONFIG_CLK() Card Working Frequency = 21MHz
--SDHC_INIT
BP_Init
[BP:INF] BP_Init++
[BP:INF] BP_Init: pMemory=0xa00c0000
[BP:INF] BP_Init: g_pbMBRSector=0xa00c0000
[BP:INF] BP_Init: g_pbBlock=0xa00c0200
[BP:INF] BP_Init: g_pSectorInfoBuf=0xa00e0200
[BP:INF] BP_Init--

Press [ENTER] to launch image stored on boot media, or [SPACE] to enter boot
monitor.

Initiating image launch in 5 seconds.
```

Figure 6-7 After IROM\_SDMMCBoot.nb0 Download

12. Please hit the SPACE BAR key to view the current Ethernet Boot Loader Configuration. Then there will be the Main Menu to set some KITL option, and Flash Fusing Options. This menu is changed from previous version to support various connection options.

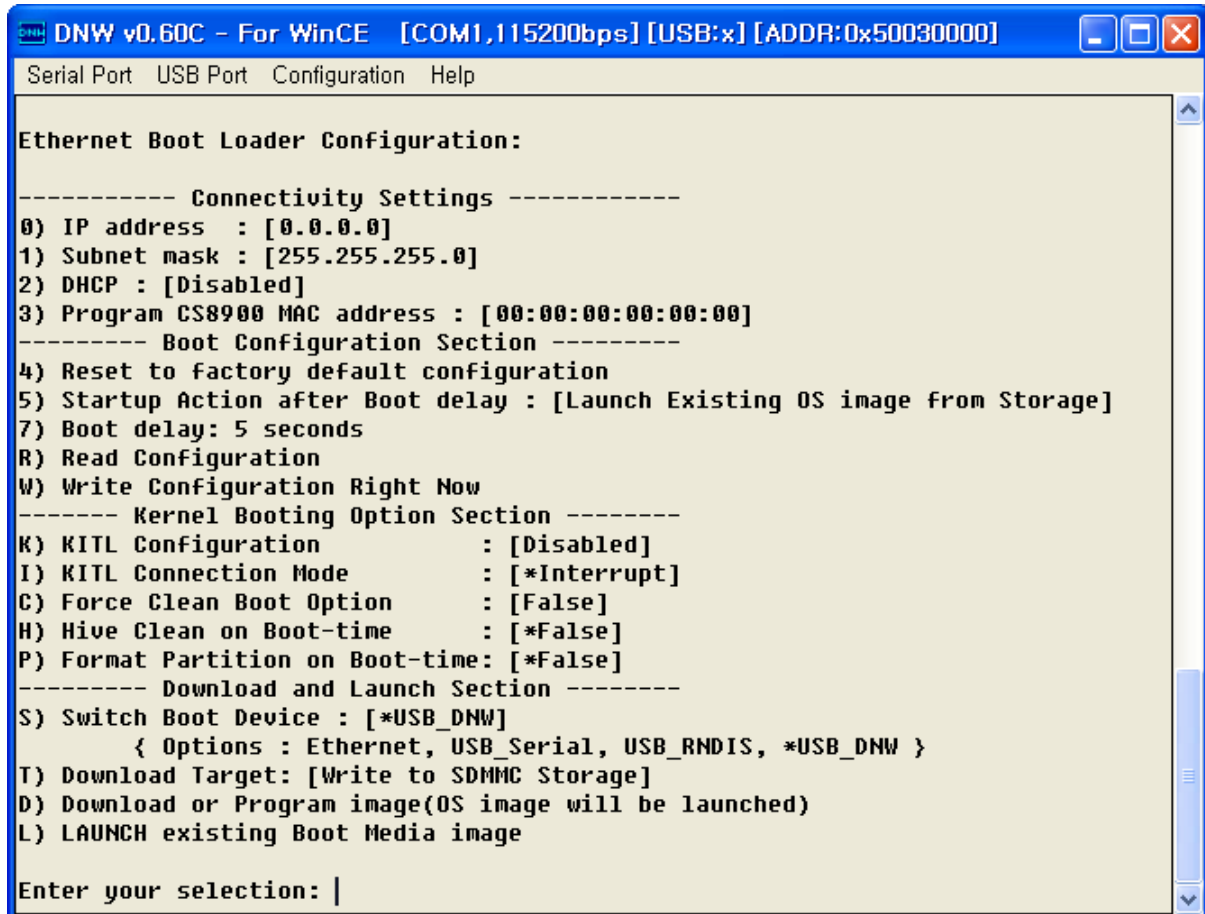


Figure 6-8 Ethernet Boot Loader Configuration - Before

13. Configure the Ethernet Boot loader as follows by entering the respective options:

- Enter [0] to enter SMDK6410 Board IP address
- Enter [1] to enter SMDK6410 Board Subnet mask
- Enter [2] to change DHCP mode to **DISABLED**. Default value is **ENABLED**.
- Enter [3] to enter SMDK6410 Board MAC Address.
- Enter [5] to change Startup action after Boot Delay to **Launch Existing OS image from Storage**. Default value is **Download New image**
- Enter [T] to change Download Target to **Write to SDMMC Storage**. Default value is **Download to RAM**.
- Enter [K] to change KITL Configuration to **DISABLED**. Default value is **ENABLED**.
- Enter [W] to Write Configuration Right Now
- Keep Boot Device as **USB\_DNW**. Default value is **USB\_DNW**

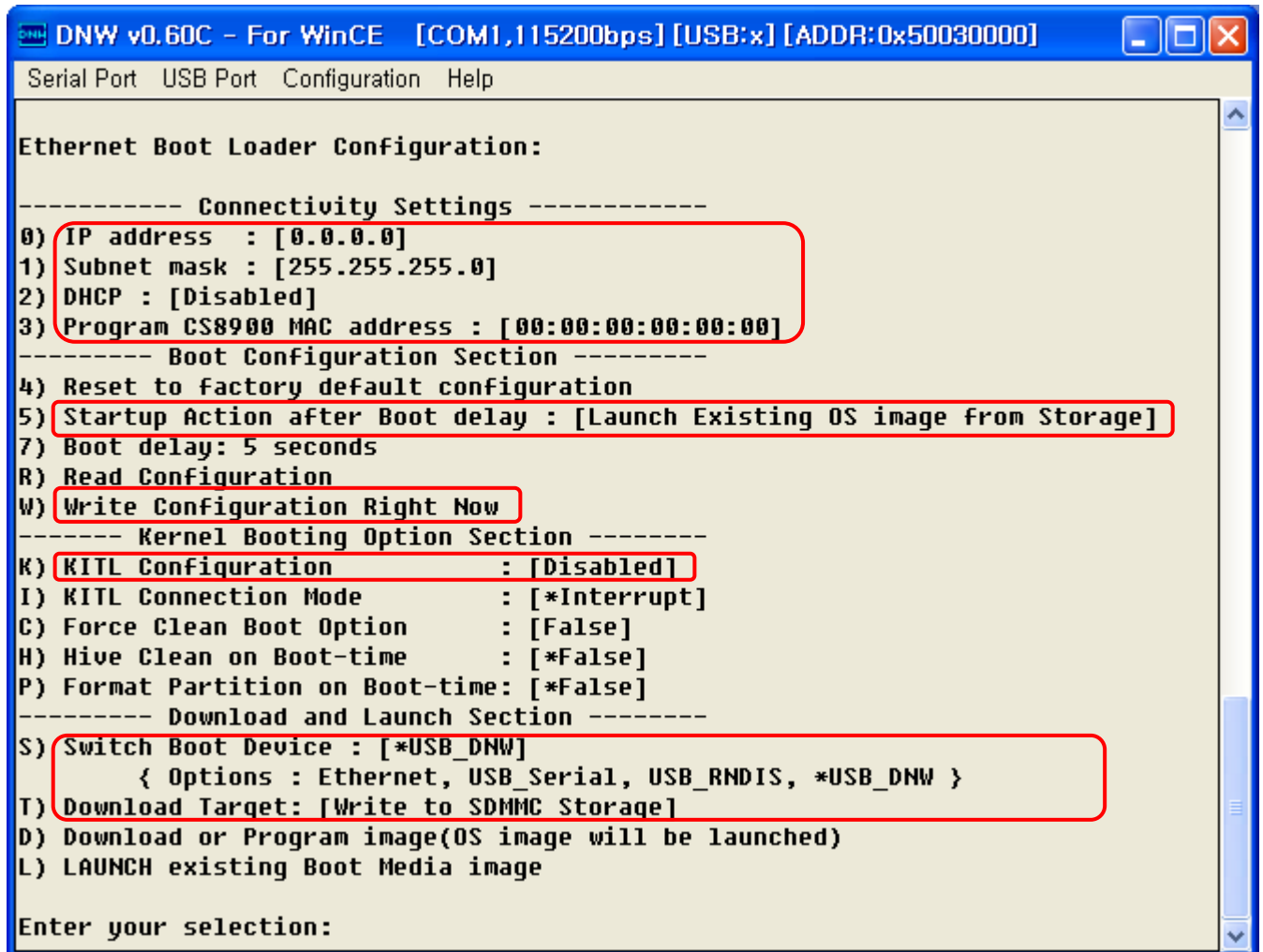


Figure 6-9 Ethernet Boot Loader Configuration - After

14. Change the IP address and Subnet Mask manually on your Host PC in TCP/IP properties before you start to download the OS image to the target board. For example, if the Target Board IP Address is 192.168.1.200, then set Host PC IP address as 192.168.1.100. Set the subnet mask as 255.255.255.0 (You can skip this step for downloading via USB)

And then Enter [D] for download image. If so, You can see the below window.

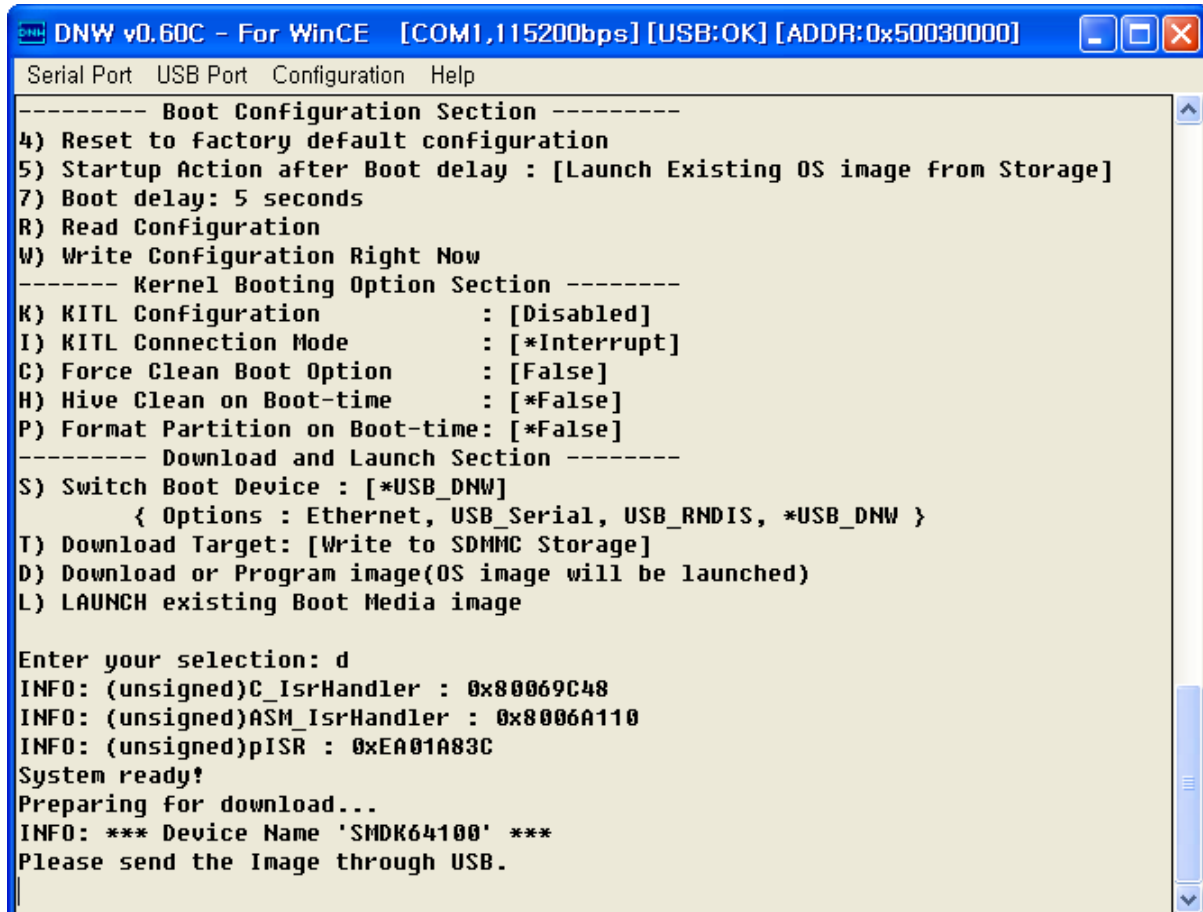


Figure 6-10 Preparing to download image through USB



15. On the USB Port menu click UBOOT and the following window appears on your screen. Select IROM\_SDMMCStepldr.nb0 from X:\WINCE600\OSDesigns\[OSDesign name]\[OSDesign name]\ReIDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

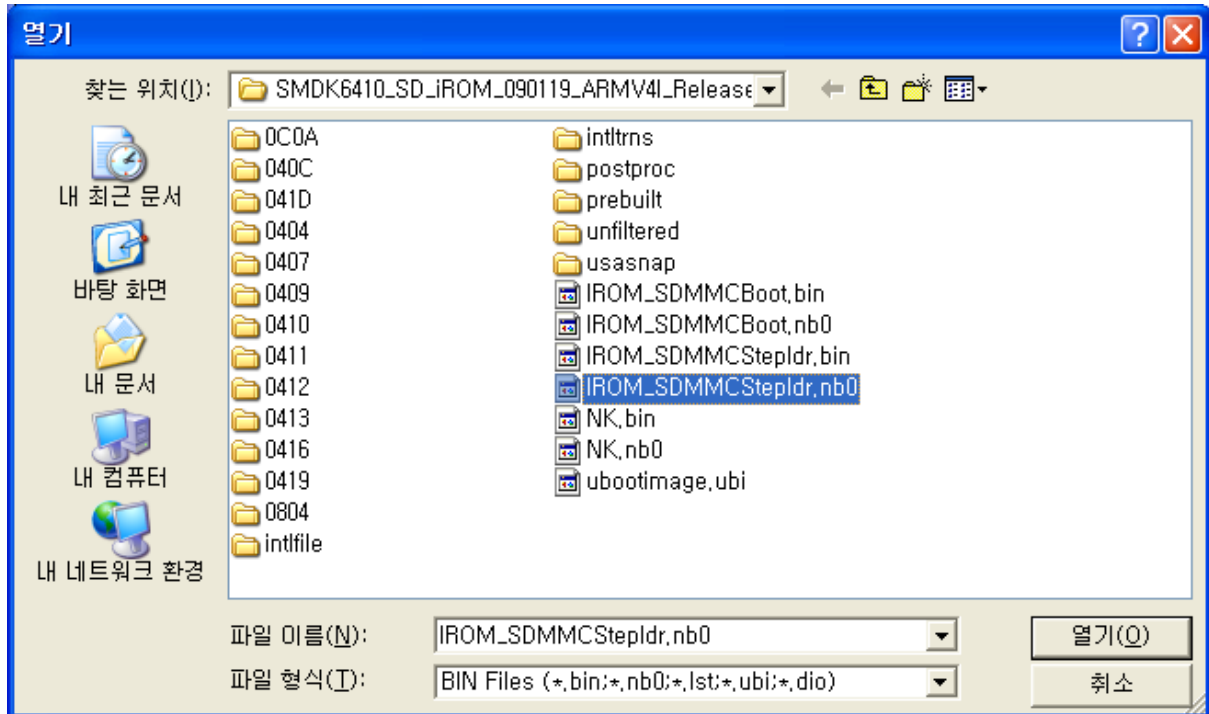
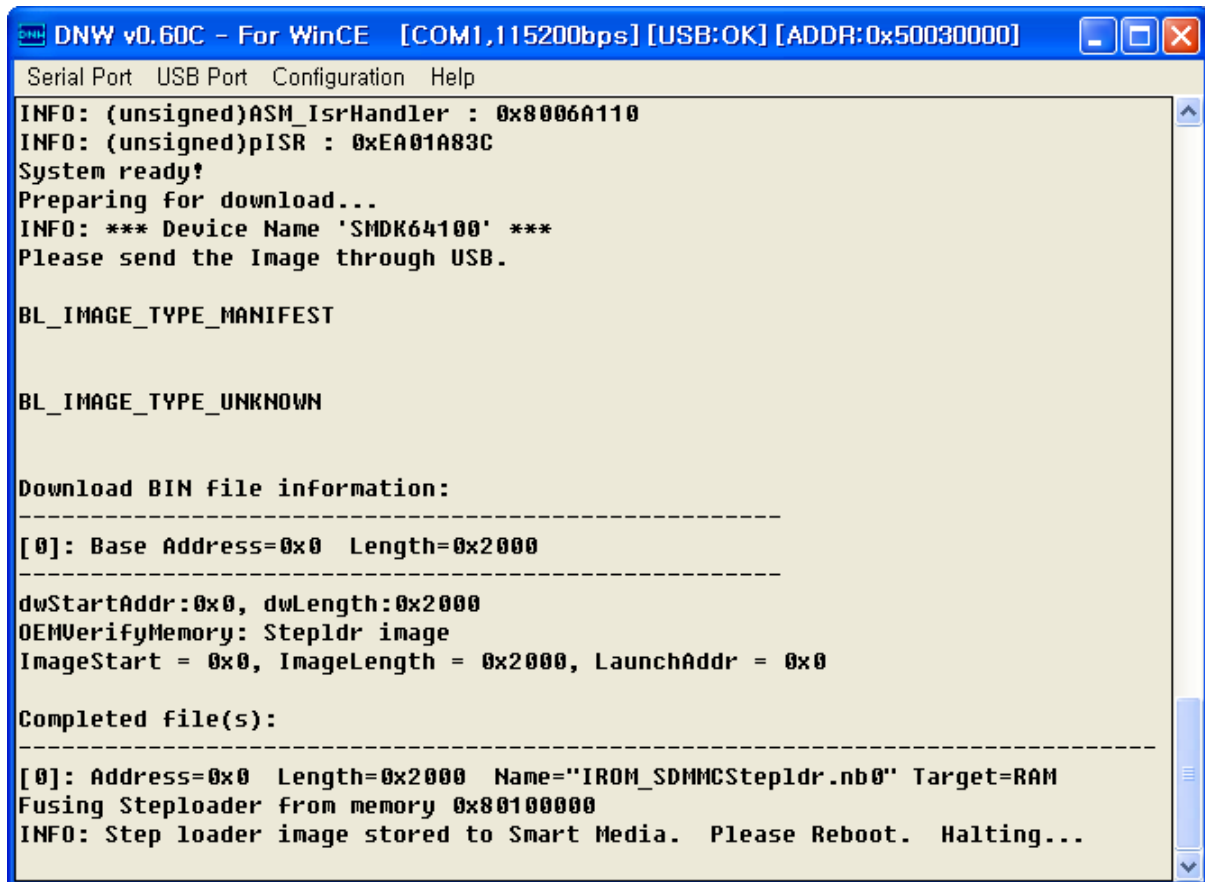


Figure 6-11 Selecting IROM\_SDMMCStepldr.nb0 for Download

16. You can see the following messages on the DNW window after IROM\_SDMMCStepldr.nb0 download is over.



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

```
INFO: (unsigned)ASM_IsrHandler : 0x8006A110
INFO: (unsigned)pISR : 0xEA01A83C
System ready!
Preparing for download...
INFO: *** Device Name 'SMDK64100' ***
Please send the Image through USB.

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="IROM_SDMMCStepldr.nb0" Target=RAM
Fusing Steploader from memory 0x80100000
INFO: Step loader image stored to Smart Media. Please Reboot. Halting...
```

Figure 6-12 Messages via UART Port after IROM\_SDMMCStepldr.nb0 Download

17. Reset the board. DNW window appears as shown in figure 6-13.

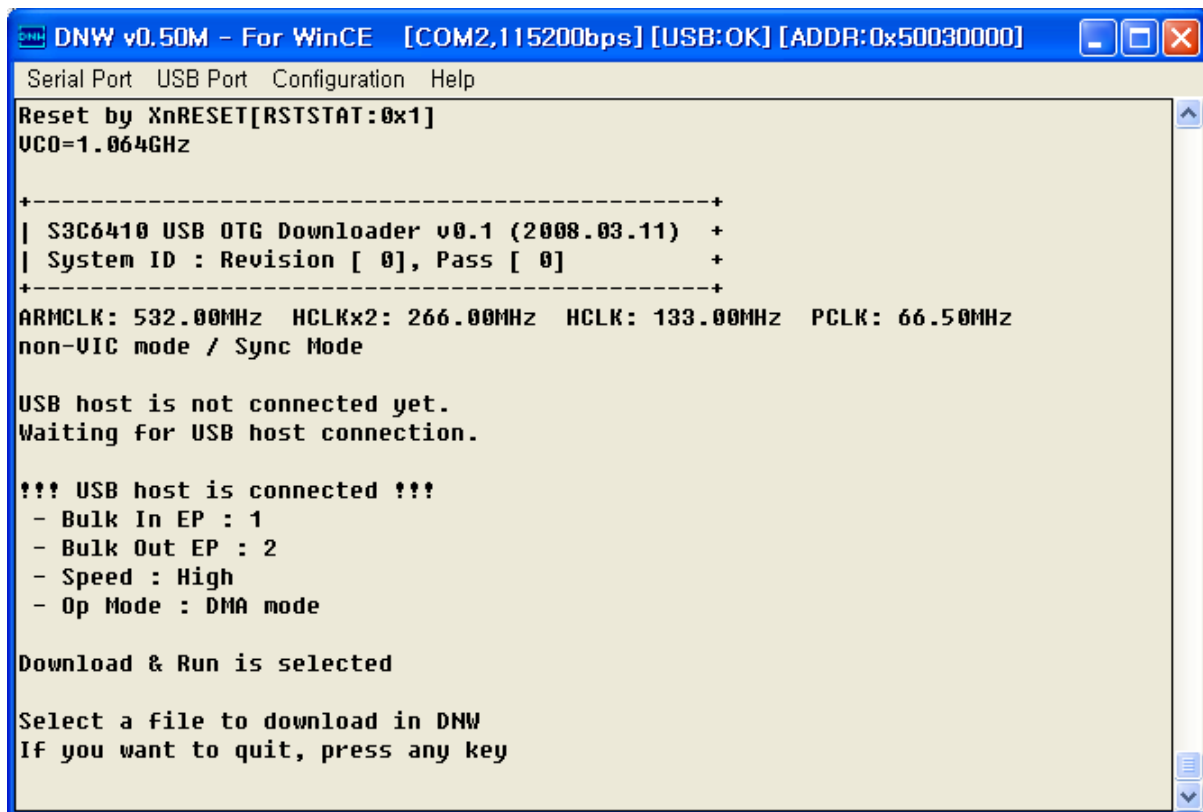


Figure 6-13 DNW Window after reset

18. On the USB Port menu, click Transmit and the following window appears on your screen. Select IROM\_SDMMCBoot.nb0 file from X:\WINCE600\OSDesigns\[OSDesign name] \[OSDesign name]\ReIDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

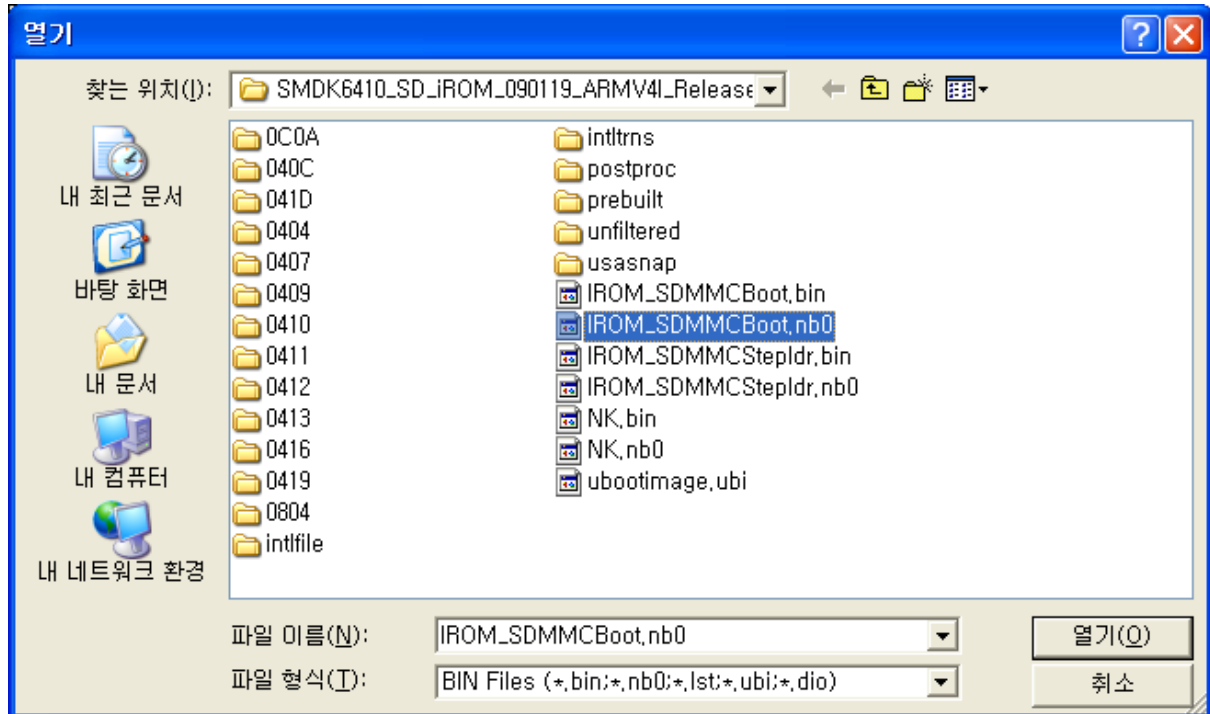
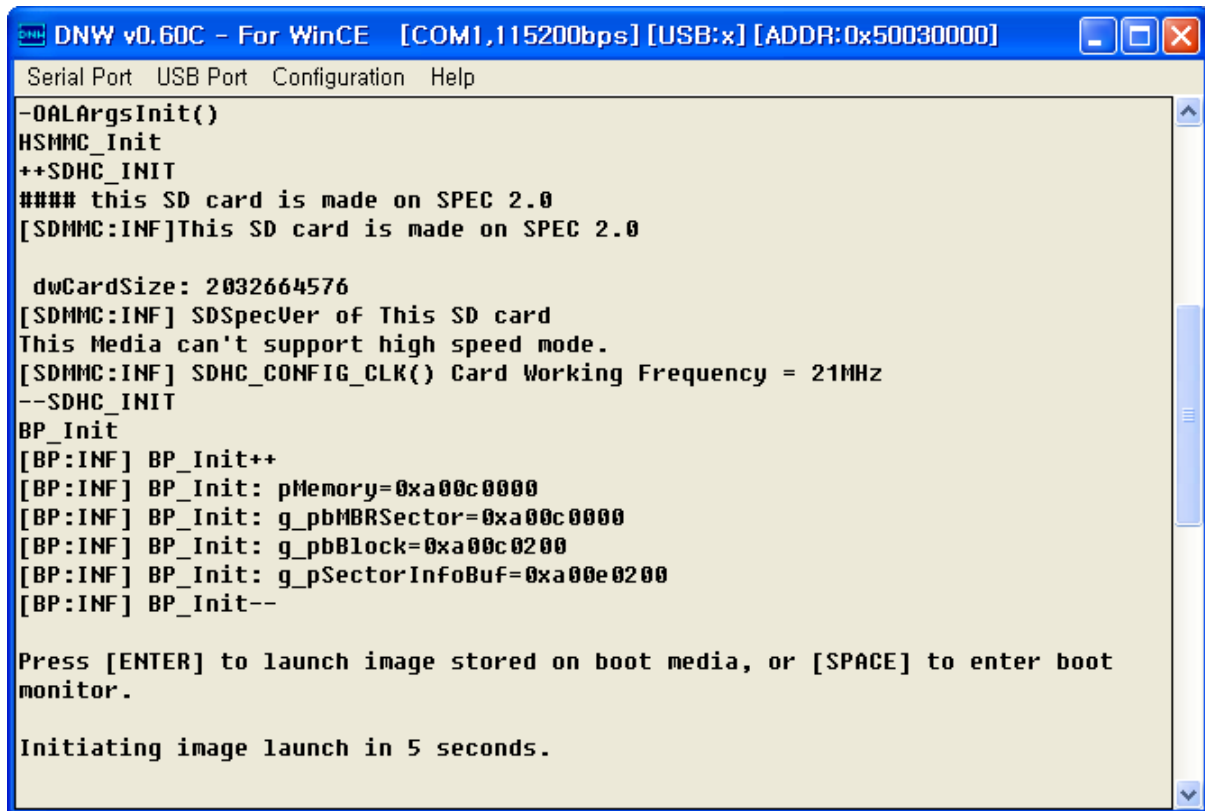


Figure 6-14 Selecting IROM\_SDMMCBoot.nb0 for Download

19. As soon as IROM\_SDMMCBBoot.nb0 download is over, the following messages appear in the DNW window.



The screenshot shows a window titled "DNW v0.60C - For WinCE" with a menu bar containing "Serial Port", "USB Port", "Configuration", and "Help". The window displays the following text:

```
-OALargsInit()
HSMC_Init
++SDHC_INIT
#### this SD card is made on SPEC 2.0
[SDMMC:INF]This SD card is made on SPEC 2.0

dwCardSize: 2032664576
[SDMMC:INF] SDSpecVer of This SD card
This Media can't support high speed mode.
[SDMMC:INF] SDHC_CONFIG_CLK() Card Working Frequency = 21MHz
--SDHC_INIT
BP_Init
[BP:INF] BP_Init++
[BP:INF] BP_Init: pMemory=0xa00c0000
[BP:INF] BP_Init: g_pbMBRSector=0xa00c0000
[BP:INF] BP_Init: g_pbBlock=0xa00c0200
[BP:INF] BP_Init: g_pSectorInfoBuf=0xa00e0200
[BP:INF] BP_Init--

Press [ENTER] to launch image stored on boot media, or [SPACE] to enter boot
monitor.

Initiating image launch in 5 seconds.
```

Figure 6-15 After IROM\_SDMMCBBoot.nb0 Download

20. Please hit the SPACE BAR key to view the current Ethernet Boot Loader Configuration.

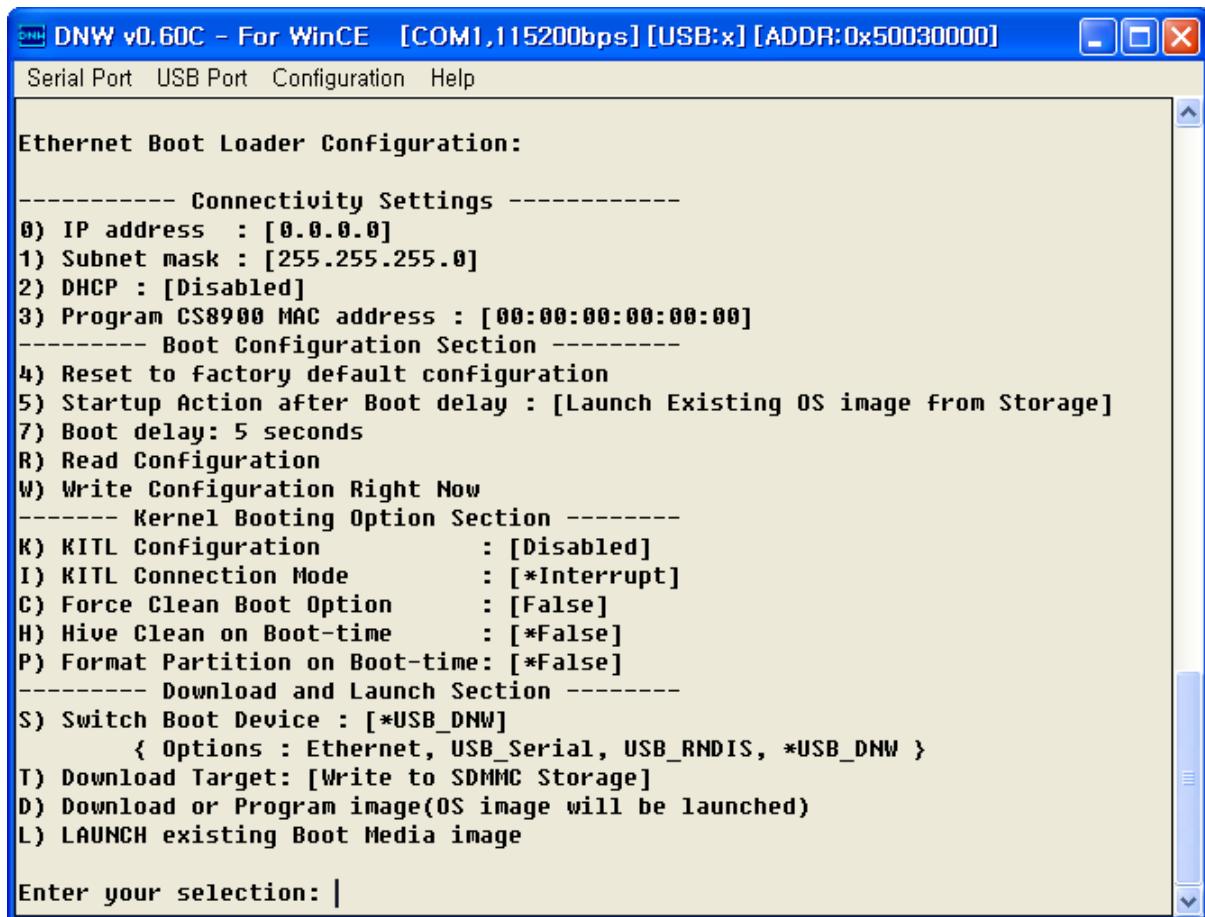


Figure 6-16 Ethernet Boot Loader Configuration

21. Enter [D] to Download image, the following messages appear in the DNW window.

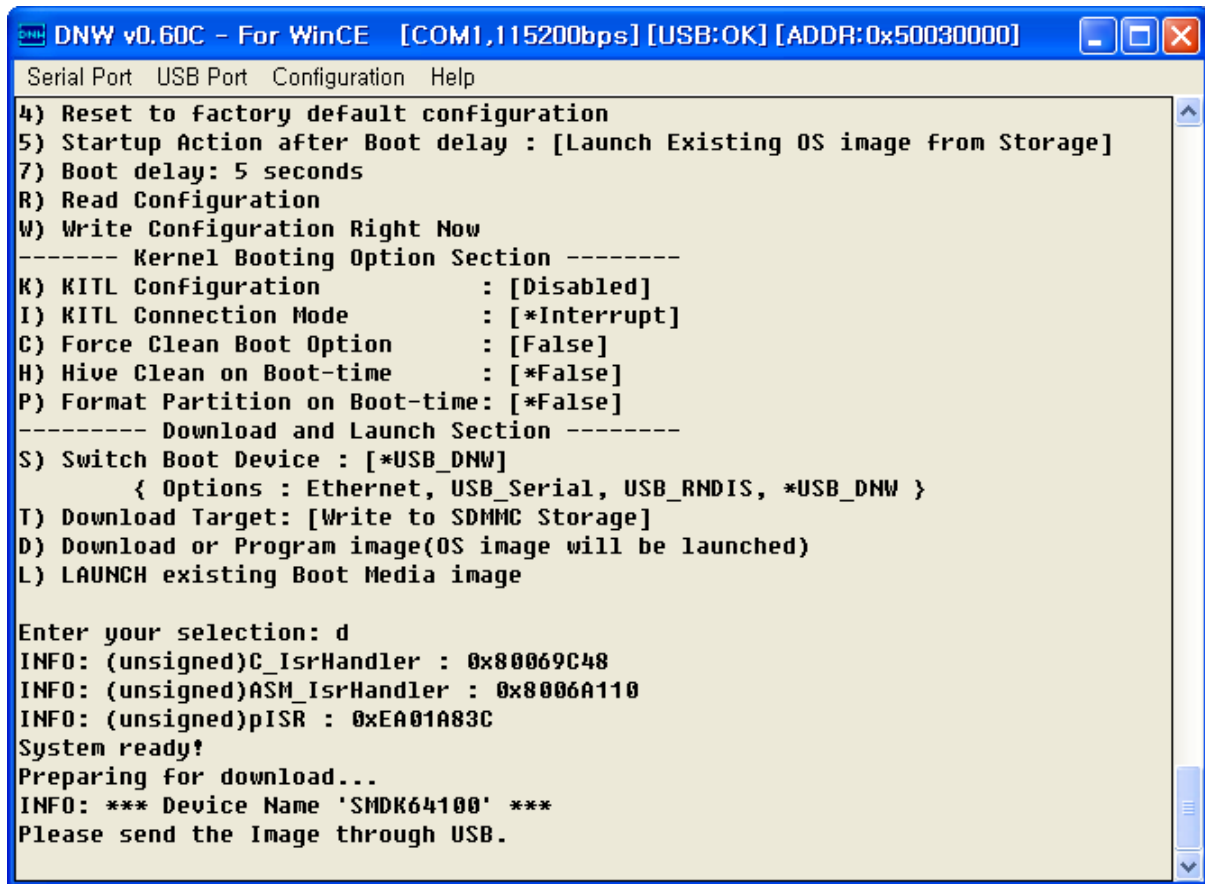


Figure 6-17 Preparing to download image through USB

22. On the USB Port menu click UBOOT and the following window appears on your screen. Select IROM\_SDMMCBoot.bin from X:\WINCE600\OSDesigns\[OSDesign name]\[OSDesign name]\ReIDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

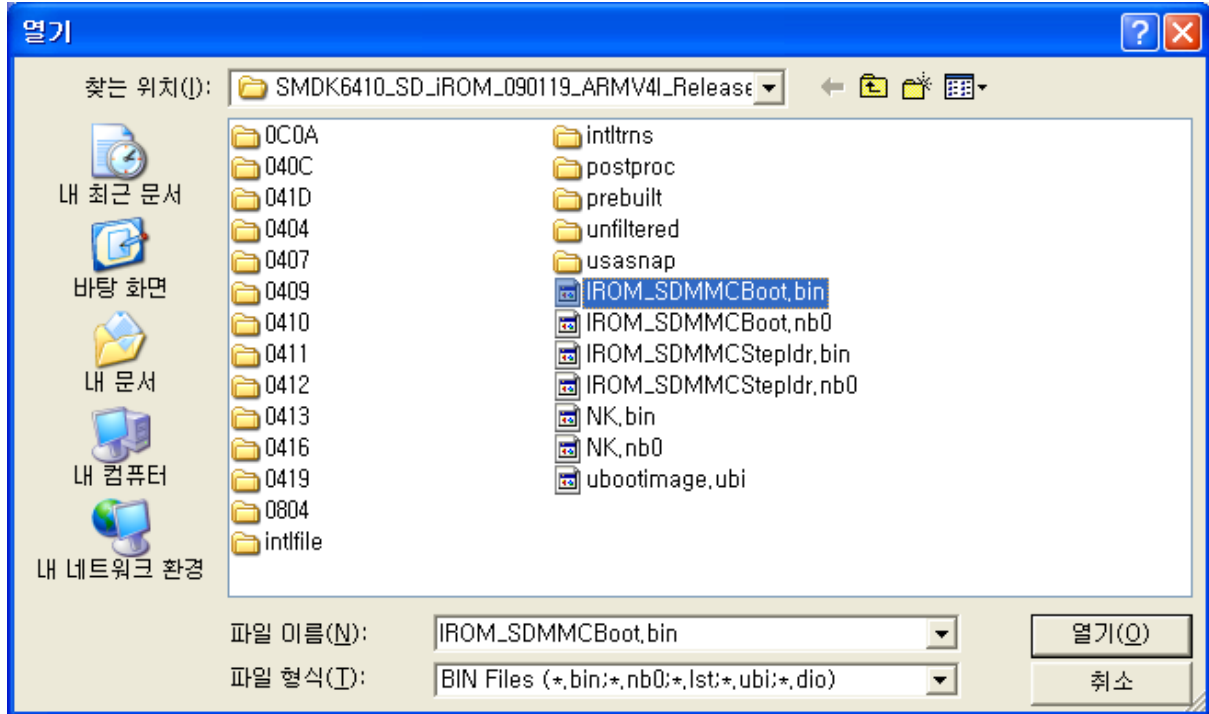
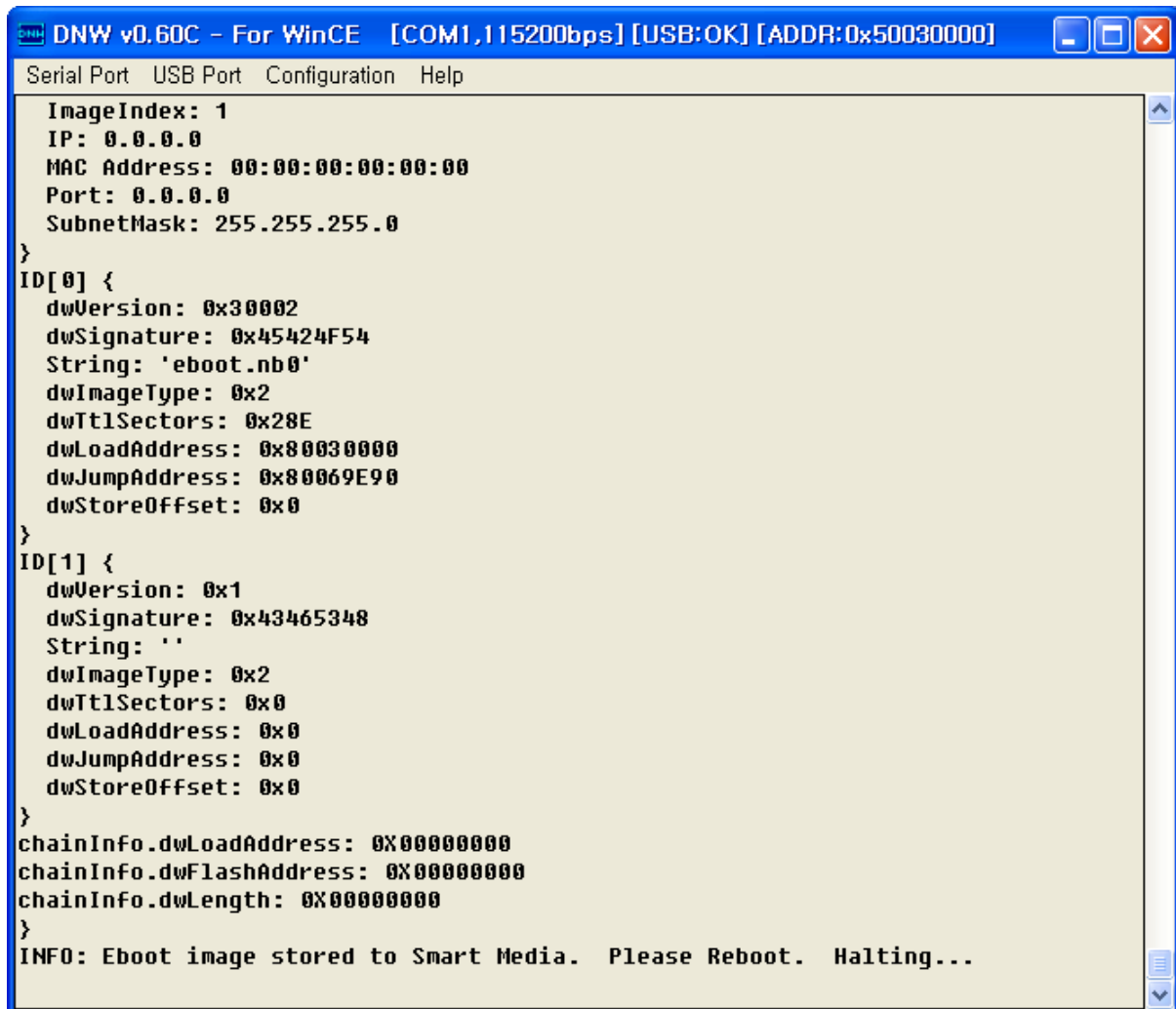


Figure 6-18 Selecting IROM\_SDMMCBoot.bin for Download



23. You can see the following messages on the DNW window after IROM\_SDMMCBBoot.bin download.

The image shows a screenshot of the 'DNW v0.60C - For WinCE' application window. The title bar includes the application name and status information: '[COM1,115200bps] [USB:OK] [ADDR:0x50030000]'. The window has a menu bar with 'Serial Port', 'USB Port', 'Configuration', and 'Help'. The main text area displays the following configuration and status messages:

```
ImageIndex: 1
IP: 0.0.0.0
MAC Address: 00:00:00:00:00:00
Port: 0.0.0.0
SubnetMask: 255.255.255.0
}
ID[0] {
  dwVersion: 0x30002
  dwSignature: 0x45424F54
  String: 'eboot.nb0'
  dwImageType: 0x2
  dwTtlSectors: 0x28E
  dwLoadAddress: 0x80030000
  dwJumpAddress: 0x80069E90
  dwStoreOffset: 0x0
}
ID[1] {
  dwVersion: 0x1
  dwSignature: 0x43465348
  String: ''
  dwImageType: 0x2
  dwTtlSectors: 0x0
  dwLoadAddress: 0x0
  dwJumpAddress: 0x0
  dwStoreOffset: 0x0
}
chainInfo.dwLoadAddress: 0X00000000
chainInfo.dwFlashAddress: 0X00000000
chainInfo.dwLength: 0X00000000
}
INFO: Eboot image stored to Smart Media. Please Reboot. Halting...
```

Figure 6-19 Messages via UART Port after IROM\_SDMMCBBoot.bin Download

24. Reset the board. DNW window appears as shown in figure 6-20.

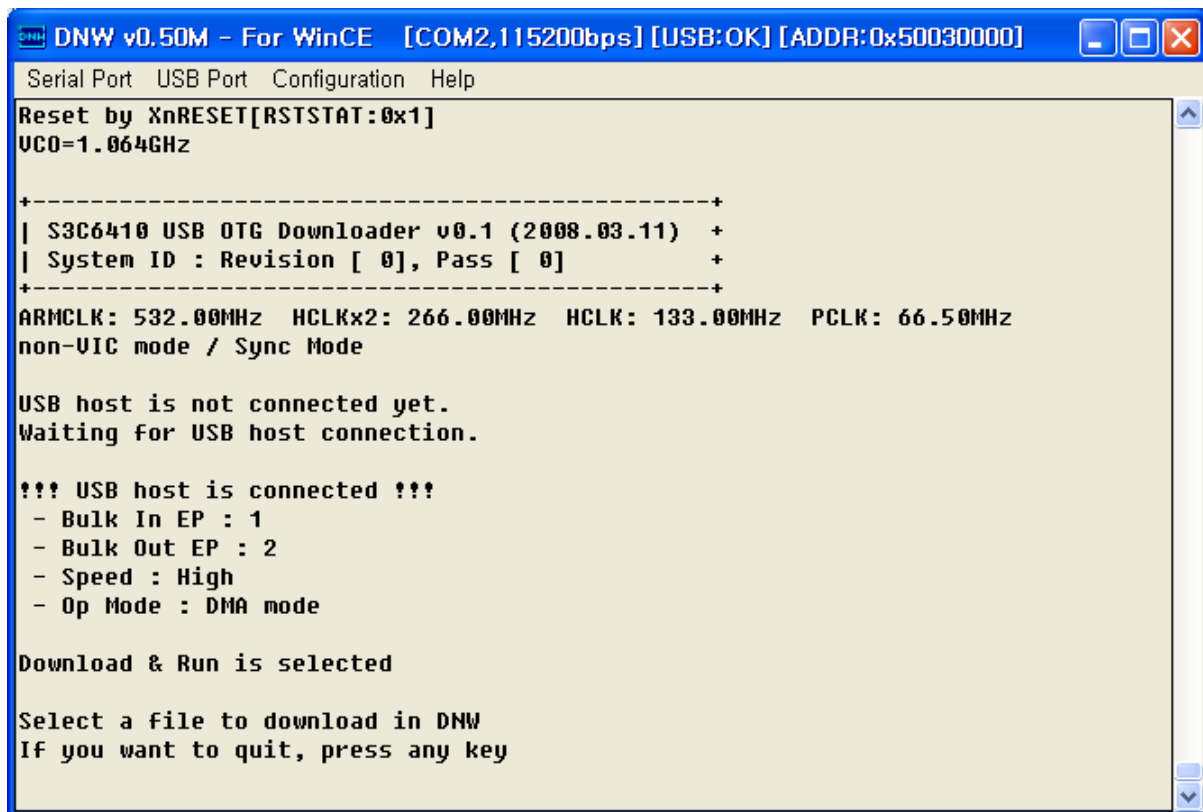


Figure 6-20 DNW Window after reset

25. On the USB Port menu, click Transmit and the following window appears on your screen. Select IROM\_SDMMCBBoot.nb0 file from X:\WINCE600\OSDesigns\[OSDesign name] \[OSDesign name]\ReIDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

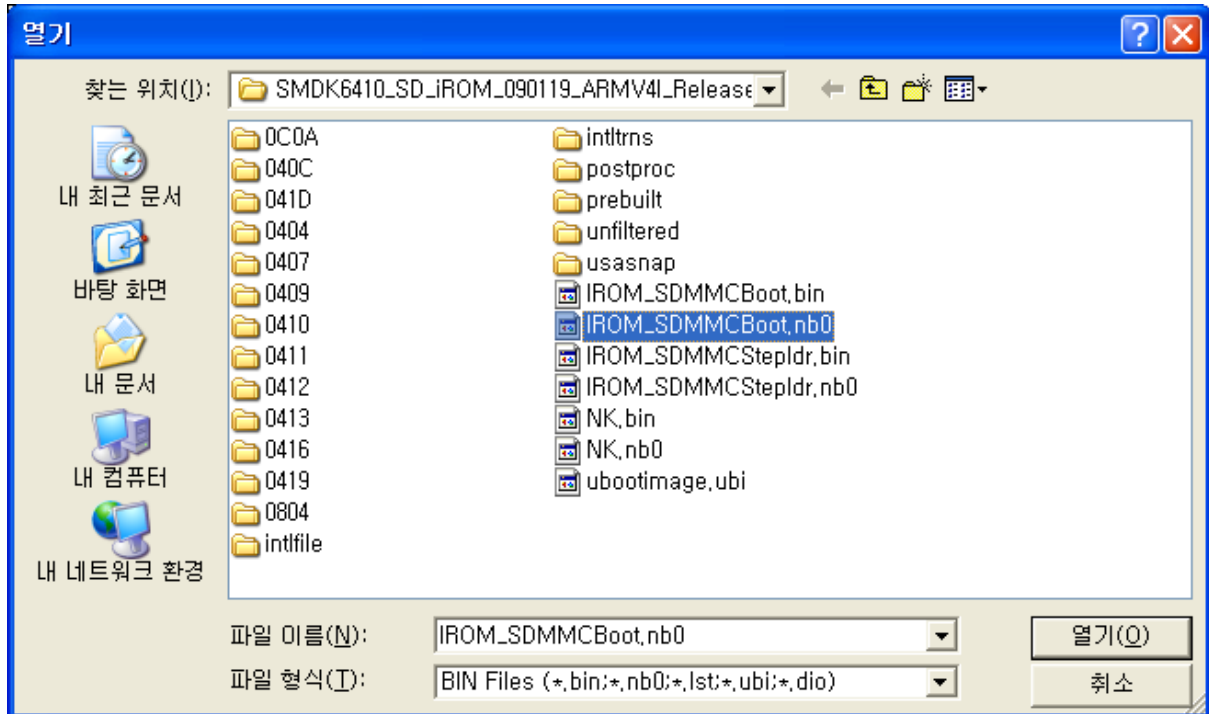
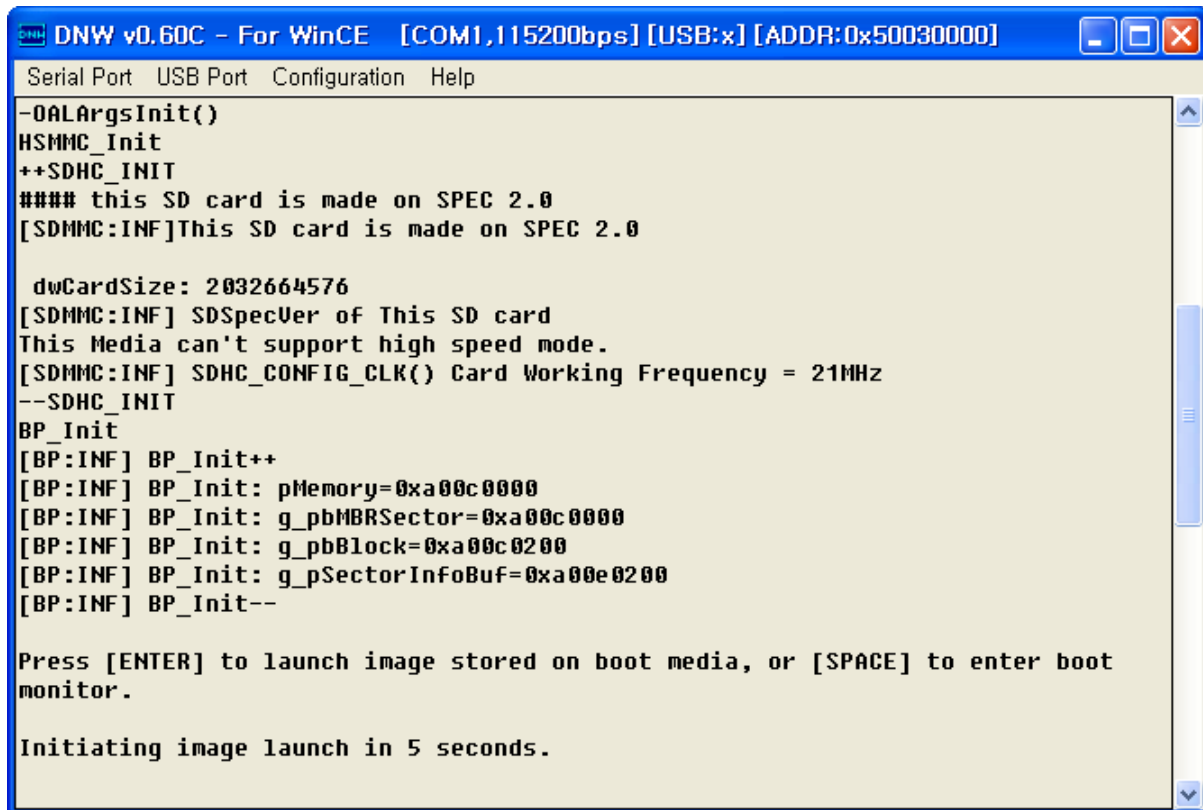


Figure 6-21 Selecting IROM\_SDMMCBBoot.nb0 for Download

26. As soon as IROM\_SDMMCBoot.nb0 download is over, the following messages appear in the DNW window.

The image shows a screenshot of a software window titled "DNW v0.60C - For WinCE". The window has a menu bar with "Serial Port", "USB Port", "Configuration", and "Help". The main text area displays the following boot sequence messages:

```
-OALArgsInit()
HSMC_Init
++SDHC_INIT
#### this SD card is made on SPEC 2.0
[SDMMC:INF]This SD card is made on SPEC 2.0

    dwCardSize: 2032664576
[SDMMC:INF] SDSpecVer of This SD card
This Media can't support high speed mode.
[SDMMC:INF] SDHC_CONFIG_CLK() Card Working Frequency = 21MHz
--SDHC_INIT
BP_Init
[BP:INF] BP_Init++
[BP:INF] BP_Init: pMemory=0xa00c0000
[BP:INF] BP_Init: g_pbMBRSector=0xa00c0000
[BP:INF] BP_Init: g_pbBlock=0xa00c0200
[BP:INF] BP_Init: g_pSectorInfoBuf=0xa00e0200
[BP:INF] BP_Init--

Press [ENTER] to launch image stored on boot media, or [SPACE] to enter boot
monitor.

Initiating image launch in 5 seconds.
```

Figure 6-22 After IROM\_SDMMCBoot.nb0 Download

27. Please hit the SPACE BAR key to view the current Ethernet Boot Loader Configuration.

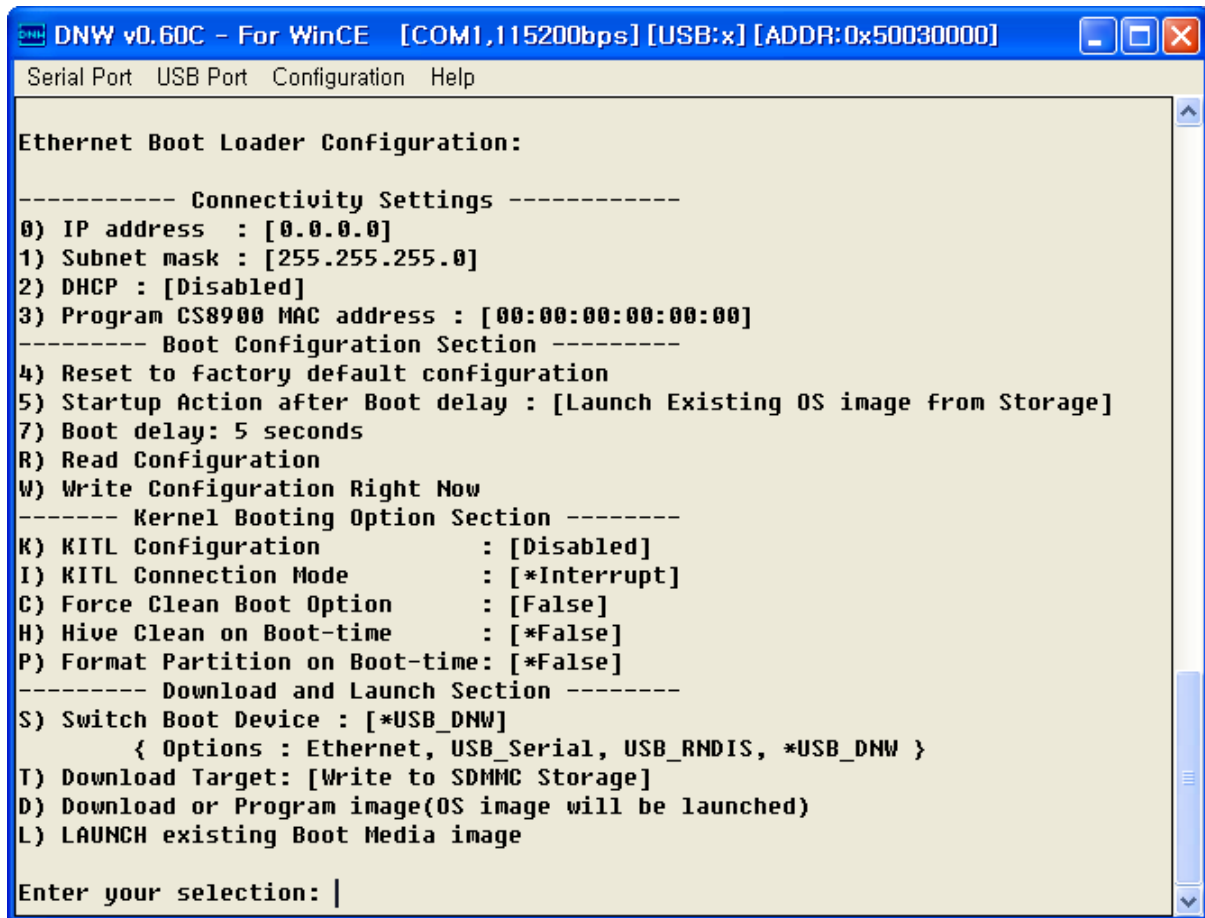


Figure 6-23 Ethernet Boot Loader Configuration

28. Enter [D] to Download image, the following messages appear in the DNW window.



Figure 6-24 Preparing to download image through USB

29. On the USB Port menu click UBOOT and the following window appears on your screen. Select NK.bin from X:\WINCE600\OSDesigns\[OSDesign name]\[OSDesign name]\ReDir\SMDK6410\_ARMV4I\_Release directory and then click Open button.

- Single-XIP (no IMGMULTIXIP) : Select NK.bin
- Multiple-XIP (IMGMULTIXIP=1) : Select chain.lst

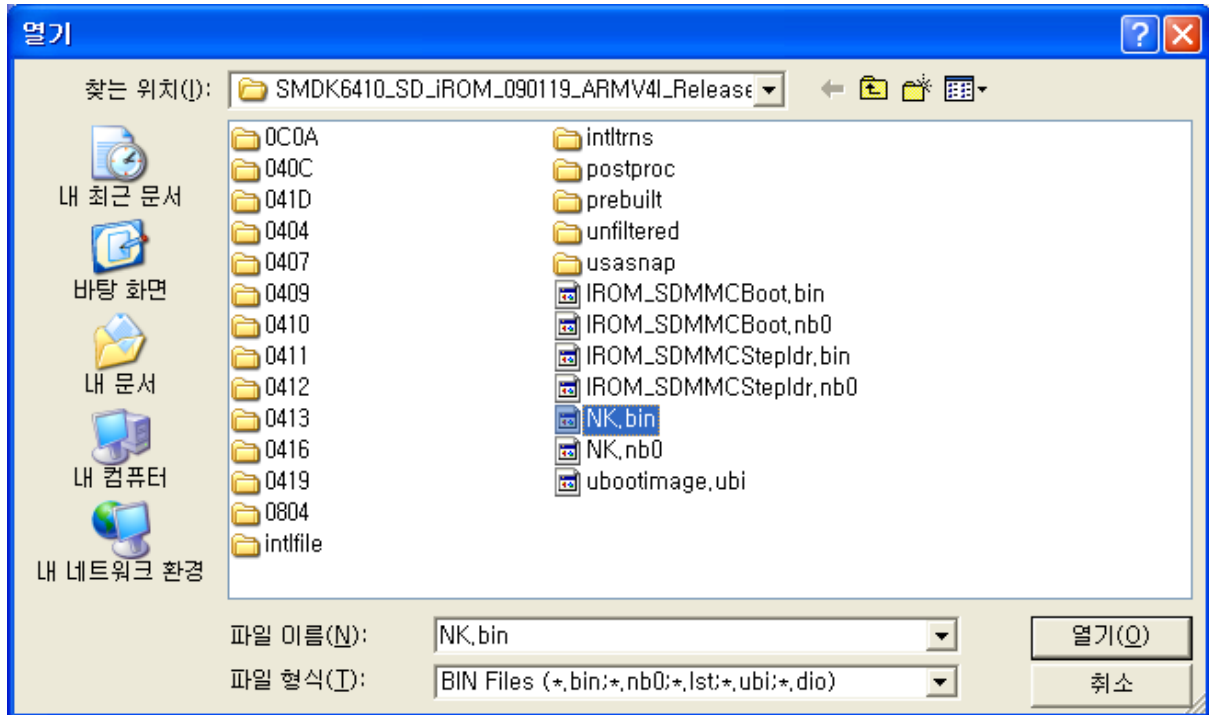


Figure 6-25 Selecting NK.bin for Download (no IMGMULTIXIP)

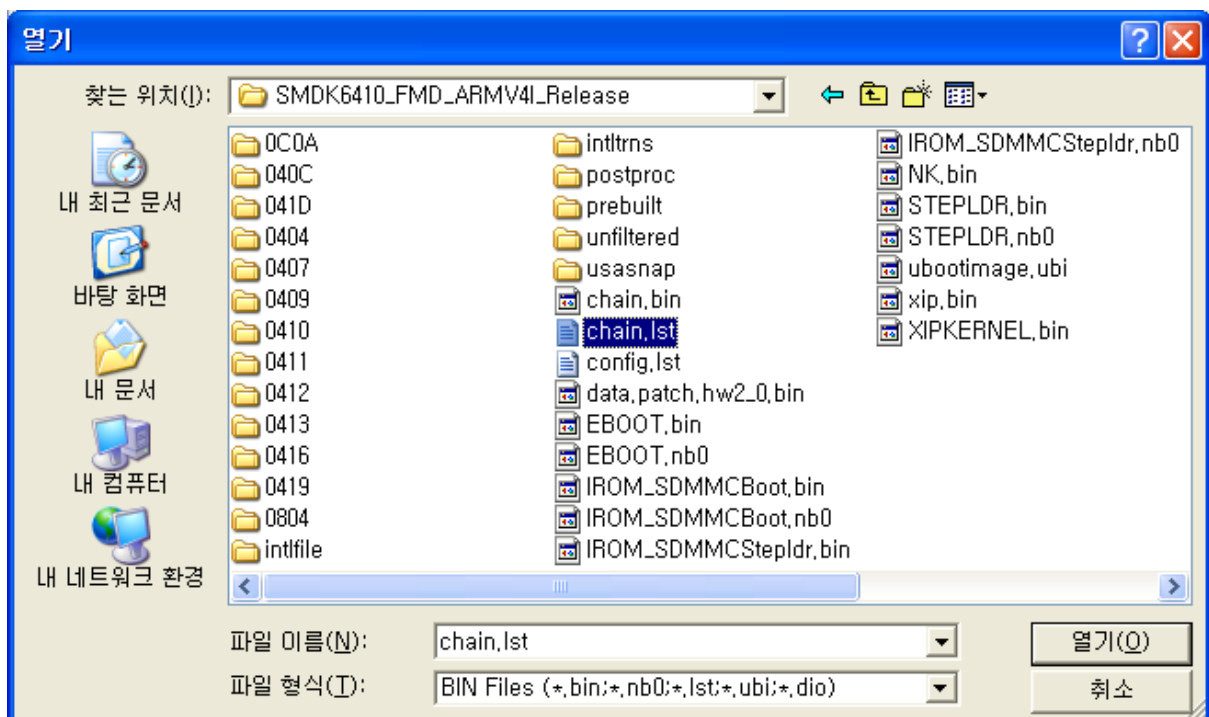
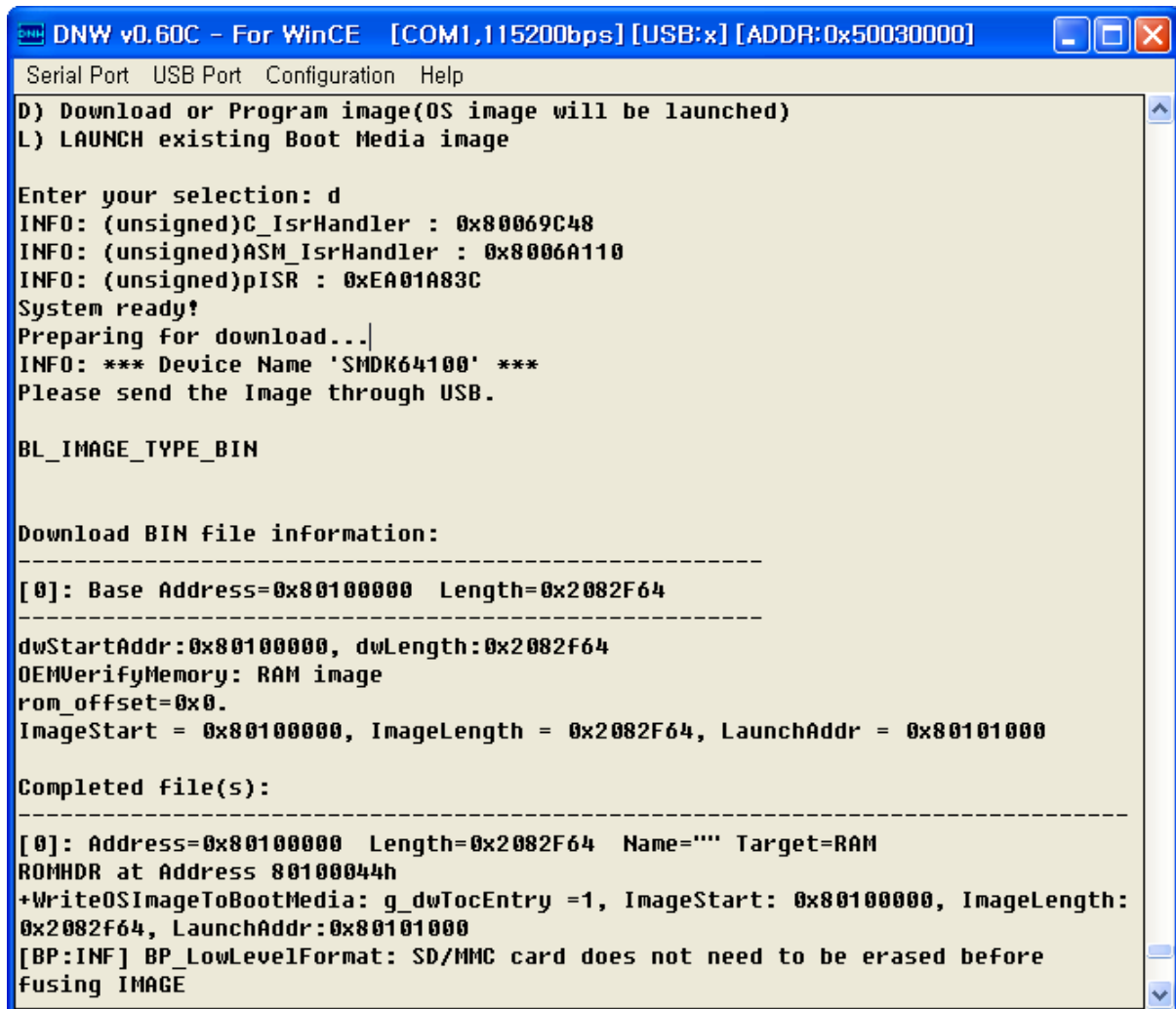


Figure 6-26 Selecting chain.lst for Download (IMGMULTIXIP=1)

30. You can see the following messages on the DNW window after NK.bin(Chain.lst) download.



The screenshot shows a window titled "DNW v0.60C - For WinCE" with a menu bar containing "Serial Port", "USB Port", "Configuration", and "Help". The window displays the following text:

```
D) Download or Program image(OS image will be launched)
L) LAUNCH existing Boot Media image

Enter your selection: d
INFO: (unsigned)C_IsrHandler : 0x80069C48
INFO: (unsigned)ASM_IsrHandler : 0x8006A110
INFO: (unsigned)pISR : 0xEA01A83C
System ready!
Preparing for download...|
INFO: *** Device Name 'SMDK64100' ***
Please send the Image through USB.

BL_IMAGE_TYPE_BIN

Download BIN file information:
-----
[0]: Base Address=0x80100000 Length=0x2082F64
-----
dwStartAddr:0x80100000, dwLength:0x2082F64
OEMVerifyMemory: RAM image
rom_offset=0x0.
ImageStart = 0x80100000, ImageLength = 0x2082F64, LaunchAddr = 0x80101000

Completed file(s):
-----
[0]: Address=0x80100000 Length=0x2082F64 Name="" Target=RAM
ROMHDR at Address 80100044h
+WriteOSImageToBootMedia: g_dwTocEntry =1, ImageStart: 0x80100000, ImageLength:
0x2082F64, LaunchAddr:0x80101000
[BP:INF] BP_LowLevelFormat: SD/MMC card does not need to be erased before
fusing IMAGE
```

Figure 6-27 Messages via UART Port during NK.bin Download



```

DNW v0.60C - For WinCE [COM1,115200bps] [USB:x] [ADDR:0x57e40000]
Serial Port USB Port Configuration Help
INFO: *** Device Name 'SMDK641017493' ***
Please send the Image through USB.

BL_IMAGE_TYPE_MANIFEST

BL_IMAGE_TYPE_BIN

Download BIN file information:
-----
[0]: Base Address=0x80100000 Length=0x4B1B2C
[1]: Base Address=0x80700000 Length=0x1470958
[2]: Base Address=0x83FFC000 Length=0x528
-----
dwStartAddr:0x80100000, dwLength:0x4b1b2c
OEMVerifyMemory: RAM image
rom_offset=0x0.
ImageStart = 0x80100000, ImageLength = 0x4B1B2C, LaunchAddr = 0x80101000

BL_IMAGE_TYPE_BIN

dwStartAddr:0x80700000, dwLength:0x1470958
OEMVerifyMemory: RAM image
rom_offset=0x0.
ImageStart = 0x80100000, ImageLength = 0x4B1B2C, LaunchAddr = 0x80101000

BL_IMAGE_TYPE_BIN

dwStartAddr:0x83ffc000, dwLength:0x528
OEMVerifyMemory: RAM image
ImageStart = 0x80100000, ImageLength = 0x4B1B2C, LaunchAddr = 0x80101000

Completed file(s):
-----
[0]: Address=0x80100000 Length=0x4B1B2C Name="XIPKERNEL.bin" Target=RAM
[1]: Address=0x80700000 Length=0x1470958 Name="NK.bin" Target=RAM
[2]: Address=0x83FFC000 Length=0x528 Name="chain.bin" Target=RAM

```

Figure 6-28 Messages via UART Port during chain.lst Download (IMGMULTIXIP=1)

31. After NK.bin download is over, Windows Embedded CE 6.0 boots on the target Board.

32. Power OFF the board and Configure jumpers and switches on the CPU Board and the BASE board properly for SDDMC iROM boot. (For more information about board configuration, Read SMDK6410 Board User's Manual)

On CPU board:

CFG3		1	2	3	4	5	6
Boot Mode	iROM boot	OFF	ON	ON	ON	ON	ON

On Base Board:

SDMMC channel 1 :

Description	J8	J7	J6
SDMMC1 iROM boot	2-3	2-3	2-3

SDMMC channel 0 :

Description	J8	J7	J6
SDMMC0 iROM boot	1-2	1-2	1-2

33. Power ON the board. You can see Windows Embedded CE 6.0 boots on the target board.

## 7 Building and Running OS Image - With KITL

In this chapter, you can understand how to build, download and run the OS image with KITL. For each Transport media type, please read SMDK6410\_Platform\_Build\_Connectivity.doc. Please Refer to MSDN how to use KITL, download images, connect to PlatformBuilder. This document will not cover common usage.

1. To enable KITL, on the left side of **Visual Studio 2005**, You can see the Solution Explorer as below figure. And then right click on **OSDesign1** and select **Properties**.

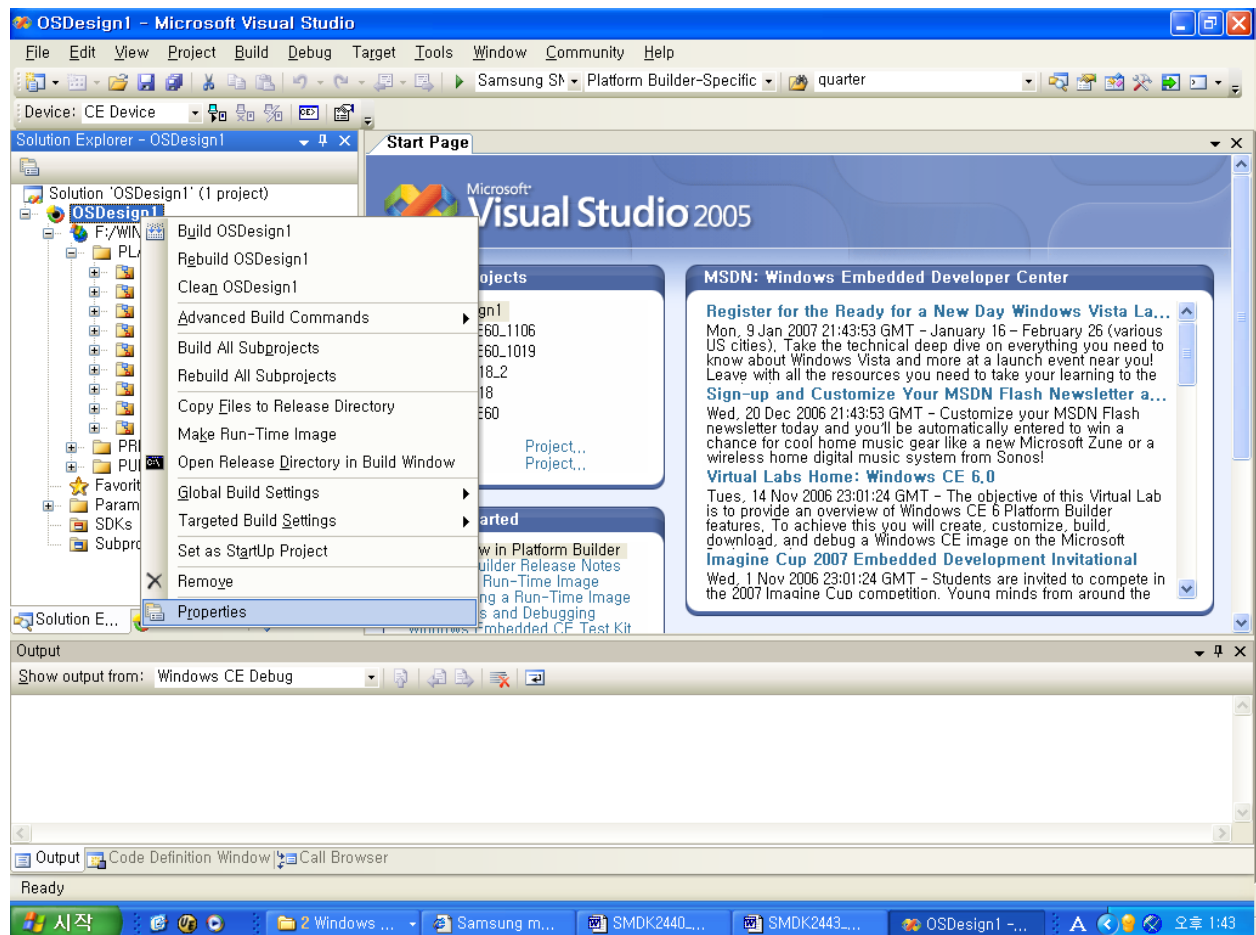


Figure 7-1 OSDesign Properties

2. OSDesign1 Property Pages window appears on your screen. Check square boxes **Enable kernel debugger**(no `IMGNODEBUGGER=1`) and **Enable KITL** (no `IMGNOKITL=1`) in the **Build Options** and then click **OK** button.

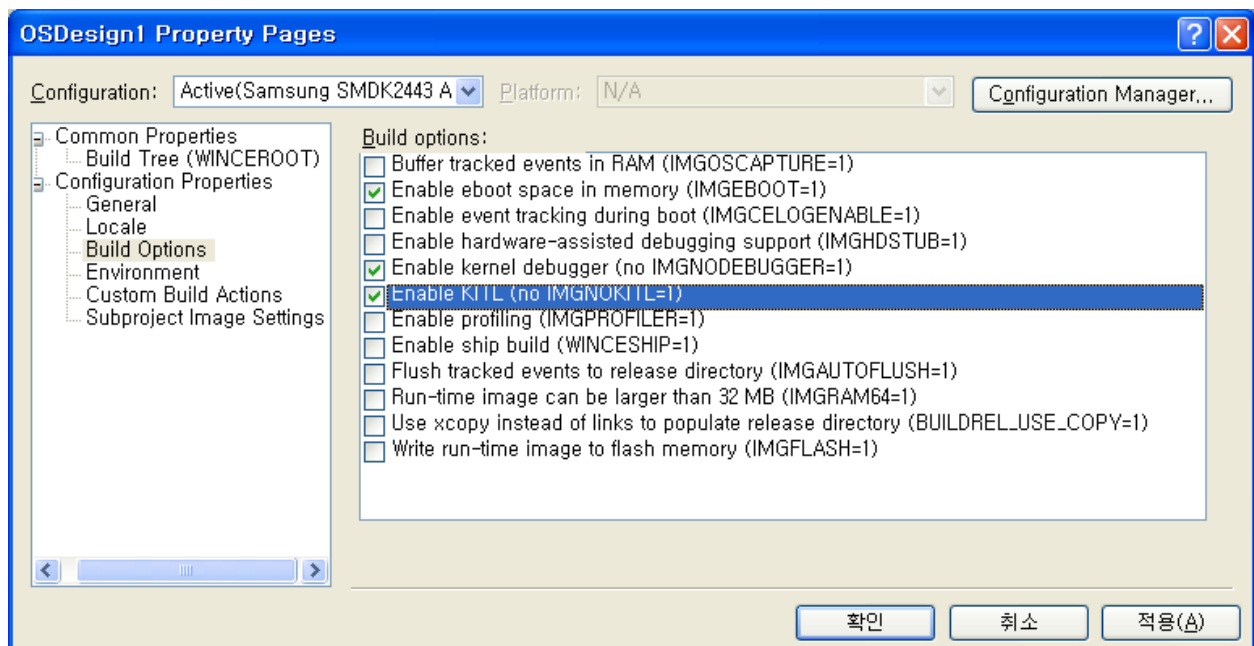


Figure 7-2 Property Pages for KITL

## 7.1 USB Serial KITL Connection with USB DNW Download

There is nothing to change code for using USB Serial KITL. KITL transport selection is configured in Bootloader Configuration Argument and these values will be sent to OAL. OAL will wait for connection from Platform Builder with proper KITL transport setting. The image building is exactly same to non-KITL image except for disabling IMG\_NOKITL. The connection procedure also is almost same through all each supported connection media, USB Serial, USB RNDIS, Ethernet.

1. On the **Build** menu, click **Build OSDesign1** as shown in figure 7-16 to build the Eboot and OS image.

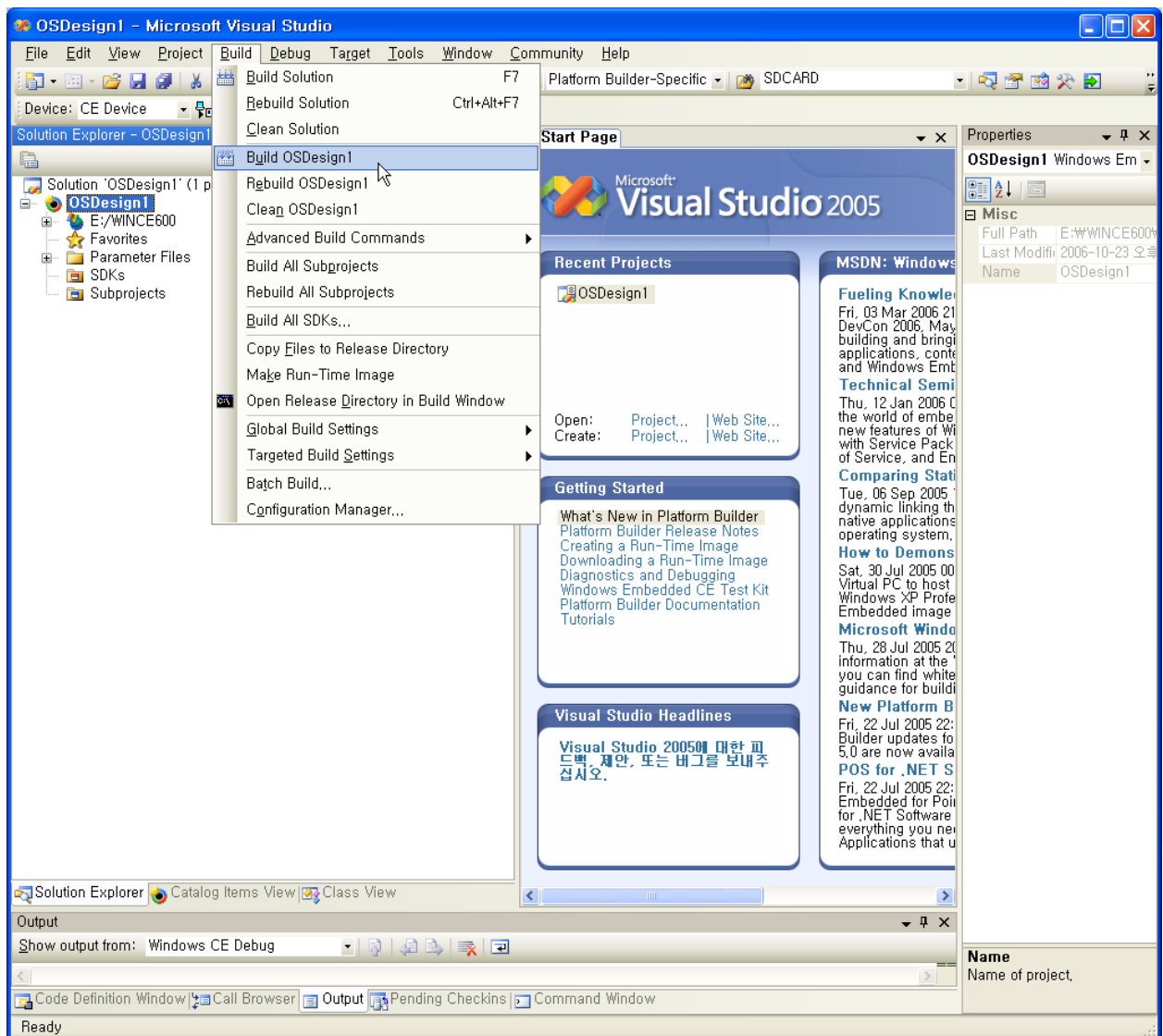


Figure 7-3 Build OSDesign

**Note:** Building process may take some time depending on your system capability. So, please wait for the build process to be completed. It might take around 1 hour.

2. After completion of build process, IROM\_SDMMCBBoot.nb0, IROM\_SDMMCBBoot.bin, IROM\_SDMMCSepldr.bin, IROM\_SDMMCSepldr.nb0, NK.bin and NK.nb0 are now available in X:\WINCE600\OSDesigns \[OS Design Name] \[OS Design Name]\ReIDir\smdk6410\_ARMV4I\_Release directory.
3. Please install the USB Driver and DNW application on your host PC if it is not installed before.
4. Please refer to chapter 6 Fusing WinCE image to SMC via USB in this documentation. And fuse to SMC along to Steps in Chapter 6.
5. Reset the board. DNW window appears as shown in figure 7-17.

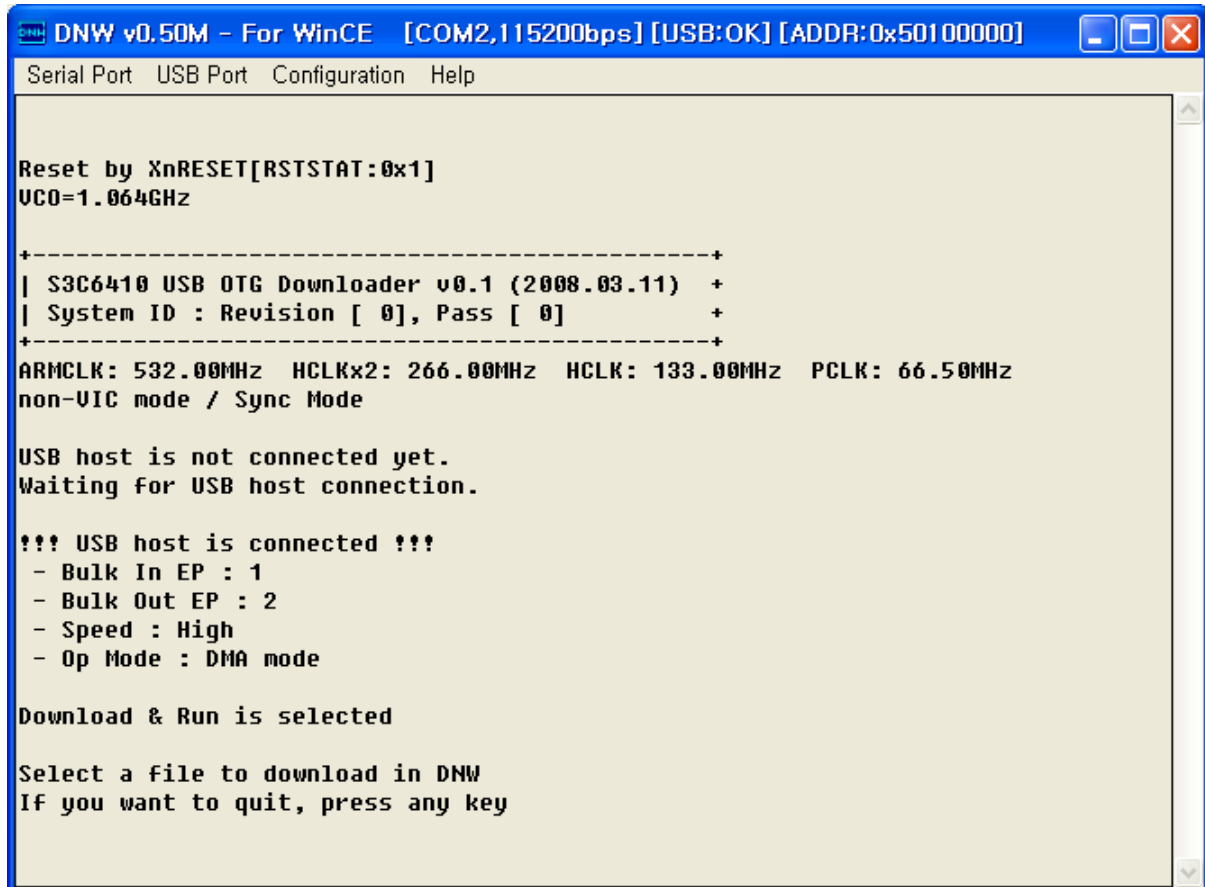


Figure 7-4 DNW Window after reset

6. On the USB Port menu, click Transmit and the following window appears on your screen. Select IROM\_SDMMCBBoot.nb0 file from X:\WINCE600\OSDesigns\[OSDesign name] \[OSDesign name]\ReIDir\smdk6410\_ARMV4I \_Release directory and then click Open button.

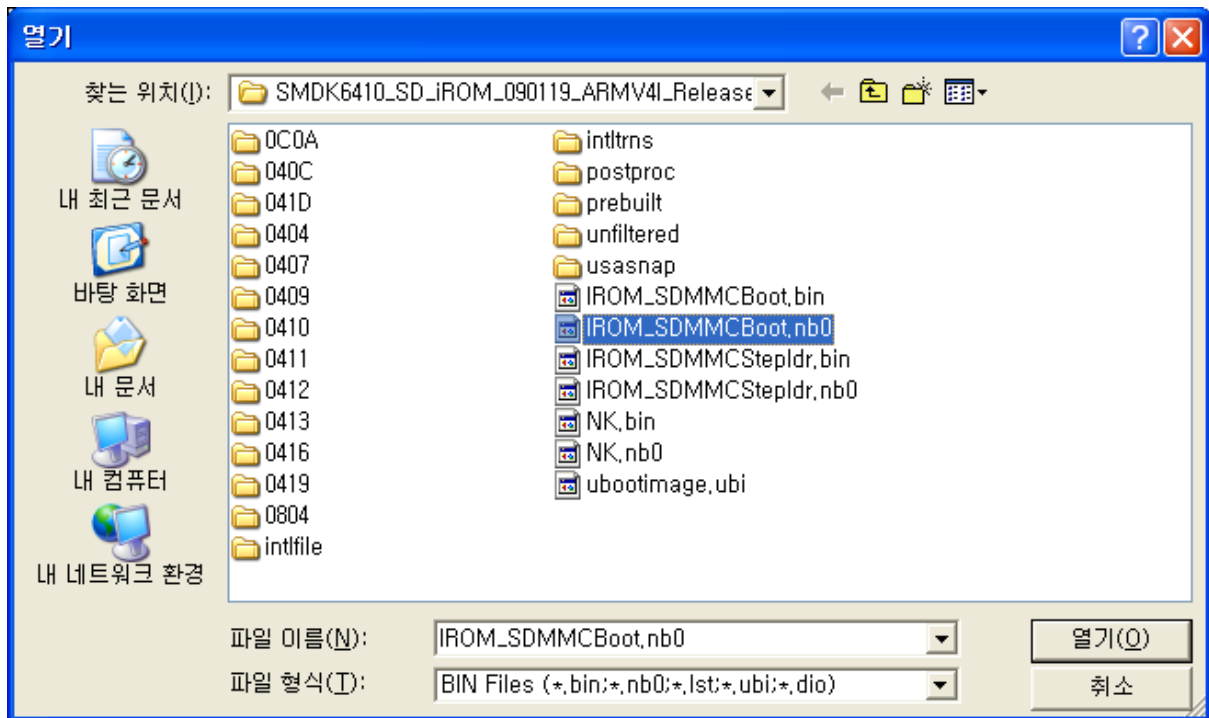


Figure 7-5 Selecting IROM\_SDMMCBoot.nb0 for Download

7. As soon as IROM\_SDMMCBoot.nb0 download is over, the following messages appear in the DNW window.

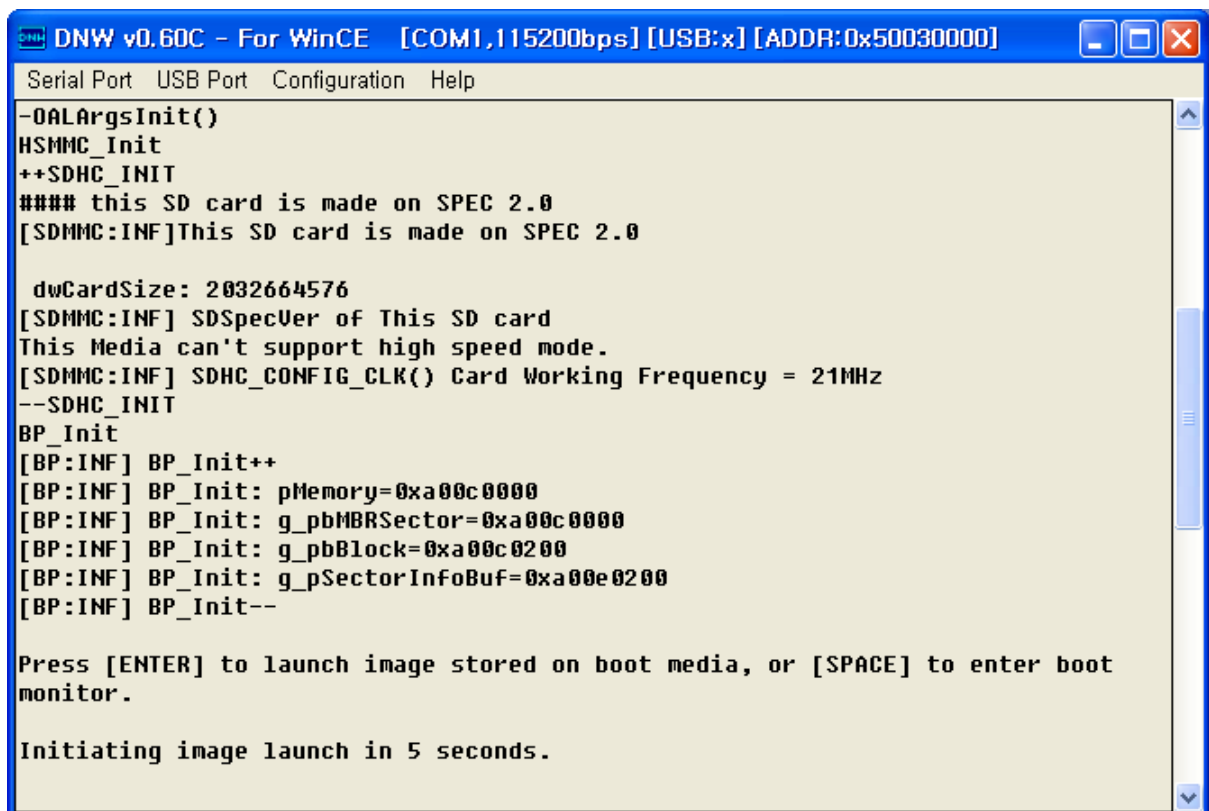


Figure 7-6 After IROM\_SDMMCBoot.nb0 Download

8. Please hit the SPACE BAR key to view the current Ethernet Boot Loader Configuration. Configure the Ethernet Boot Loader as follows by entering the respective options:
  - Keep KITL Configuration: **ENABLED**
  - Enter [L] to LAUNCH existing Boot Media image. This assume the user already fusing KITL enabled image to NAND storage.

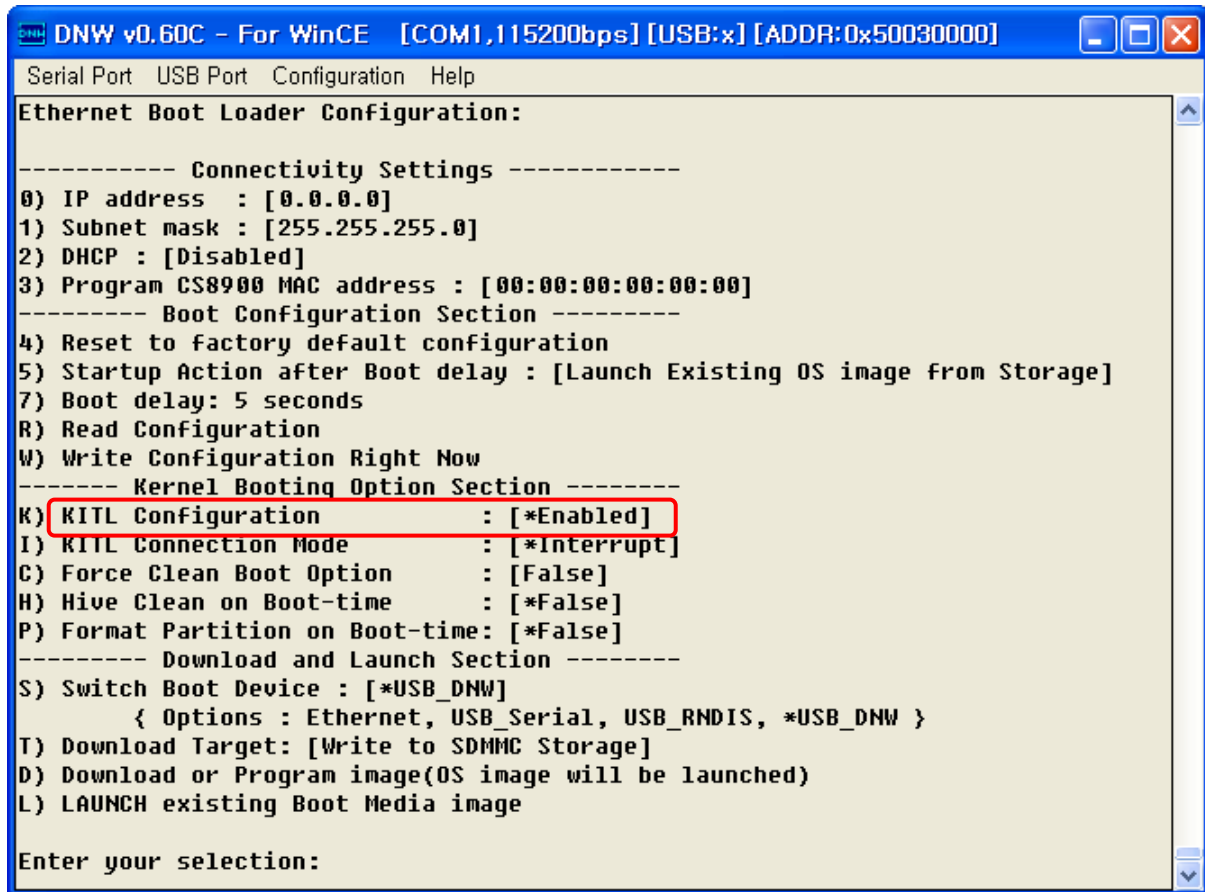


Figure 7-7 Ethernet Boot Loader Configuration

9. On the Target menu in the Visual Studio 2005 window, click Connectivity Options... as shown below. Target Device Connectivity Options window appears on your screen as shown in figure 7-22.



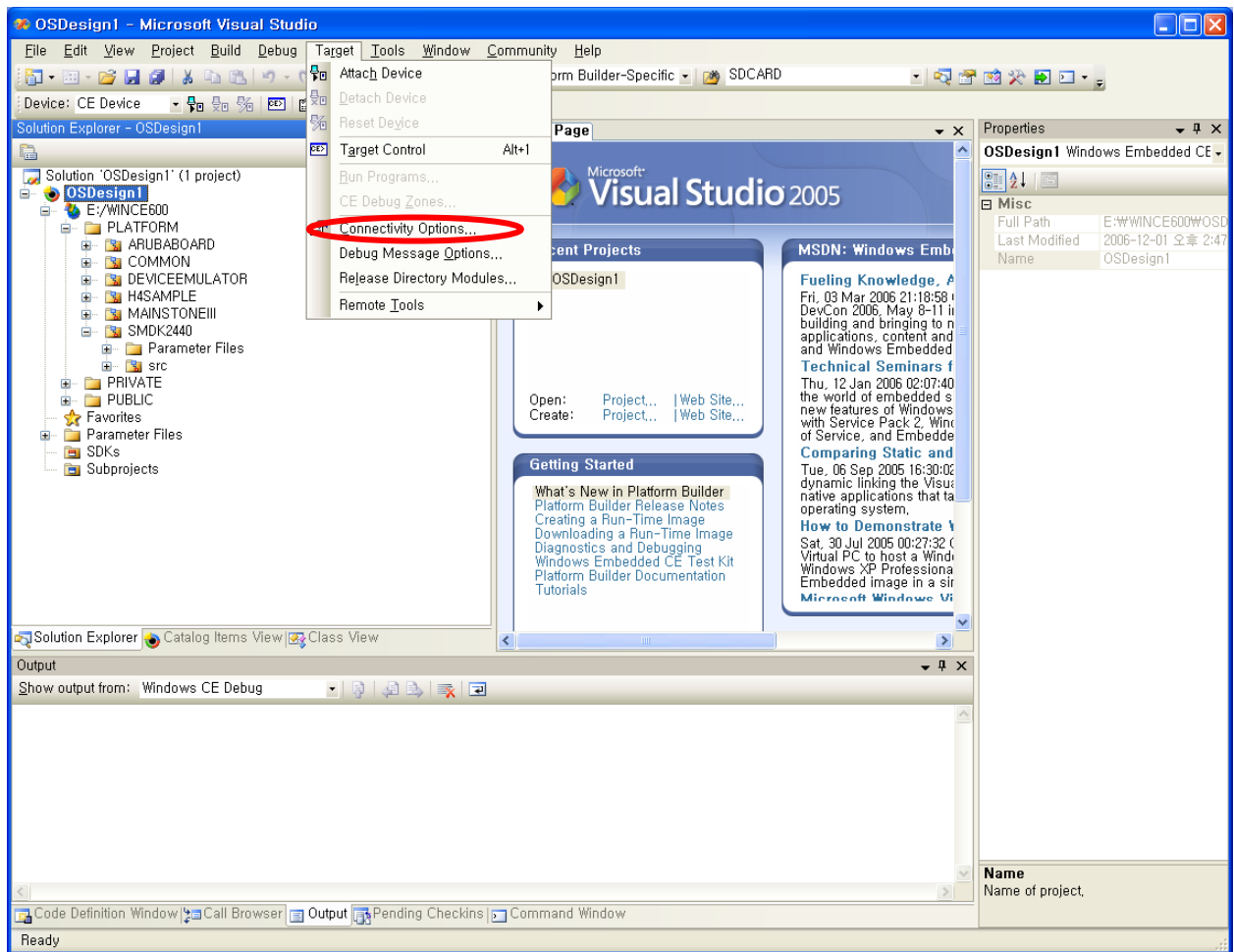


Figure 7-8 Target Connectivity Option

10. On the Target Device Connectivity Options window, select USB option from Transport drop down menu box.

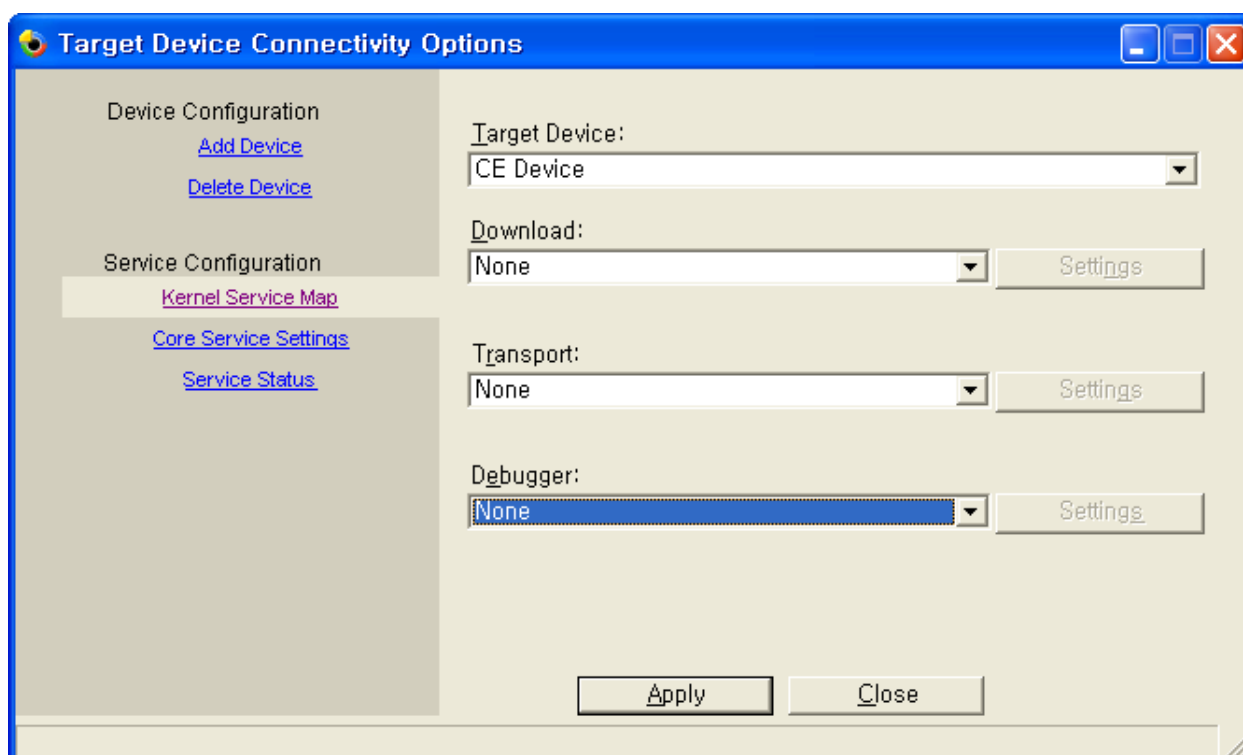


Figure 7-9 Target Device Connectivity Options Window Before Transport Select

11. Configure the KdStub option in Debugger drop down menu box.

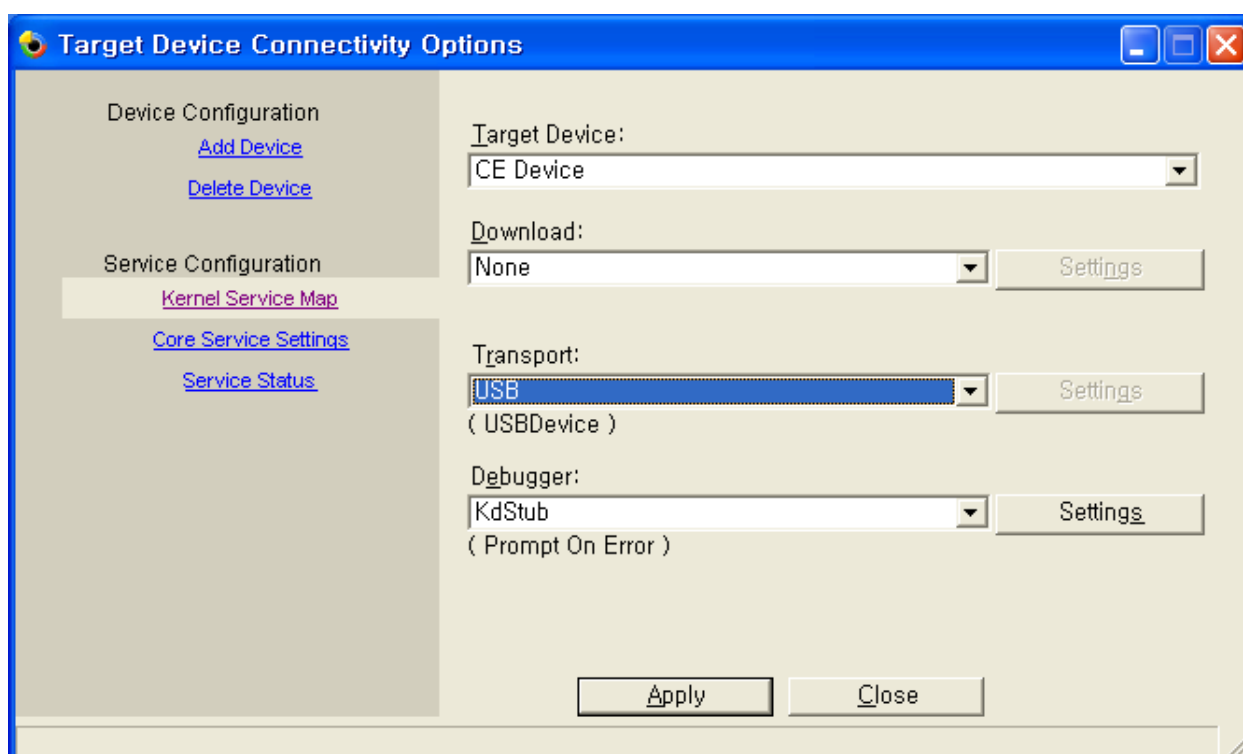


Figure 7-10 Target Device Connectivity Options Window After Transport Select

12. On the Target menu in Visual Studio 2005 window, click **Attach Device** as shown below.

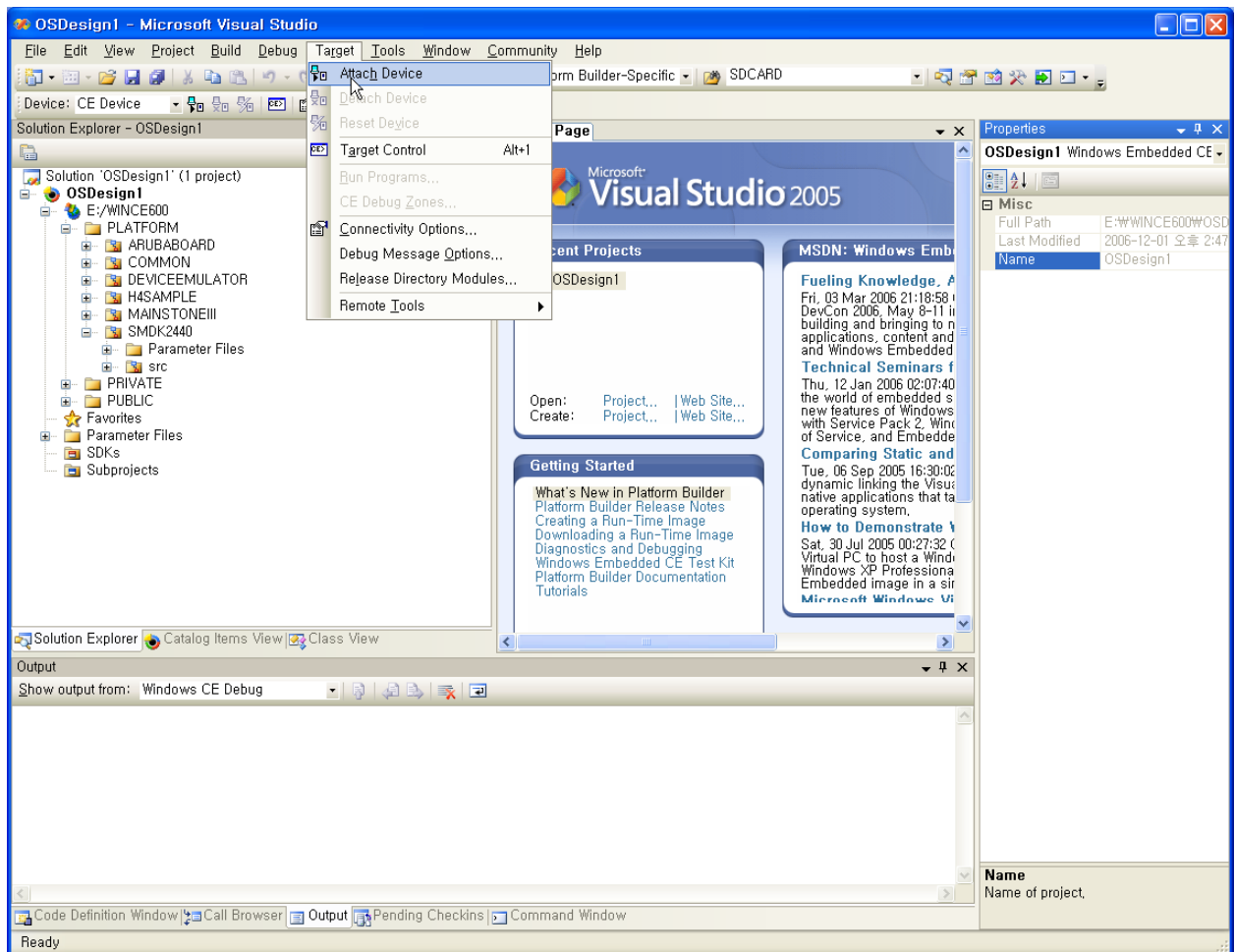
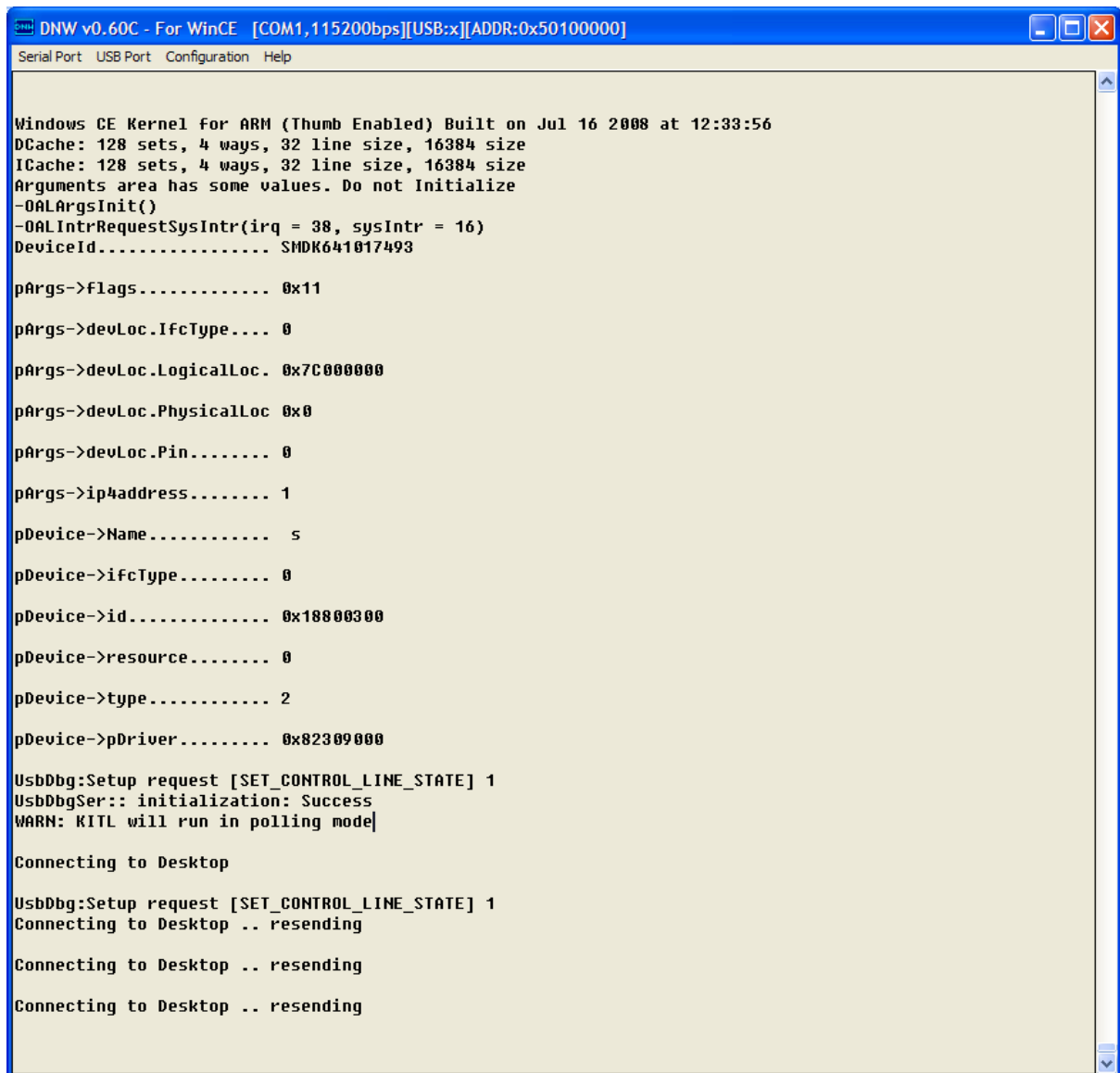


Figure 7-11 Attach Device

13. You can see the following messages on the DNW window. With DNW, the system will run in polling mode to connect through KITL



```
DNW v0.60C - For WinCE [COM1,115200bps][USB:x][ADDR:0x50100000]
Serial Port  USB Port  Configuration  Help

Windows CE Kernel for ARM (Thumb Enabled) Built on Jul 16 2008 at 12:33:56
DCache: 128 sets, 4 ways, 32 line size, 16384 size
ICache: 128 sets, 4 ways, 32 line size, 16384 size
Arguments area has some values. Do not Initialize
-OALArgsInit()
-OALIntrRequestSysIntr(irq = 38, sysIntr = 16)
DeviceId..... SMDK641017493

pArgs->flags..... 0x11
pArgs->devLoc.Ifctype.... 0
pArgs->devLoc.LogicalLoc. 0x7C000000
pArgs->devLoc.PhysicalLoc 0x0
pArgs->devLoc.Pin..... 0
pArgs->ip4address..... 1
pDevice->Name..... s
pDevice->ifctype..... 0
pDevice->id..... 0x18800300
pDevice->resource..... 0
pDevice->type..... 2
pDevice->pDriver..... 0x82309000

UsbDbg:Setup request [SET_CONTROL_LINE_STATE] 1
UsbDbgSer:: initialization: Success
WARN: KITL will run in polling mode|

Connecting to Desktop

UsbDbg:Setup request [SET_CONTROL_LINE_STATE] 1
Connecting to Desktop .. resending

Connecting to Desktop .. resending

Connecting to Desktop .. resending
```

Figure 7-12 Messages via UART Port



## 8 Appendix I - DIP Switch Settings for Booting Mode

Table 8-1 and 8-2 explains the DIP Switch configuration on the SMDK6410 board for Booting mode.

### AMD NOR/SROM Boot

<i>Description</i>	CFG3[6:1]				
	[6]	[5]	[4]	[3]	[2]
NOR Boot ( 8bit Data Width)	Don't Care	OFF	ON	OFF	OFF
NOR Boot (16bit Data Width)	Don't Care	OFF	ON	OFF	ON

Table 8-1 DIP Switch setting for AMD Flash Boot (NOR Flash)

### NAND Boot

<i>Description</i>	CFG3[6:1]				
	[6]	[5]	[4]	[3]	[2]
Normal NAND, 512-byte page, 3 addr. Cycle	ON	OFF	OFF	OFF	OFF
Normal NAND, 512-byte page, 4 addr. Cycle	ON	OFF	OFF	OFF	ON
Advanced NAND, 2K-byte page, 4 addr. Cycle	ON	OFF	OFF	ON	OFF
Advanced NAND, 2K-byte page, 5 addr. Cycle	ON	OFF	OFF	ON	ON

<i>Description</i>	CFGB3[4:1]			
	[4]	[3]	[2]	[1]
Connected NandFlash to Xm0CSn2	OFF	OFF	OFF	ON
Connected XD Picture Card to Xm0CSn2	OFF	OFF	ON	OFF

Table 8-2 DIP Switch setting for NAND Flash Boot

**Note:** For more information about board configuration, Please check again SMDK6410 Board Manual in DOC folder. For each board revision, these DIP switch's and Jumper's mapping can change.