

Installation Guide for MV2450 (Windows CE 6.0)



MicroVision Co.,Ltd.

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MV2450-LCD WinCE BSP Guide

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1. OVERVIEW

MV2450 is designed to provide hand-held devices and general applications with low-power, and high-performance microcontroller solution in small die size. To reduce total system cost, the MV2450 includes the following components. The MV2450 is developed with ARM926EJ core, 65nm CMOS standard cells and a memory compiler. Its lowpower, simple, elegant and fully static design is particularly suitable for cost- and power-sensitive applications. It adopts a new bus architecture known as Advanced Micro controller Bus Architecture (AMBA).



The MV2450 offers outstanding features with its CPU core, a 16/32-bit ARM926EJ RISC processor designed by Advanced RISC Machines, Ltd. The ARM926EJ implements MMU, AMBA BUS, and Harvard cache architecture with separate 16KB instruction and 16KB data caches, each with an 8-word line length.

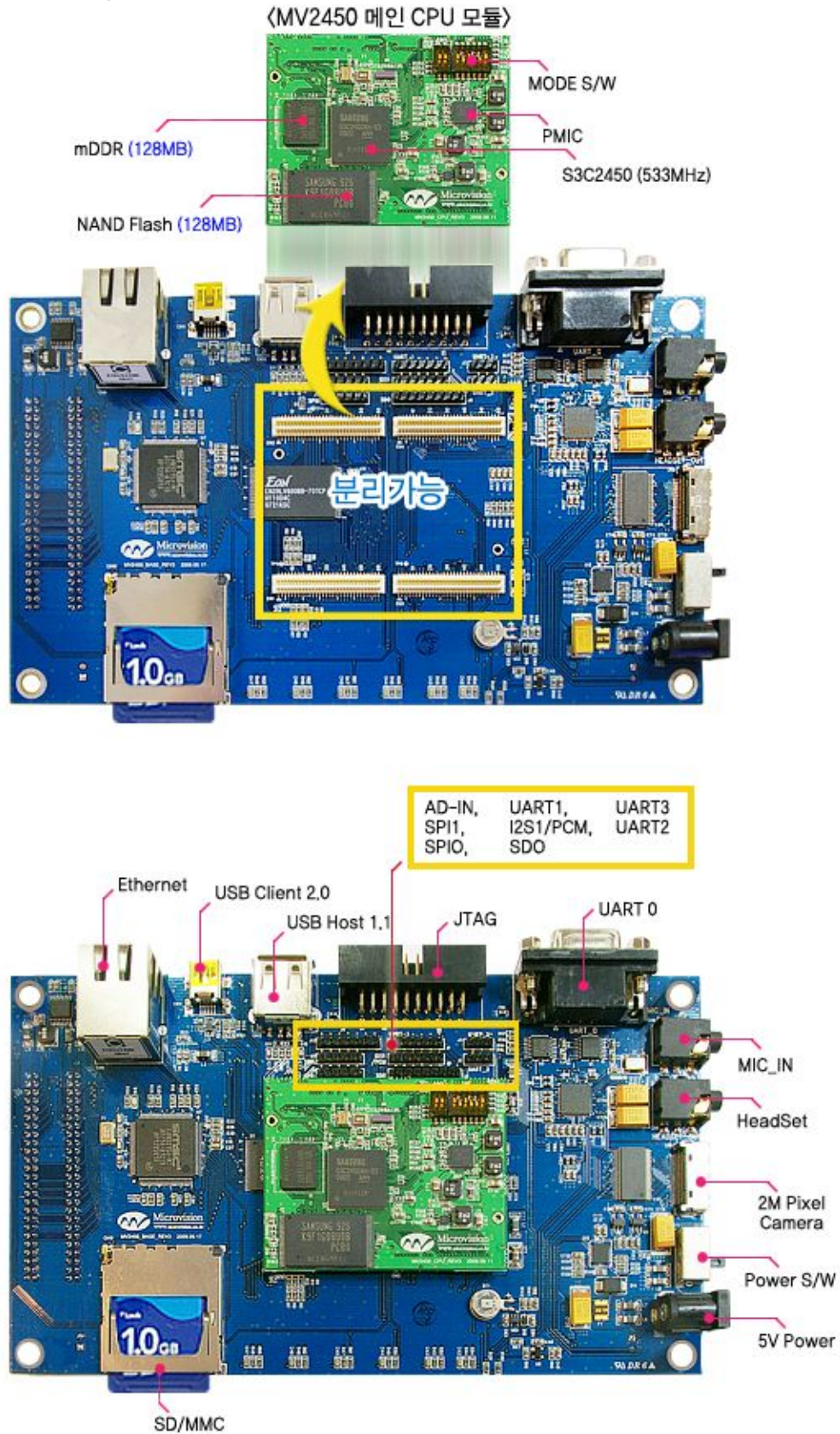
1.1 H/W

Items	SPEC & PARTS	Descriptions
CPU	S3C2450X	ARM 926EJ-S CORE 400/533MHz
DDR2(SDRAM)	mDDR	128MB 32bit access, clock speed 266MHz
NAND FLASH	NAND Flash	LARGE BLOCK 1Gb(128MB)
Audio Codec	AC97 I/F	Stereo output capacity 1000mW
Graphic	2D	Graphic Controller
USB	2Ports	USB 1.1 Host Full Speed USB 2.0 Device High Speed
UART	4Ports	3ports, 1Port Debugger
Extension Connector		SPI, GPIO
Camera	Aptina 2M Pixel	Auto Focus, Preview \$ Snap Shot
Ethernet		10/100 Base-T,
SD/MMC	1Port	SD Host Controller v2.0
LCD	4.2" TFT	480X272XRGB Dot, DE, SYSNC Mode, 16.7M, Touch
Battery	1530mA @3.7v	Full Operation 1 Hour
Charger	Micro Semi LX2205	AC & Battery Switching, Battery Protection AC Present, CC-CV

1.2 S/W

OS	Windows CE 6.0 Embedded Linux 2.6.24
Bootloader	H/W UART 115200
Image Download	USB 2.0 Client / 10/100M Ethernet
Flash	NAND Flash File System
Driver	TFT LCD 4.3" USB1.1HOST USB Client 2.0 Active Sync (Version 4.x) <ul style="list-style-type: none"> - Debugger UART - Serial communication MMC/SD Card CMOS Camera Ethernet Device Driver
Application	Camera APP

1.3 An Arrangement Plan



2. Setting Boot of mode

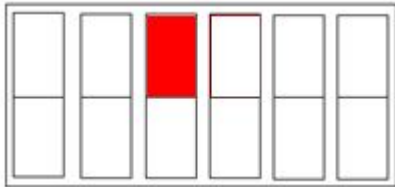
MV2450 has a NOR Flash that has programmed USB of firmware which is Boot of firmware in order to program to NAND Flash using of USB Client 2.0 so that you can program Eboot or u-boot to the NAND Flash using of USB firmware on the NOR Flash.

When you are deleted bootloader on the NAND flash but you can program without JTAG emulator. Because of NOR Flash

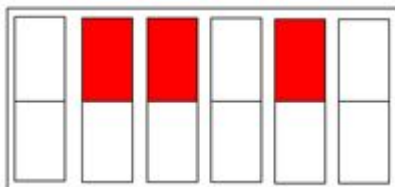


Setting Boot of mode

NAND Flash BOOT



NOR Flash BOOT



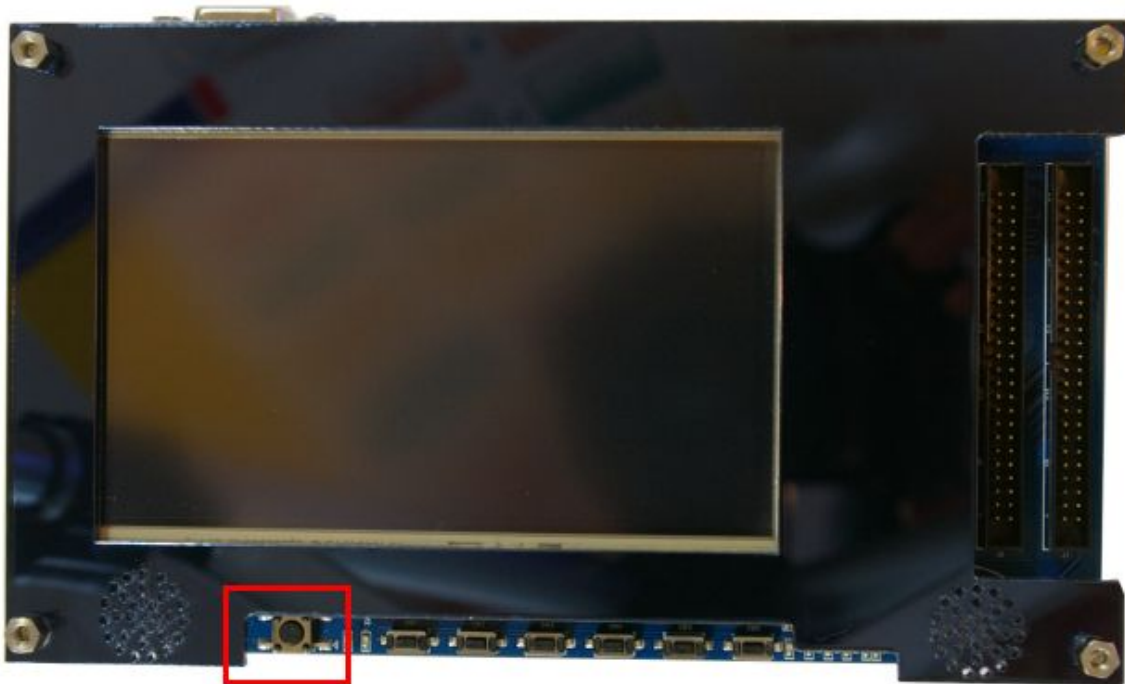
3. Power switch

5V Power.



<Connected 5V power>

This is a reset button



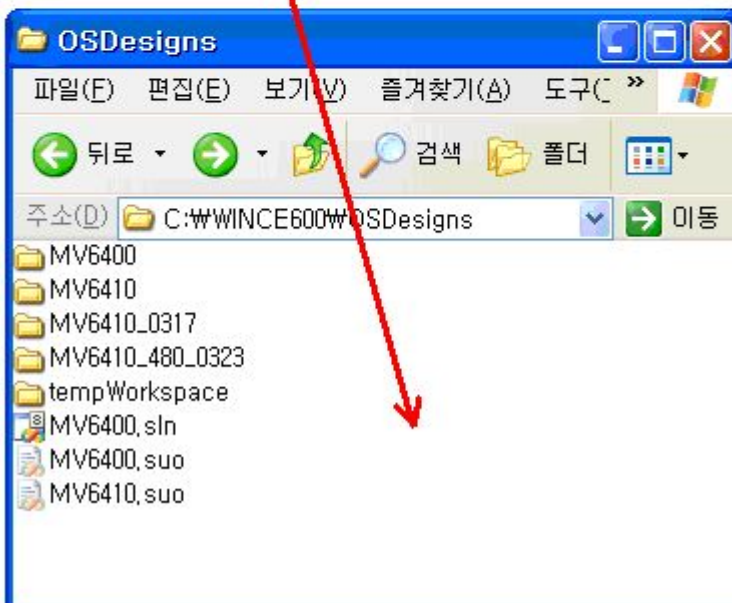
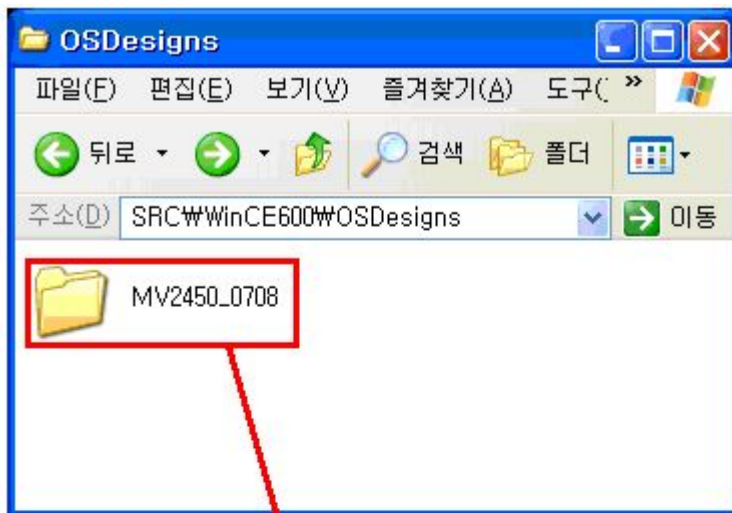
<a reset button >

4. Copying BSP

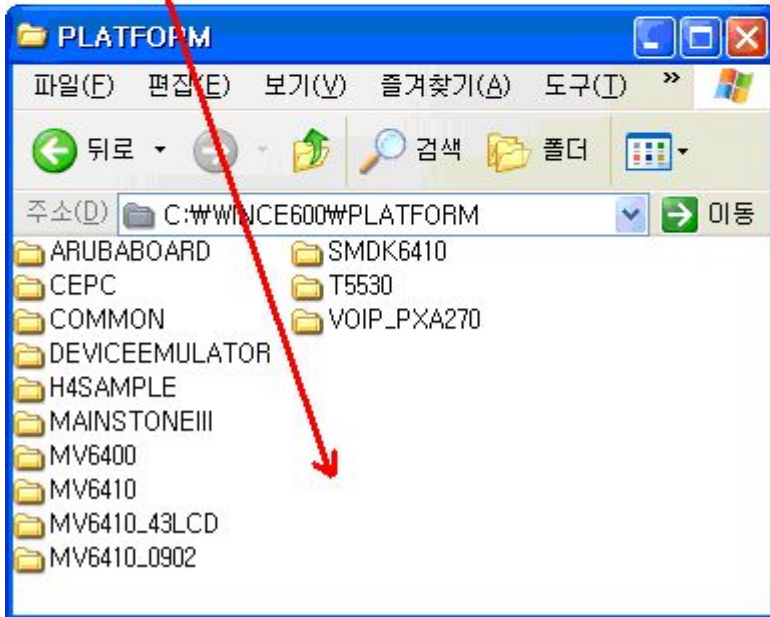
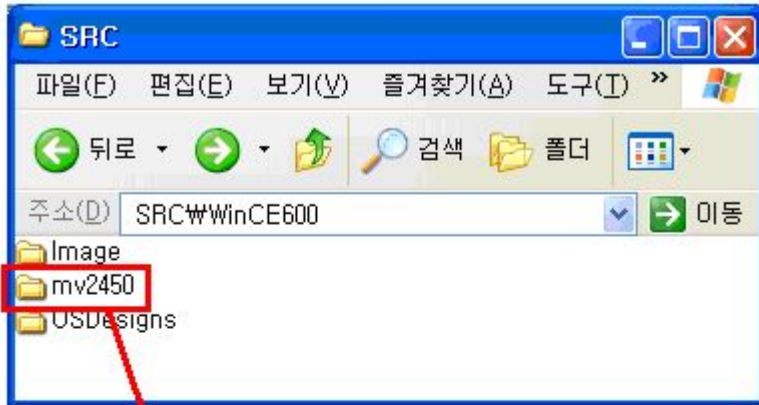
4.1 Setting up Platform Builder

In this chapter, you can understand how to copy the MV2450 Windows CE 6.0 BSP and Setup the Platform Builder.

Make new folder “\ OSDesigns” directory and then, copy mv2450_0708 BSP in \SRC\OSDesigns directory to C:\WINCE600\OSDesigns on your host PC.



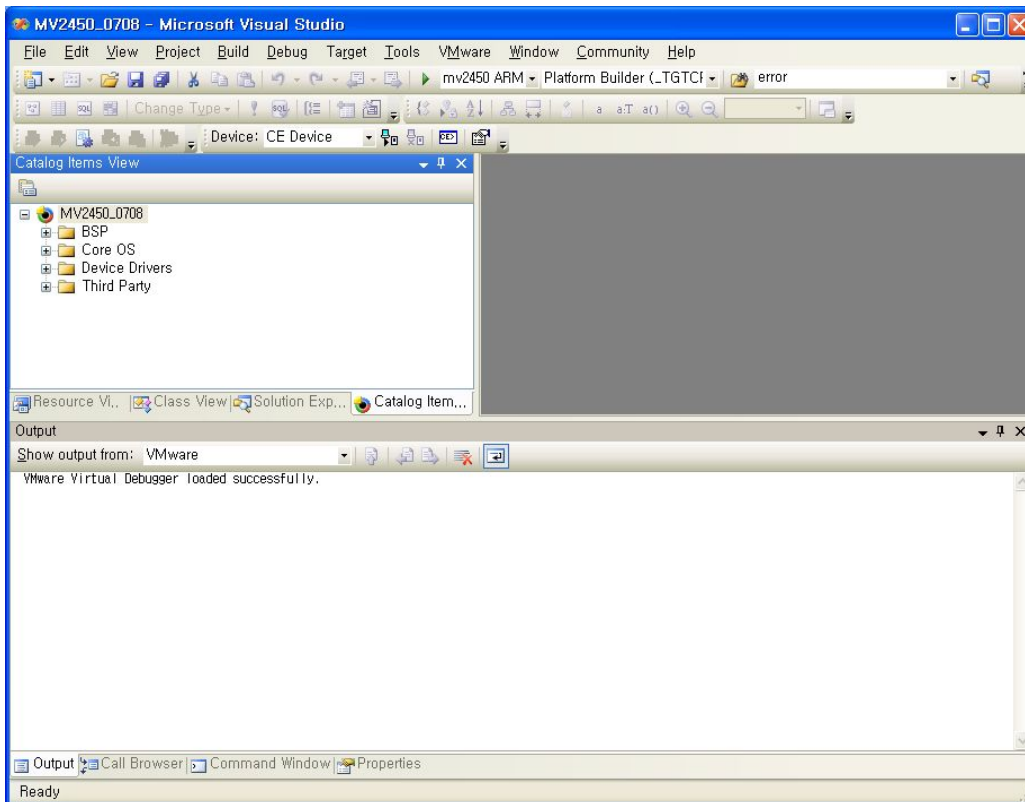
Copy mv2450 BSP in \SRC\WinCE600\mv2450 directory to C:\WINCE600\PLATFORM directory on your host PC.



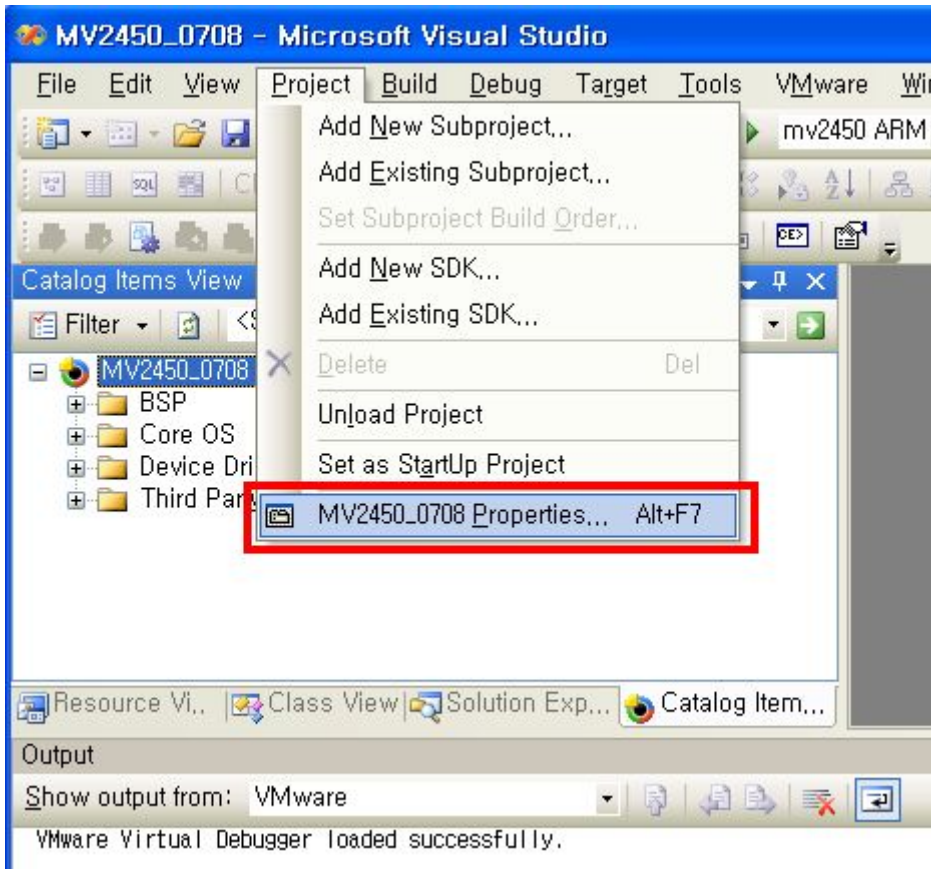
Execute MV2450_0708.pbxml in C:\WINCE600\OSDesigns\MV2450_0708\MV2450_0708



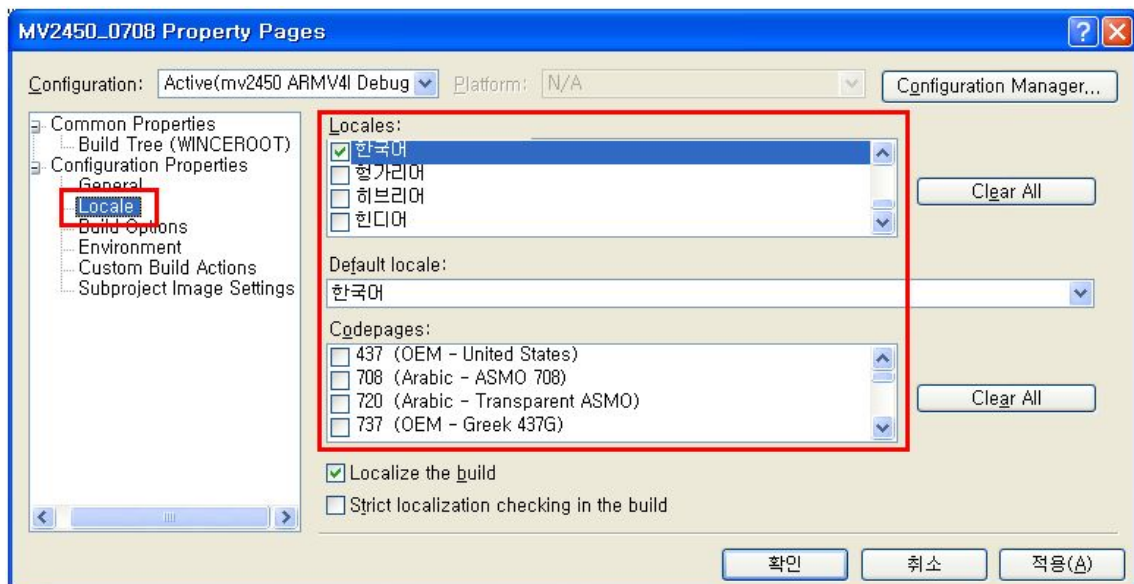
Windows CE 6.0



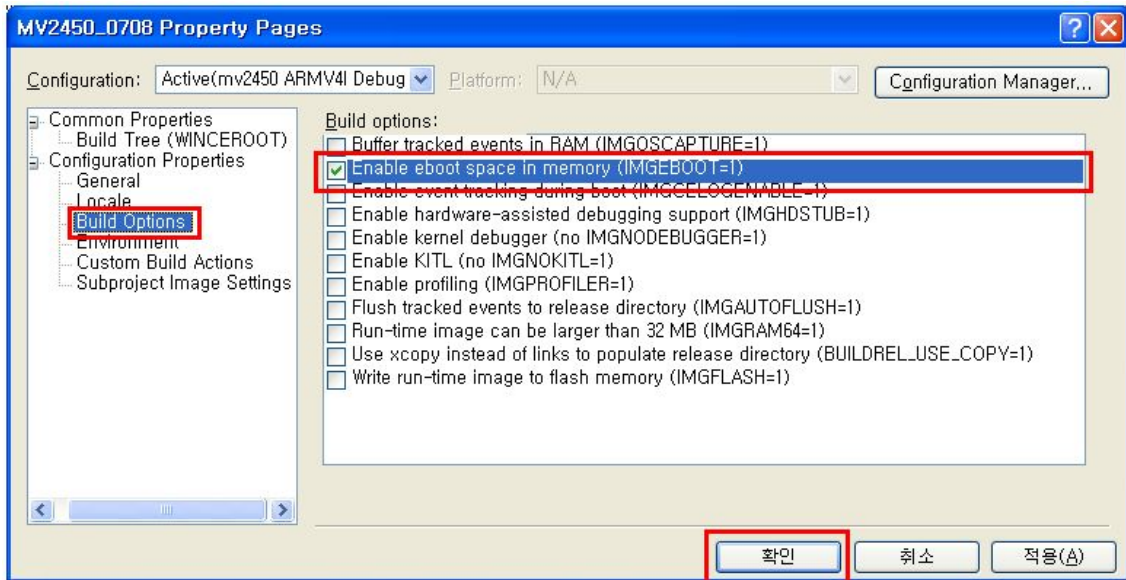
Project -> Click “MV2450_0708 Properties”



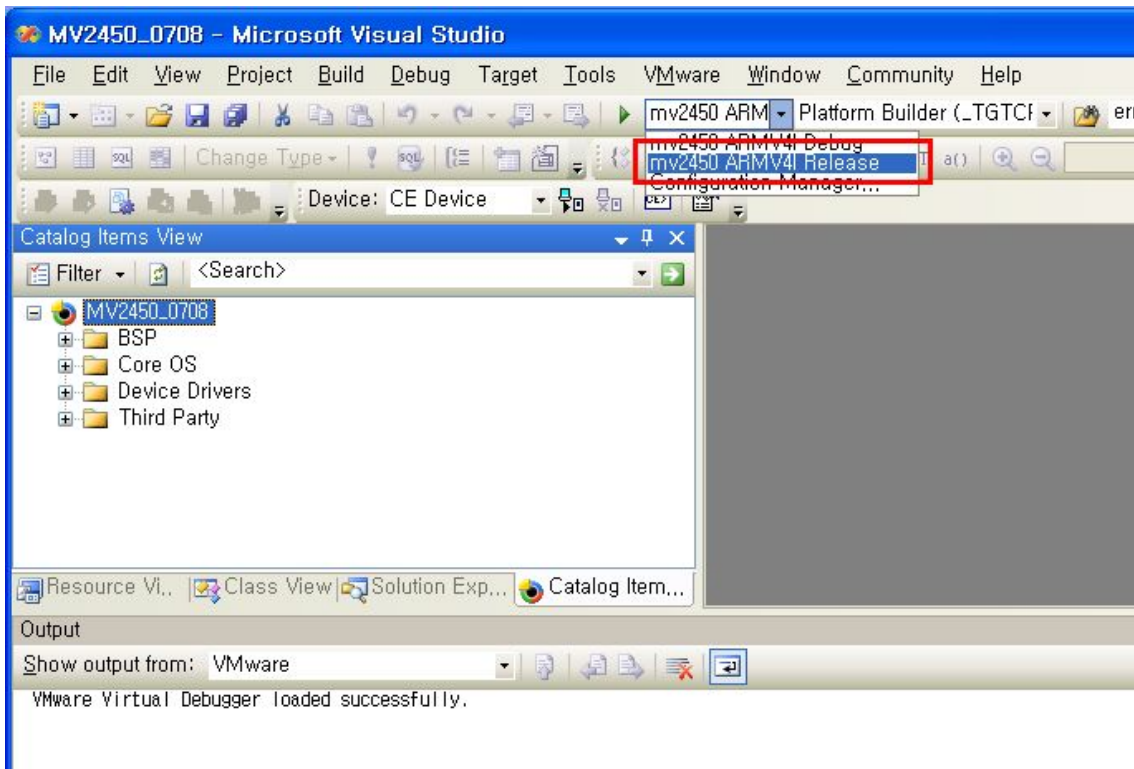
Select your wants language



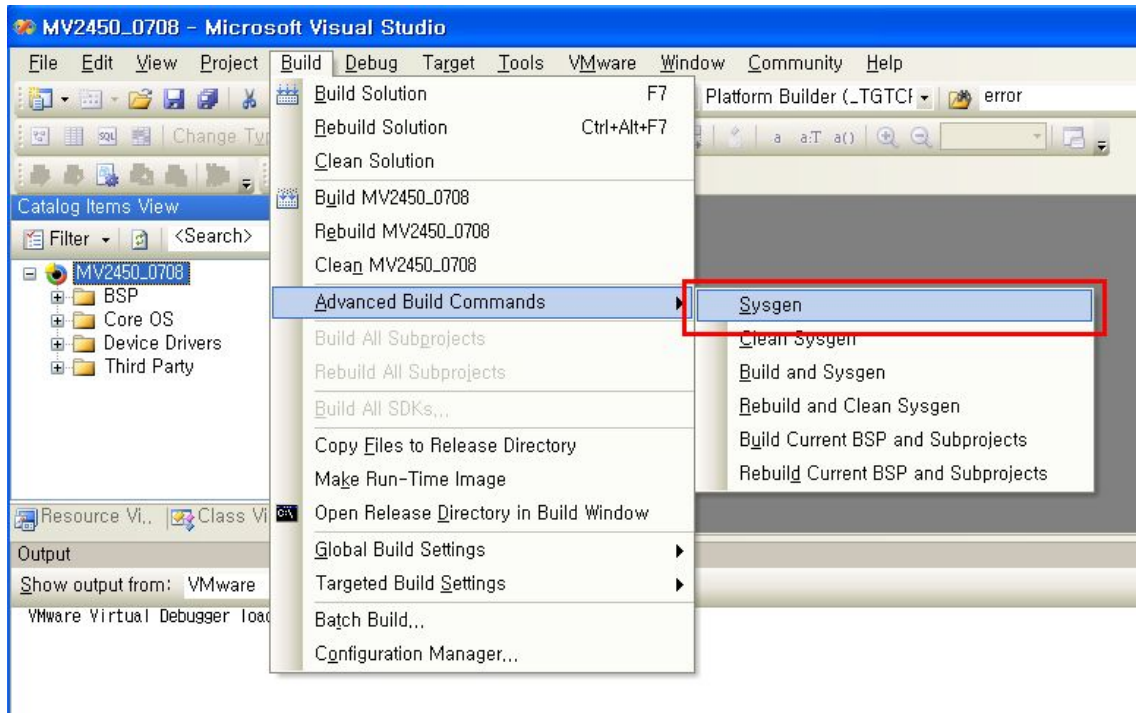
Click “OK” after setup



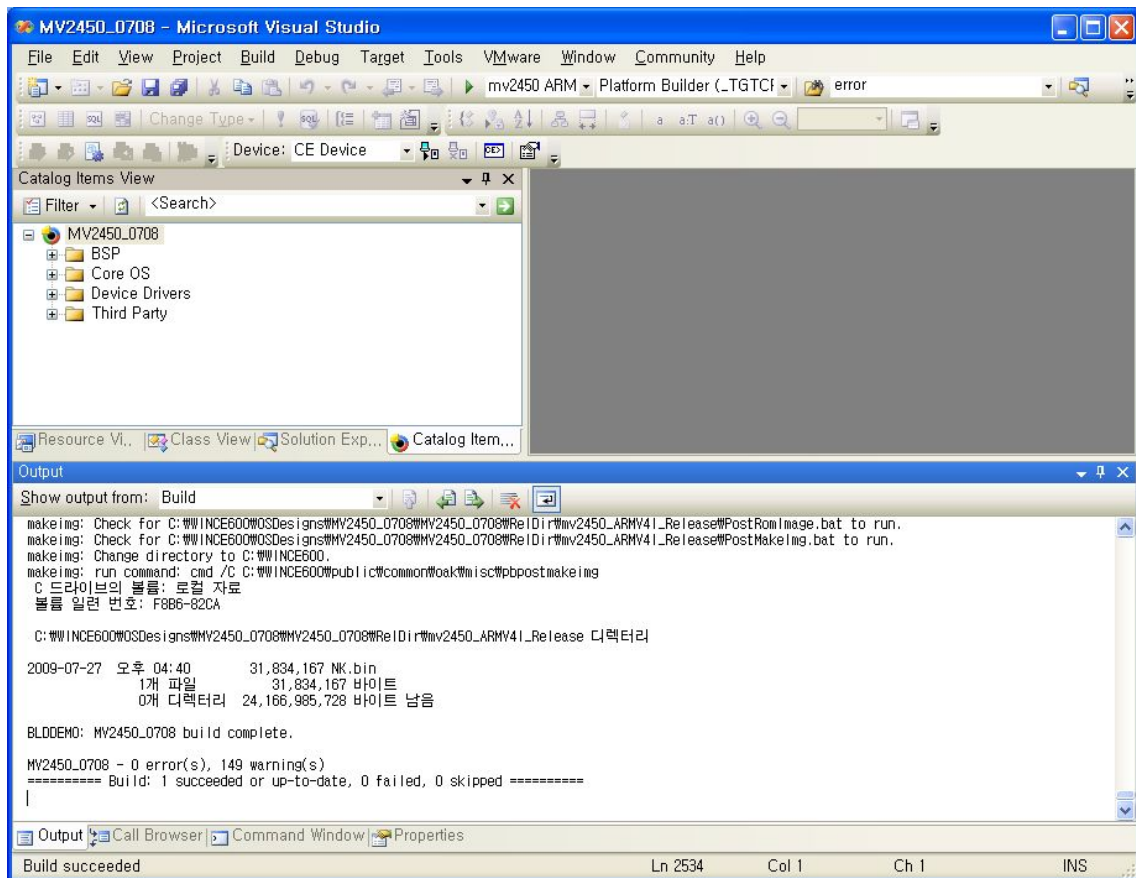
Select “Release”



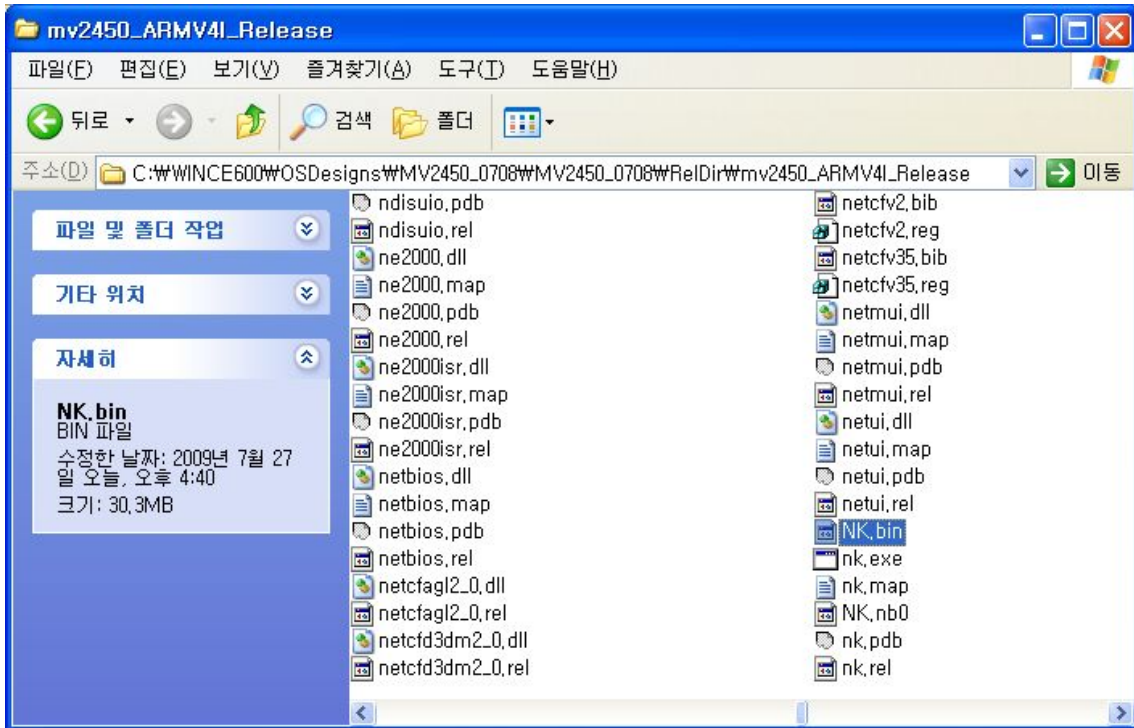
Build -> Advanced Build Commands -> click "Sysgen"



It is done



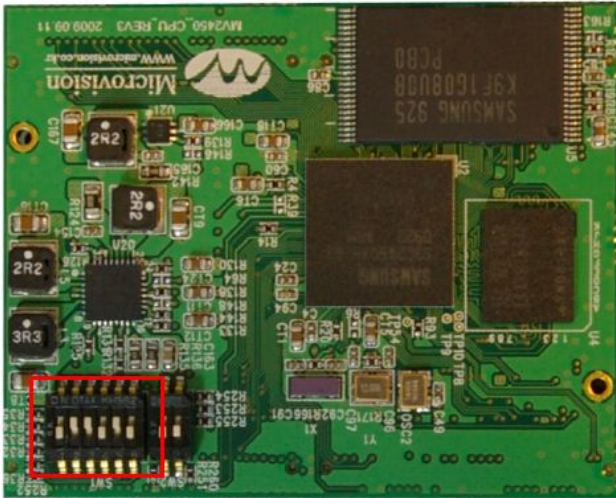
It made Eboot, STEPLDR, NK in C:\WINCE600\OSDesigns\MV2450_0708\MV2450_0708\RelDir\mv2450_ARMV4I_Release folder after compiled.



4.2 Setting for downloading Host PC to Board

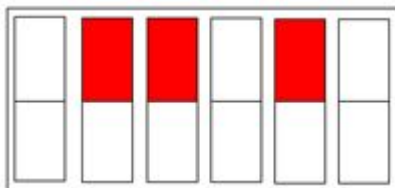
Set up NOR Flash of mode

As I first introduced in Nor Flash number 2. NOR Flash has programmed a “2450MON_NOR.bin “that can download. Set up a switch in order to boot and then run “DNW” in TOOL\DNW.

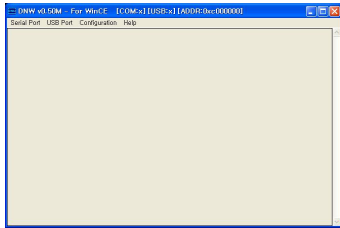


To set up switch on Main Board.

NOR Flash Mode

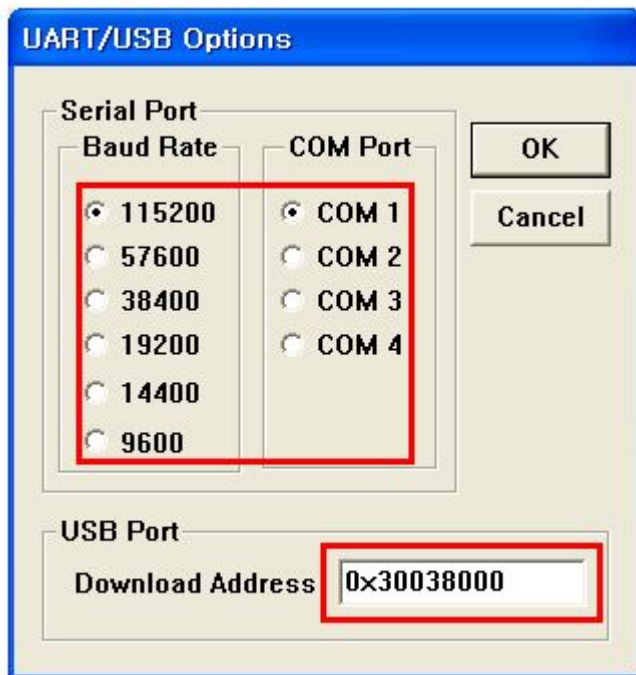


This is DNW which can download through USB.



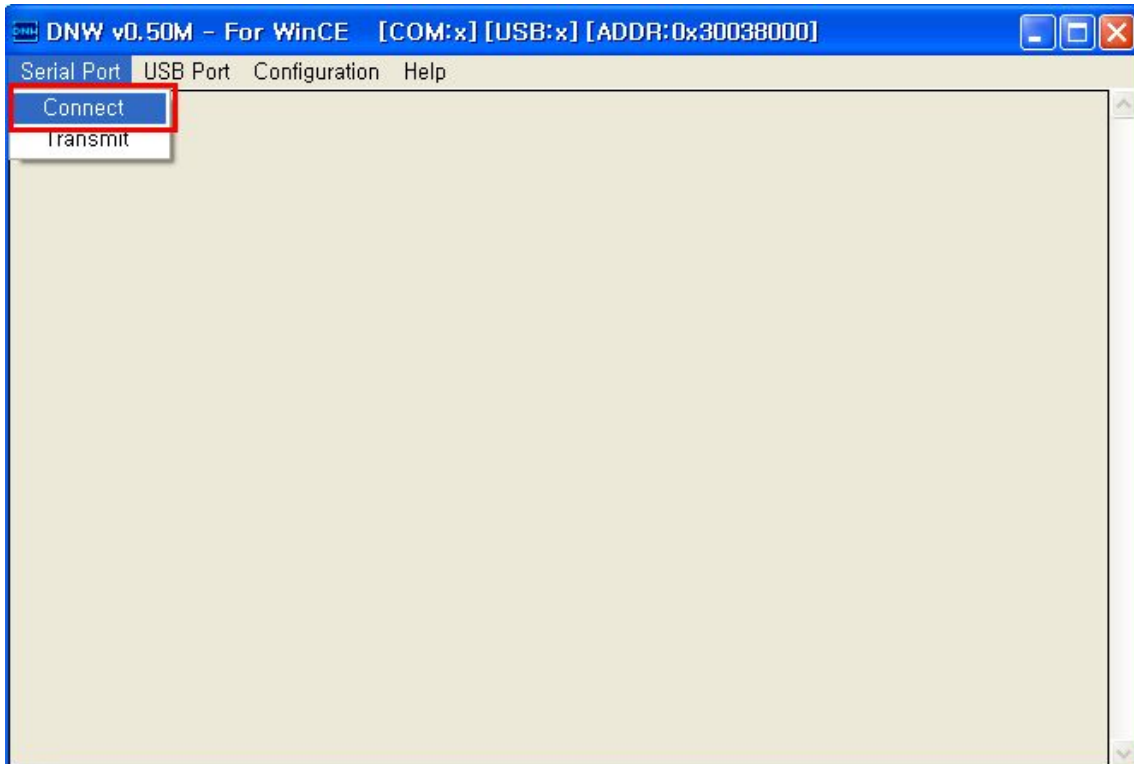
<DNW>

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 "UART/USB options", enter the download address as 0x30038000 and then click OK button. But you want to work NK.nb0 without eboot.nb0 through the NOR Flash that have to setup address 0x30200000 on the DNW.



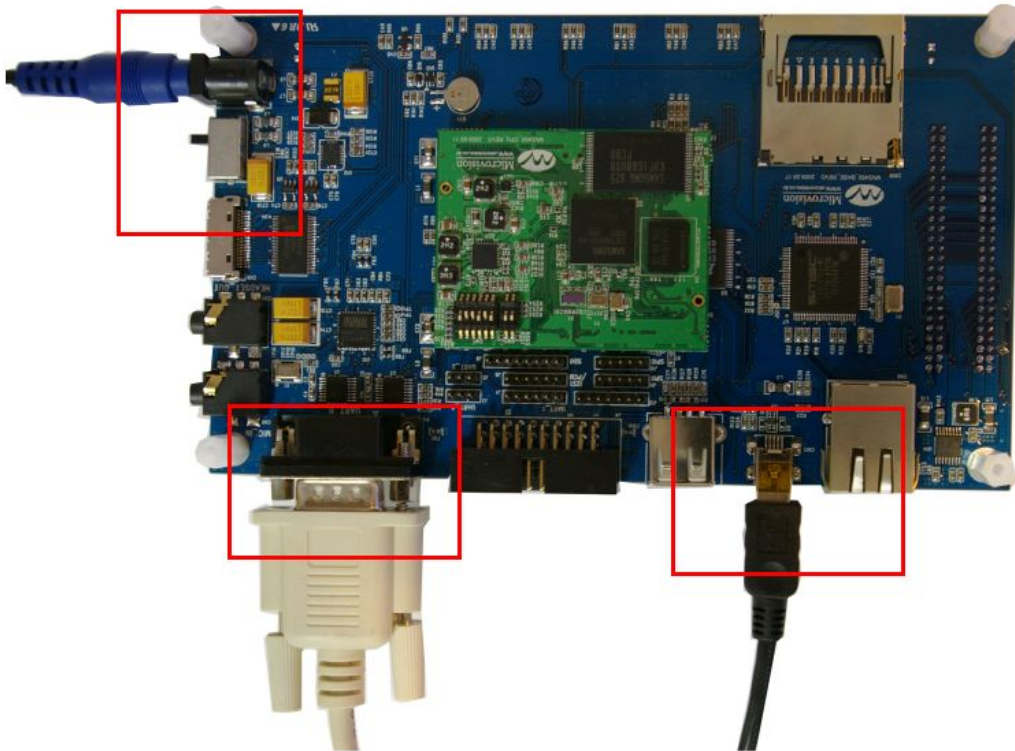
<UART/USB options>

On the Serial Port menu, click Connect.



<It is done>

Connect a USB, a UART and a Power on the Base of Board and then turn on.



Switch ON the reference board

```
DNW v0.50M - For WinCE [COM1,115200bps] [USB:x] [ADDR:0x30038000]
Serial Port USB Port Configuration Help
CLKOUT0:MPLL in, CLKOUT1:RTC clock.

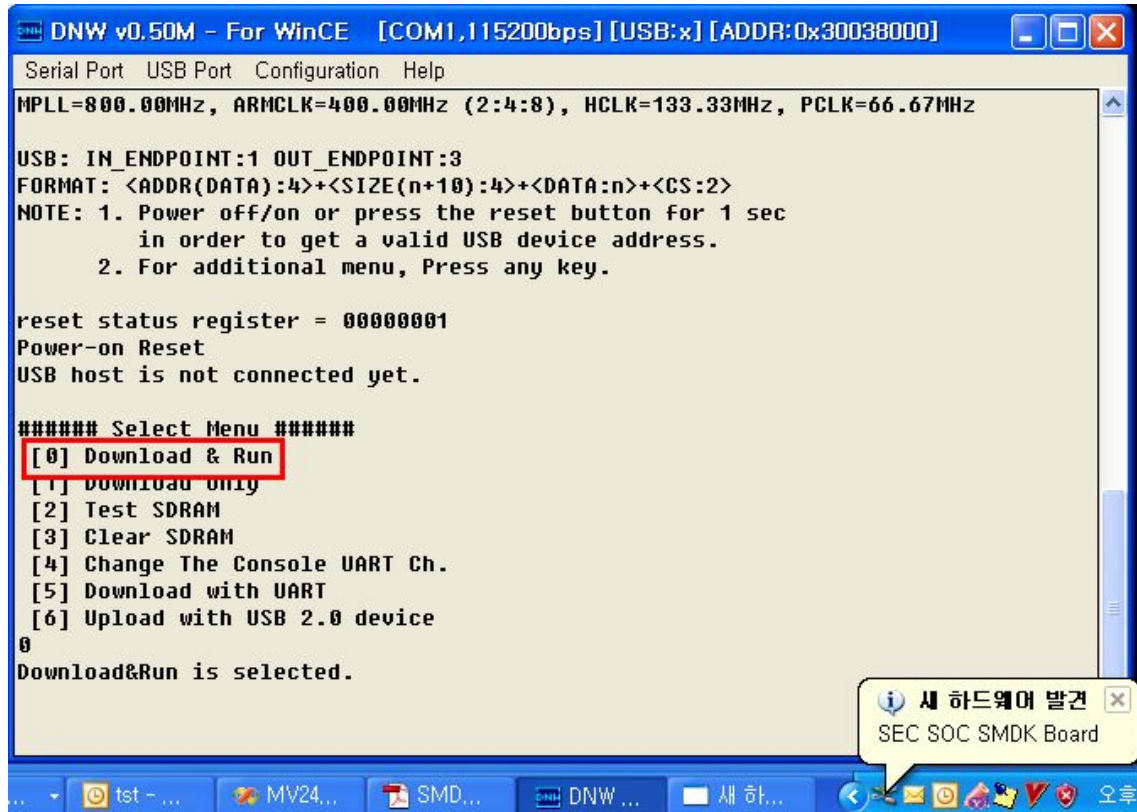
+-----+
| S3C2450X USB Downloader ver R0.0 20080221 |
+-----+

mSDR
MPLL=800.00MHz, ARMCLK=400.00MHz (2:4:8), HCLK=133.33MHz, PCLK=66.67MHz

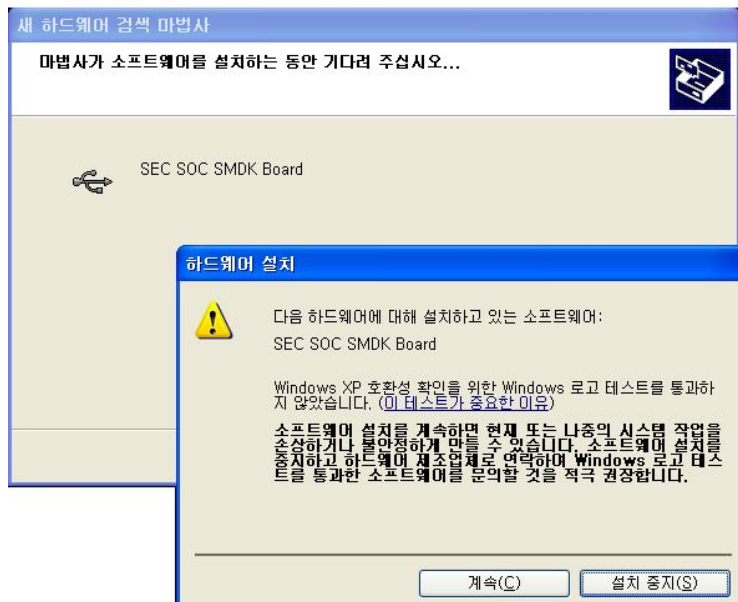
USB: IN_ENDPOINT:1 OUT_ENDPOINT:3
FORMAT: <ADDR(DATA):4>+<SIZE(n+10):4>+<DATA:n>+<CS:2>
NOTE: 1. Power off/on or press the reset button for 1 sec
       in order to get a valid USB device address.
       2. For additional menu, Press any key.

reset status register = 00000001
Power-on Reset
USB host is not connected yet.
```

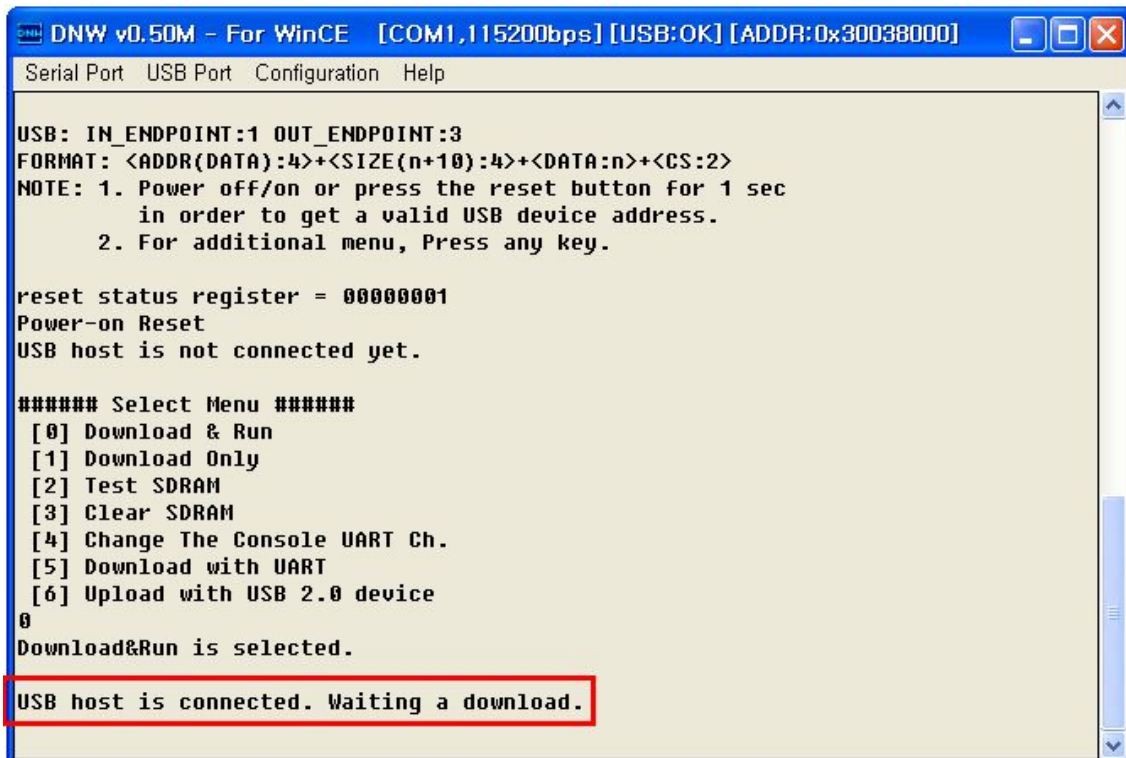
Press any key "0".



Install the USB driver in \TOOL\DNW driver directory.



DNW output messages when it is successfully installed.



The screenshot shows a window titled "DNW v0.50M - For WinCE [COM1,115200bps] [USB:OK] [ADDR:0x30038000]". The window has a menu bar with "Serial Port", "USB Port", "Configuration", and "Help". The main text area displays the following output:

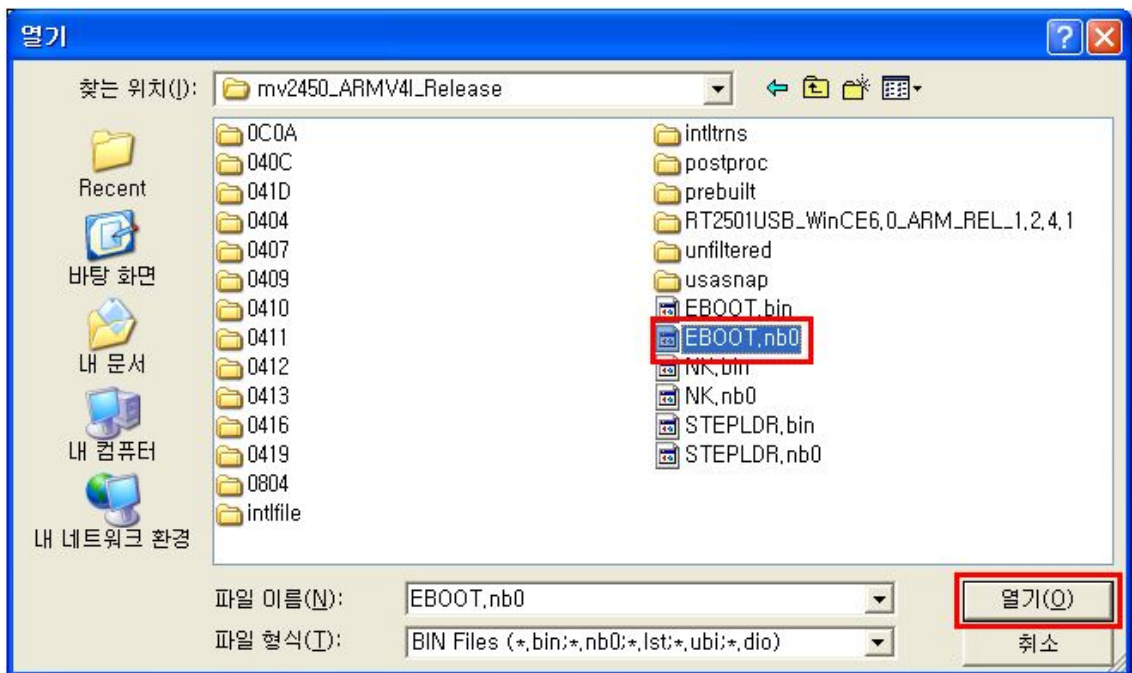
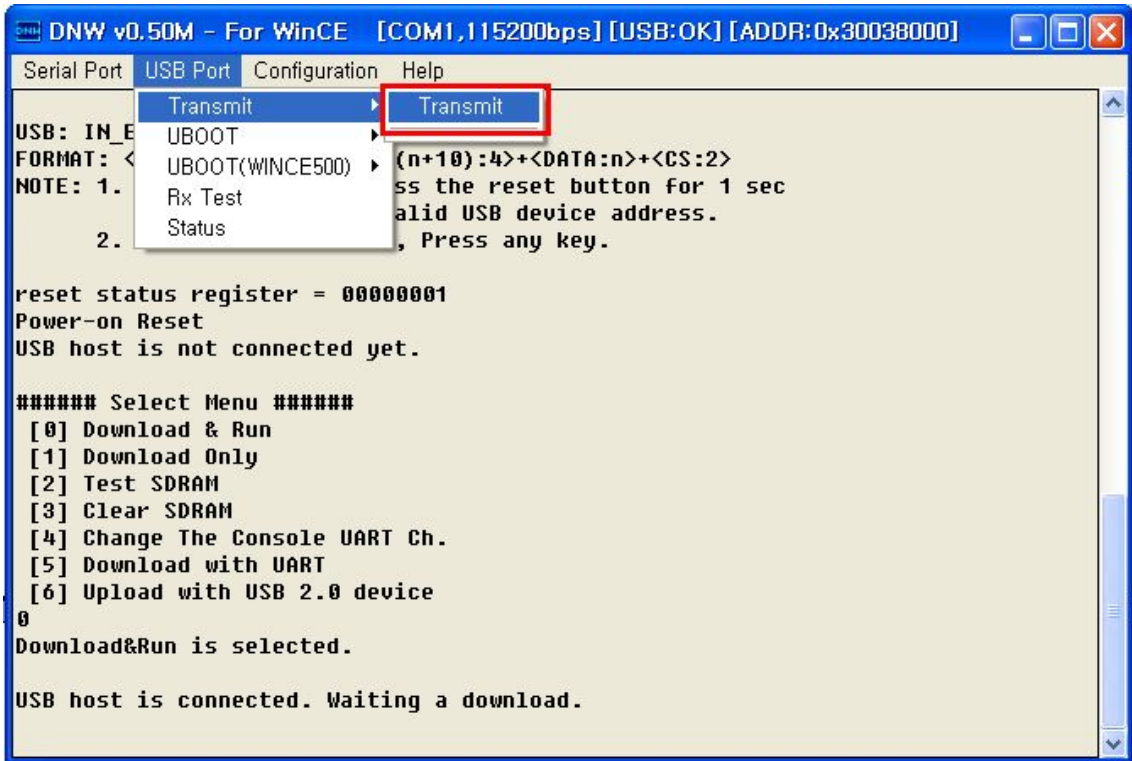
```
USB: IN_ENDPOINT:1 OUT_ENDPOINT:3
FORMAT: <ADDR(DATA):4>+<SIZE(n+10):4>+<DATA:n>+<CS:2>
NOTE: 1. Power off/on or press the reset button for 1 sec
       in order to get a valid USB device address.
       2. For additional menu, Press any key.

reset status register = 00000001
Power-on Reset
USB host is not connected yet.

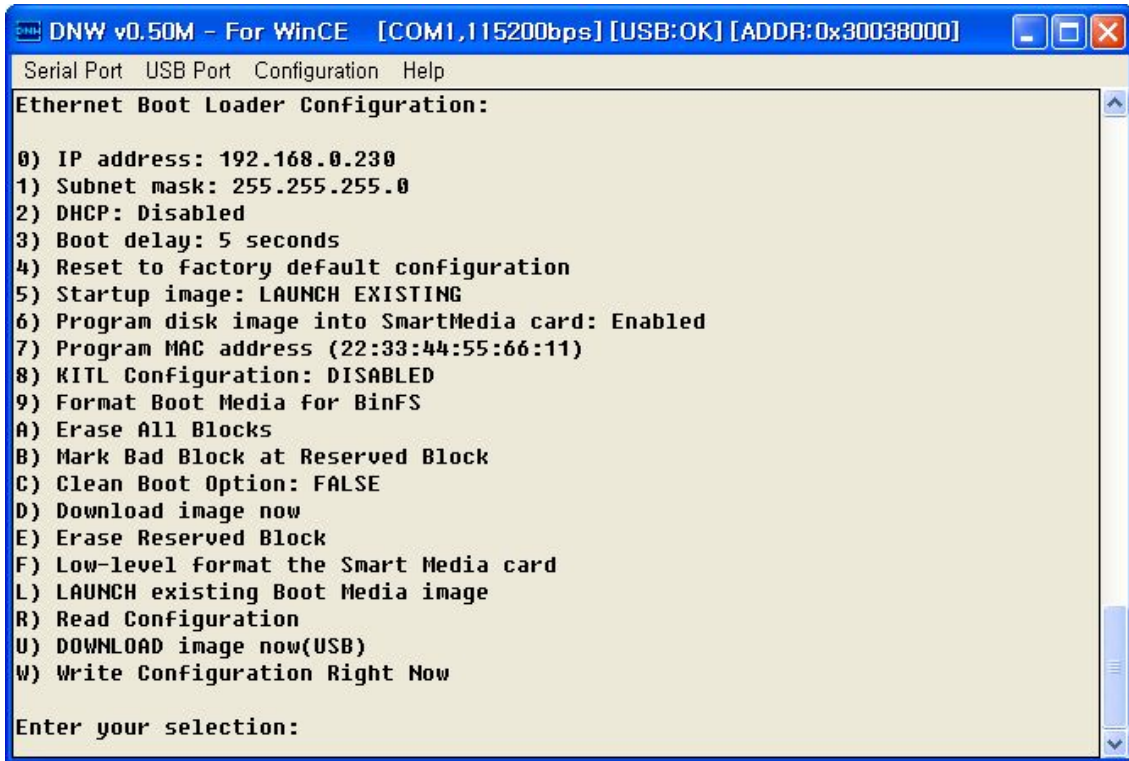
##### Select Menu #####
[0] Download & Run
[1] Download Only
[2] Test SDRAM
[3] Clear SDRAM
[4] Change The Console UART Ch.
[5] Download with UART
[6] Upload with USB 2.0 device
0
Download&Run is selected.
USB host is connected. Waiting a download.
```

The last line, "USB host is connected. Waiting a download.", is highlighted with a red rectangular box.

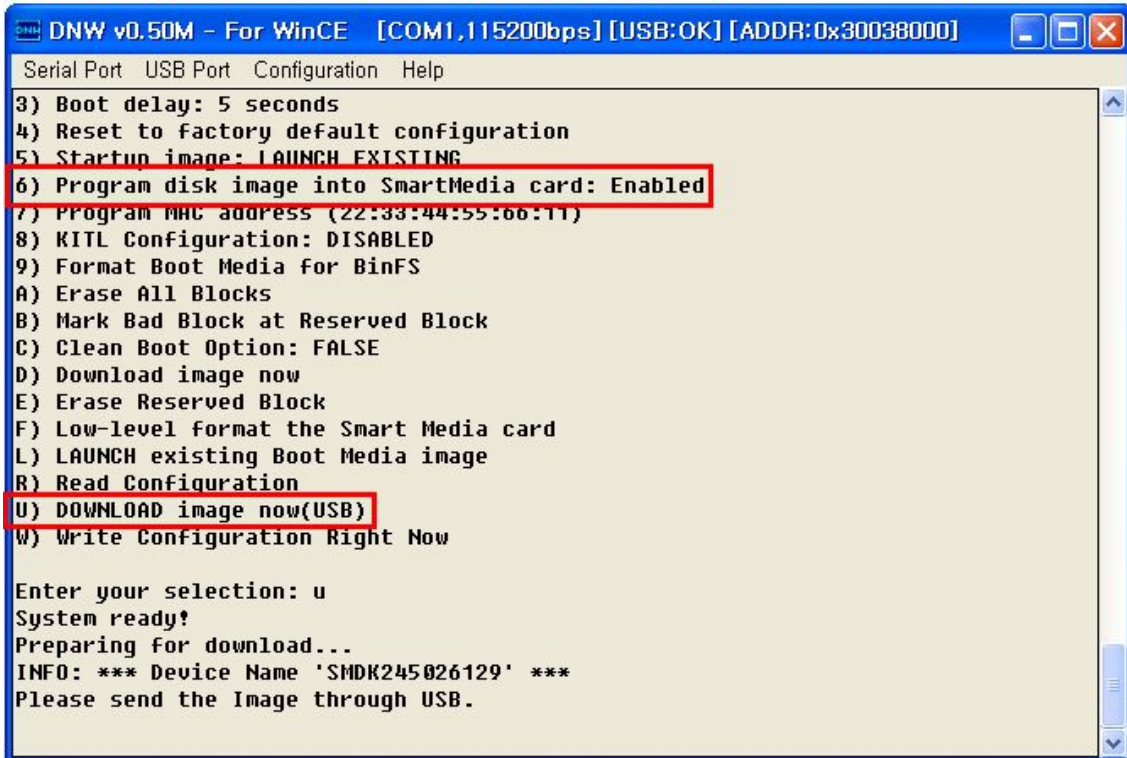
Enter "0", On the USB Port menu, click "Transmit" and the following window appears on your screen. Select EBOOT.nb0 file from C:\WINCE600\OSDesigns\MV2450_0708\MV2450_0708\RelDir\mv2450_ARMV4I_Release directory and then click "Open"



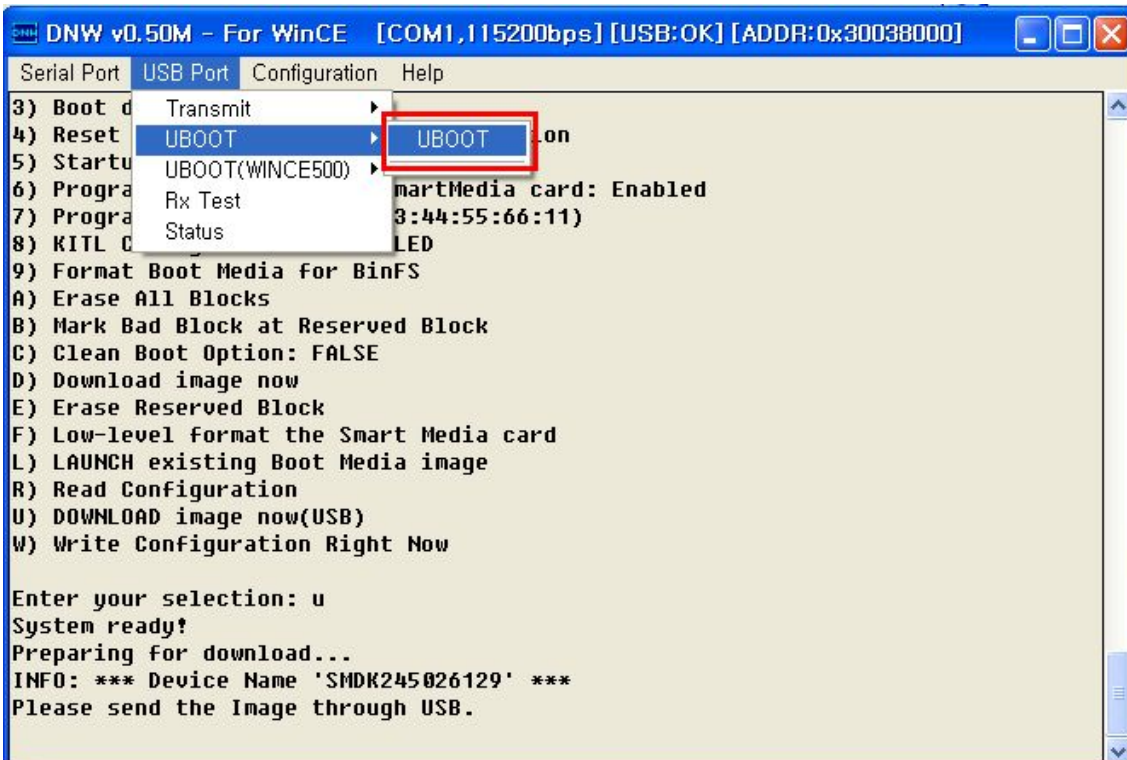
As soon as EBOOT.nb0 download is over, the following messages appear in the DNW window. Please hit the SPACE BAR key to view the current Ethernet Boot Loader Configuration. Configure the Ethernet Boot loader as follows by entering the respective options..



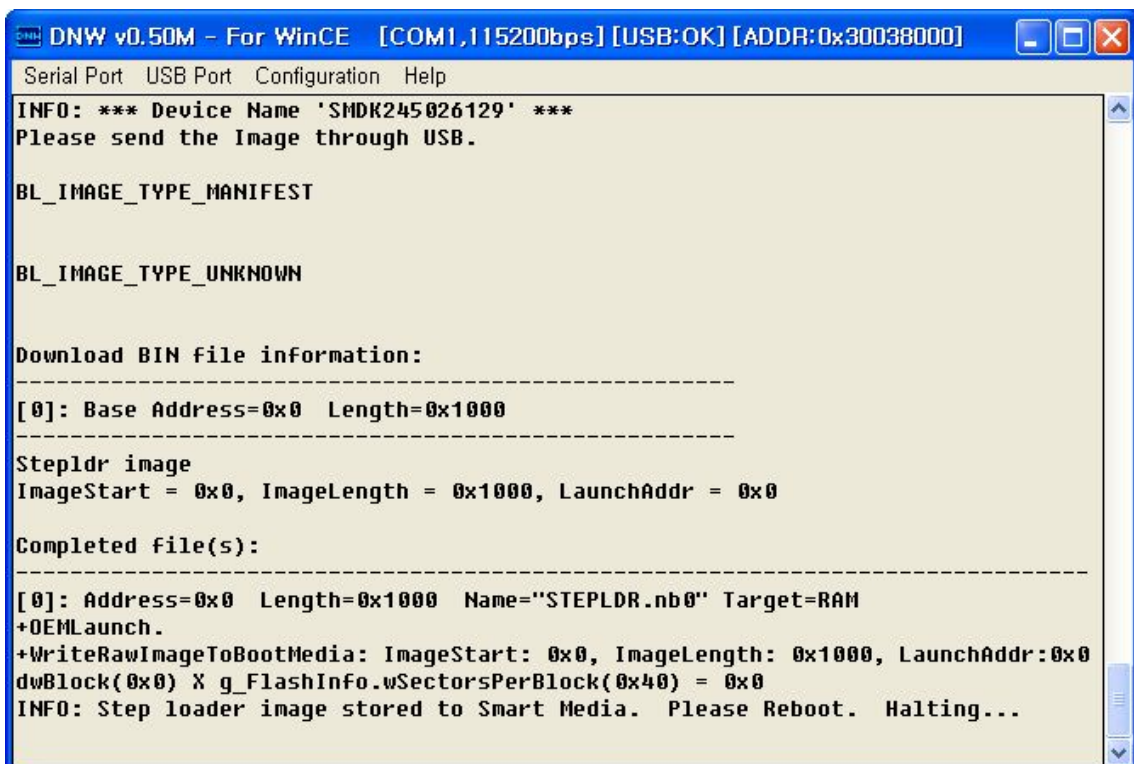
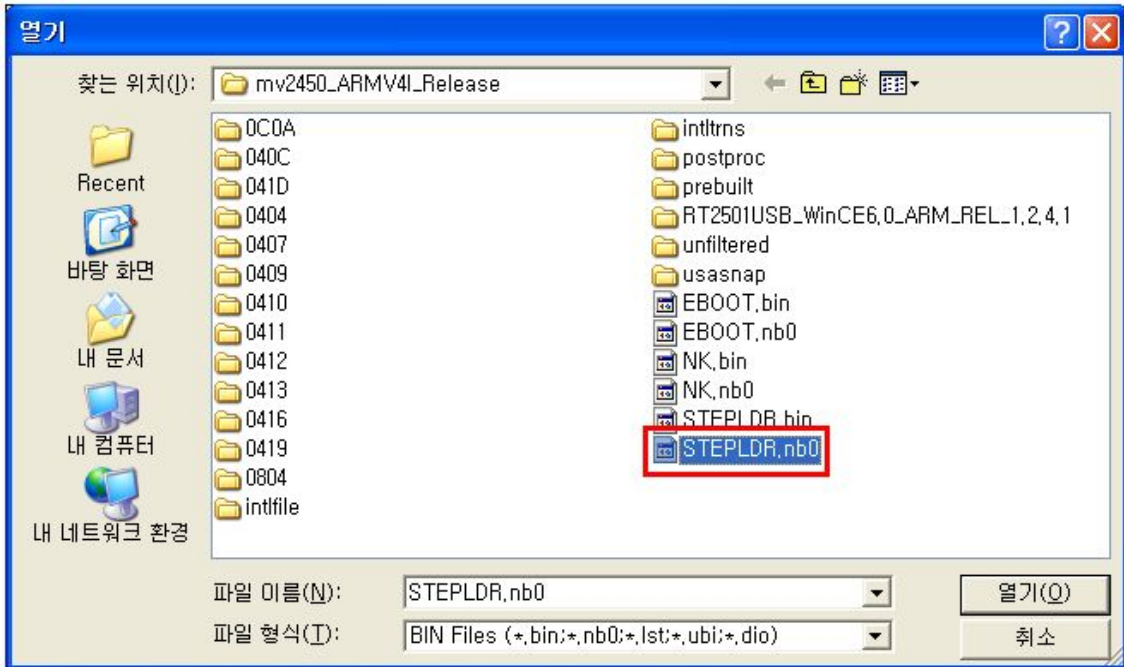
This is Eboot. Click number “6” (Enabled) and then “U”



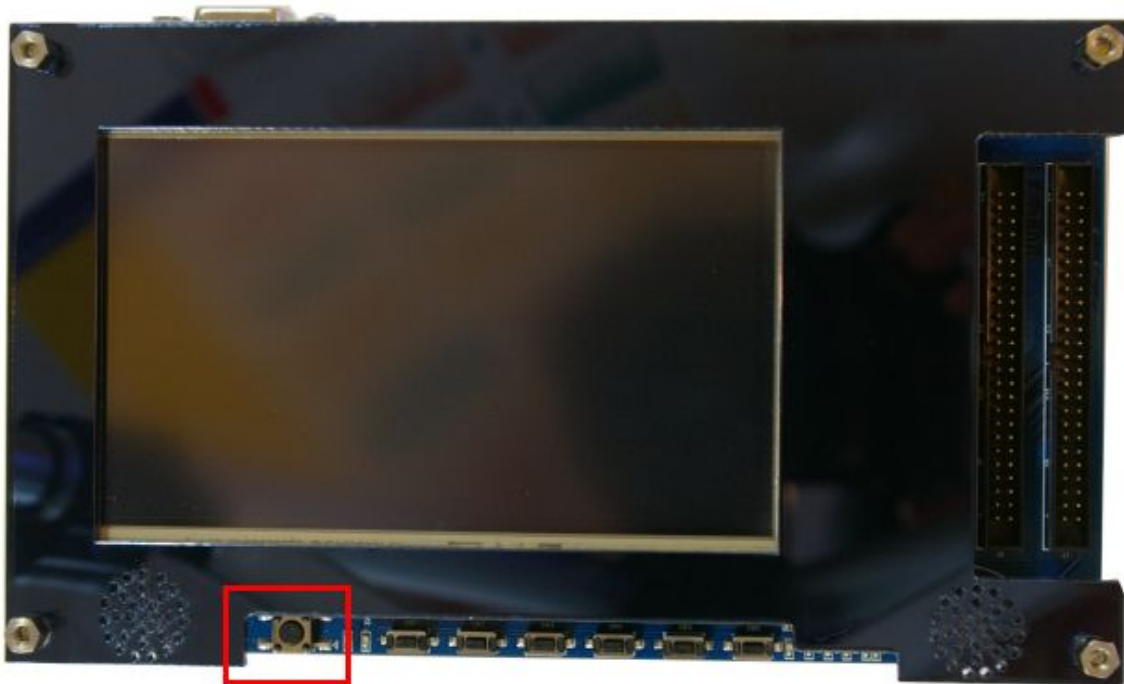
USB Port menu, click UBOOT-> UBOOT



Select STEPLDR.bin file from C:\WINCE600\OSDesigns\MV2450_0708\MV2450_0708\RelDir\mv2450_ARMV4I_Release directory and then click “Open”

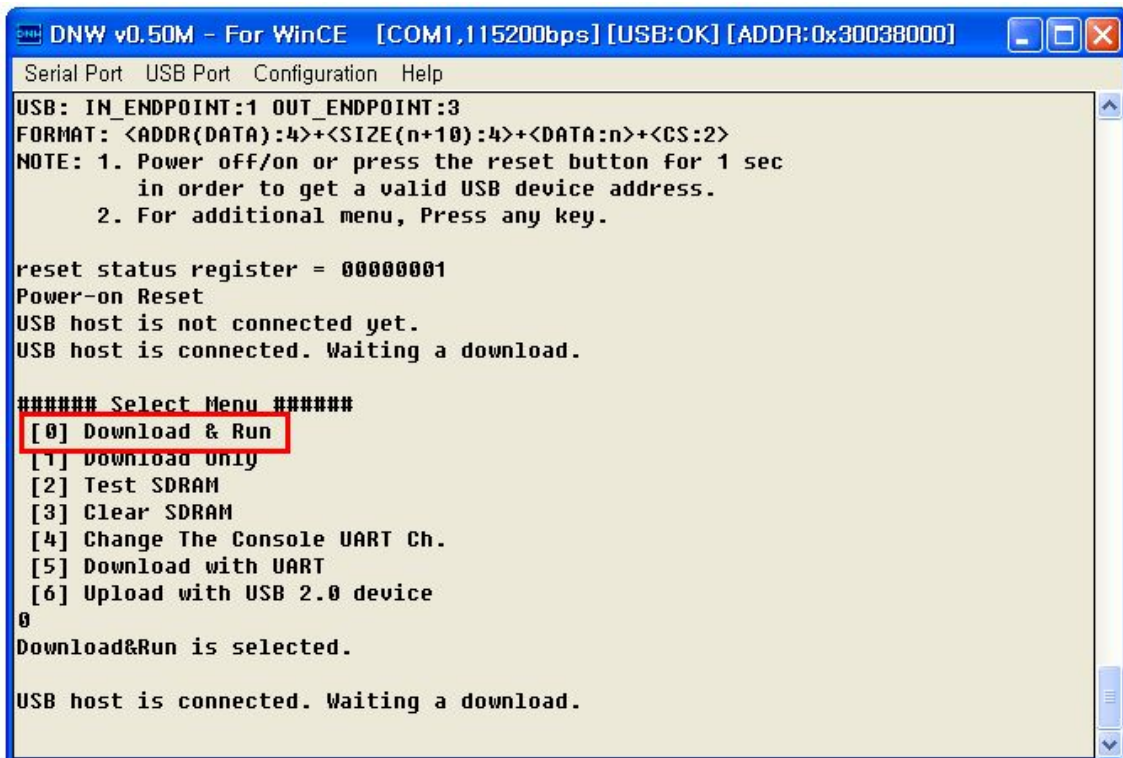


Press a reset button in order to reboot.

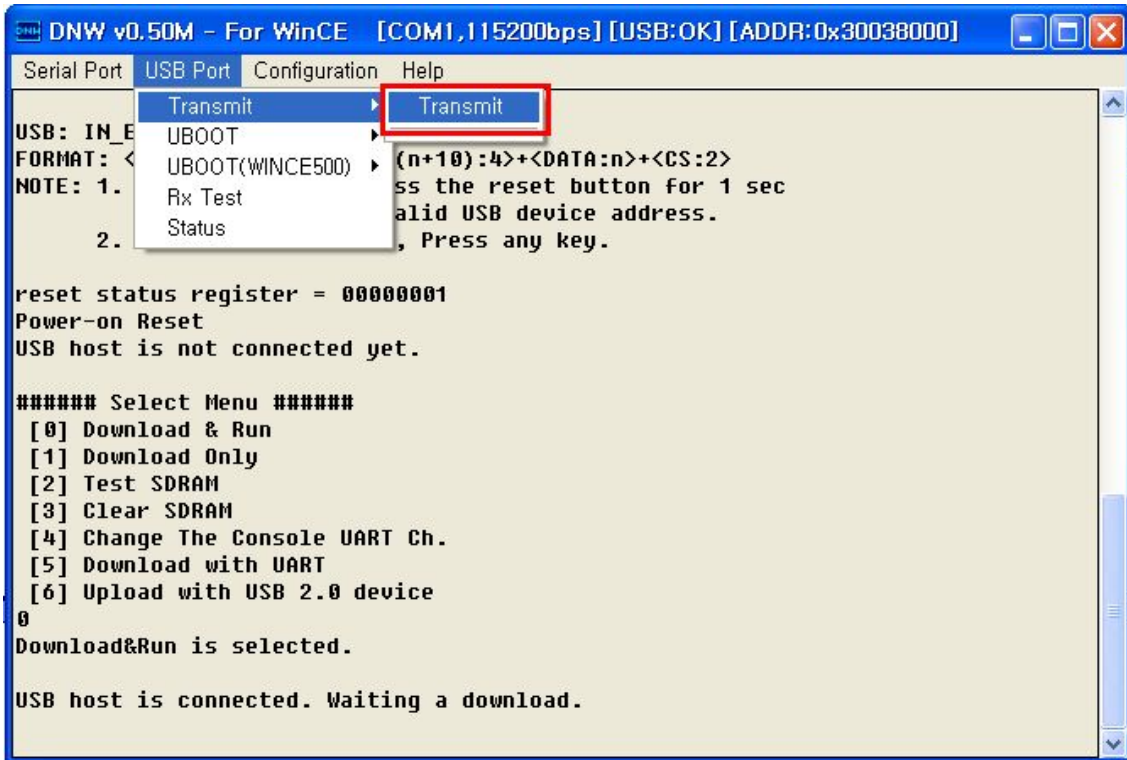


<리셋 버튼>

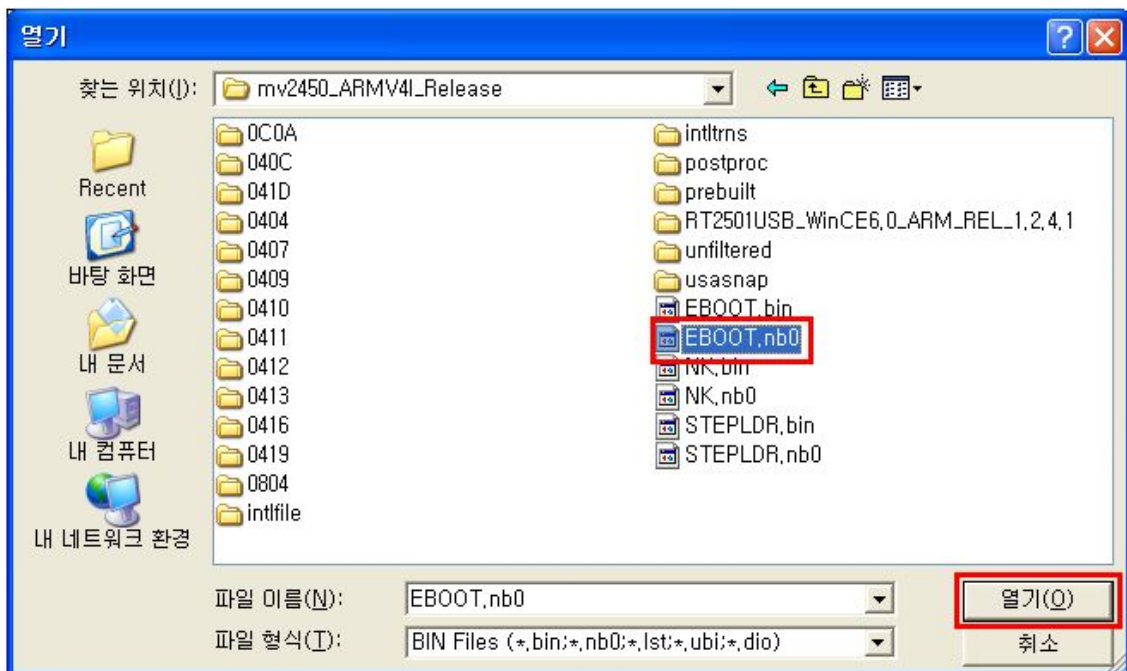
Enter "0", On the USB Port menu



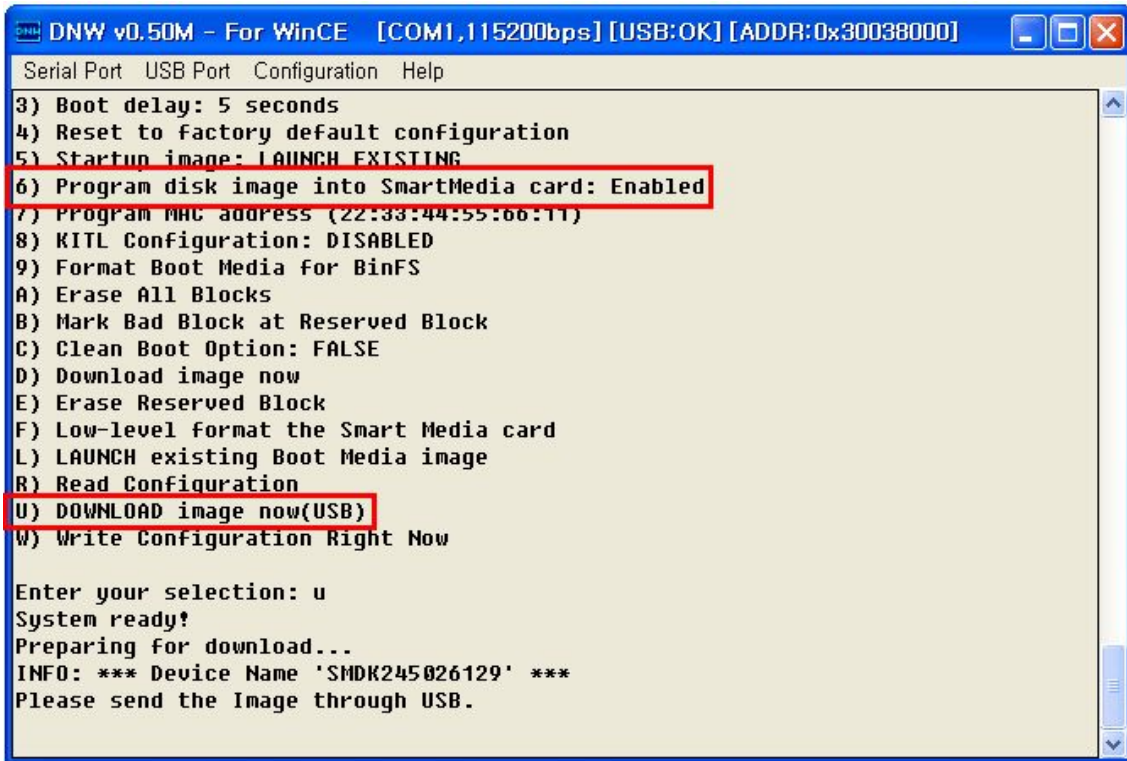
Click "Transmit" and the following window appear on your screen.



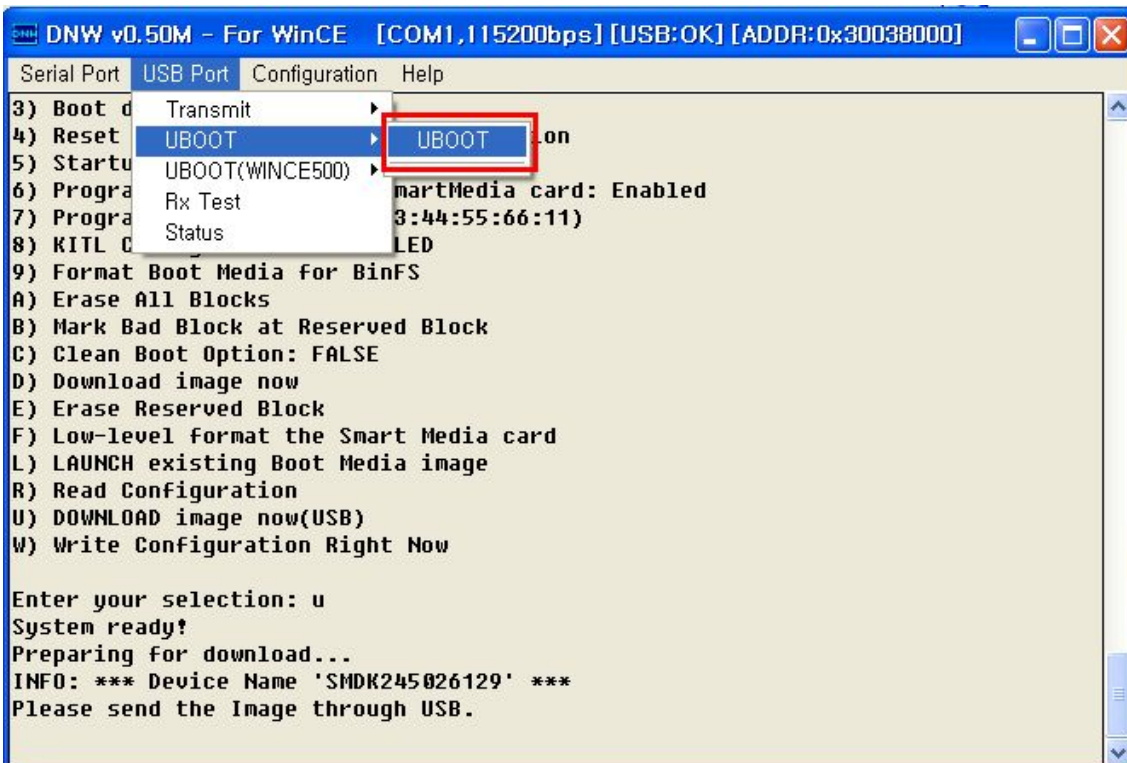
Select EBOOT.nb0 file from C:\WINCE600\OSDesigns\MV2450_0708\MV2450_0708\RelDir\mv2450_ARMV4I_Release directory and then Click "Open"



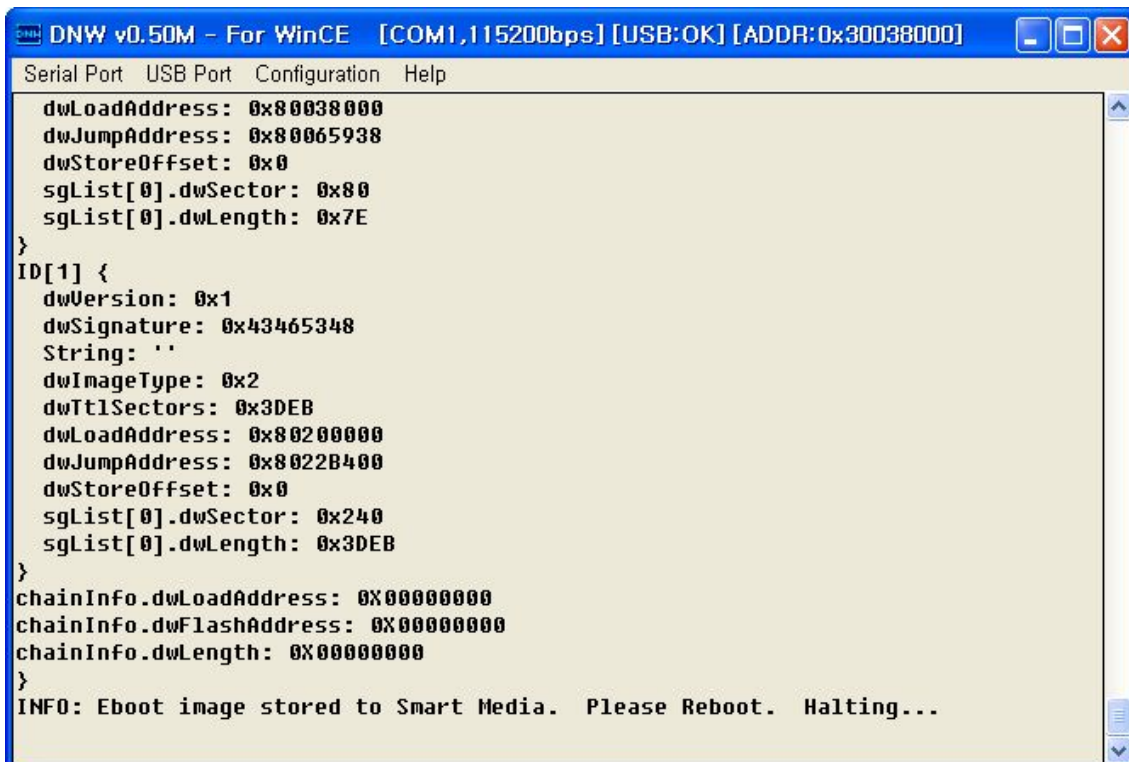
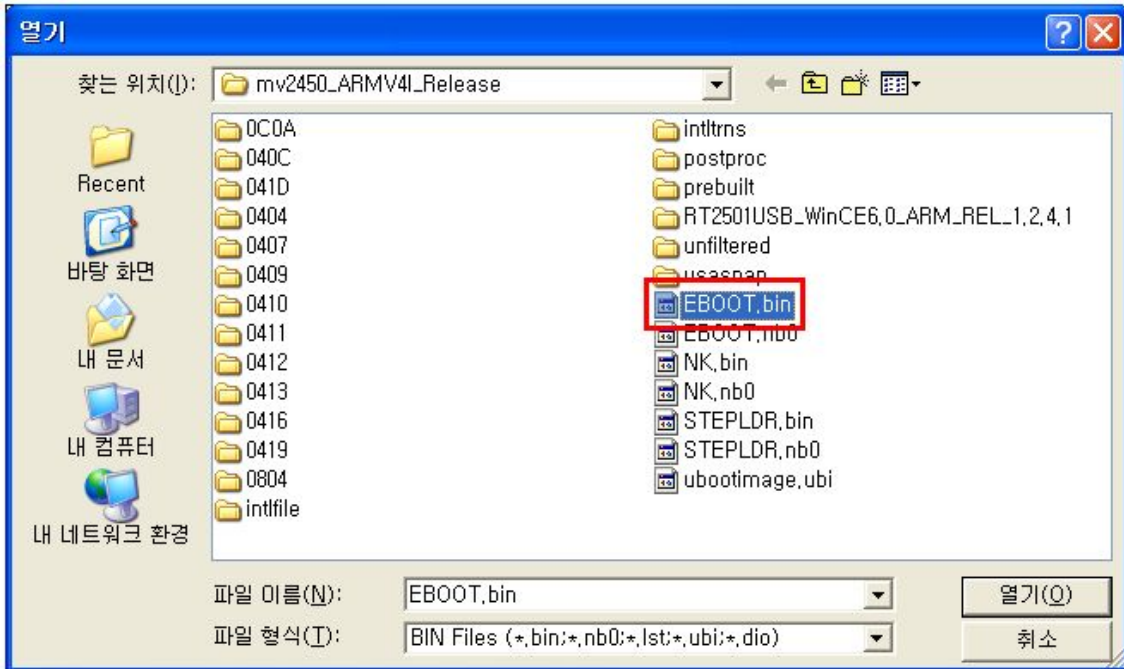
As soon as EBOOT.nb0 download Please hit the SPACE BAR key to view.
This is Eboot. Click number “6” (Enabled) and then “U”



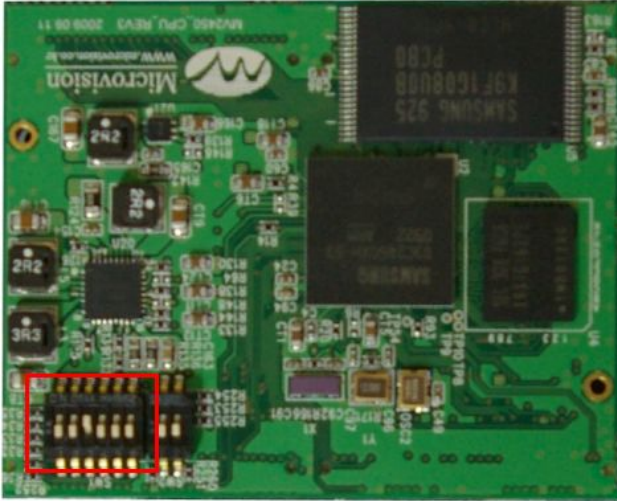
USB Port menu, click UBOOT-> UBOOT



Select EBOOT.bin file from C:\WINCE600\OSDesigns\
MV2450_0708\MV2450_0708\ReIDir\mv2450_ARMV4I_Release
directory and then click “Open”

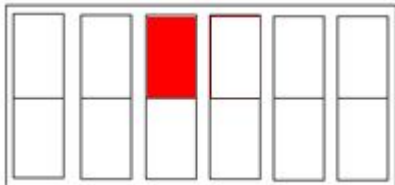


Now, You have to download NK.bin (kernel). First, Set up NAND boot mod after Turn off.

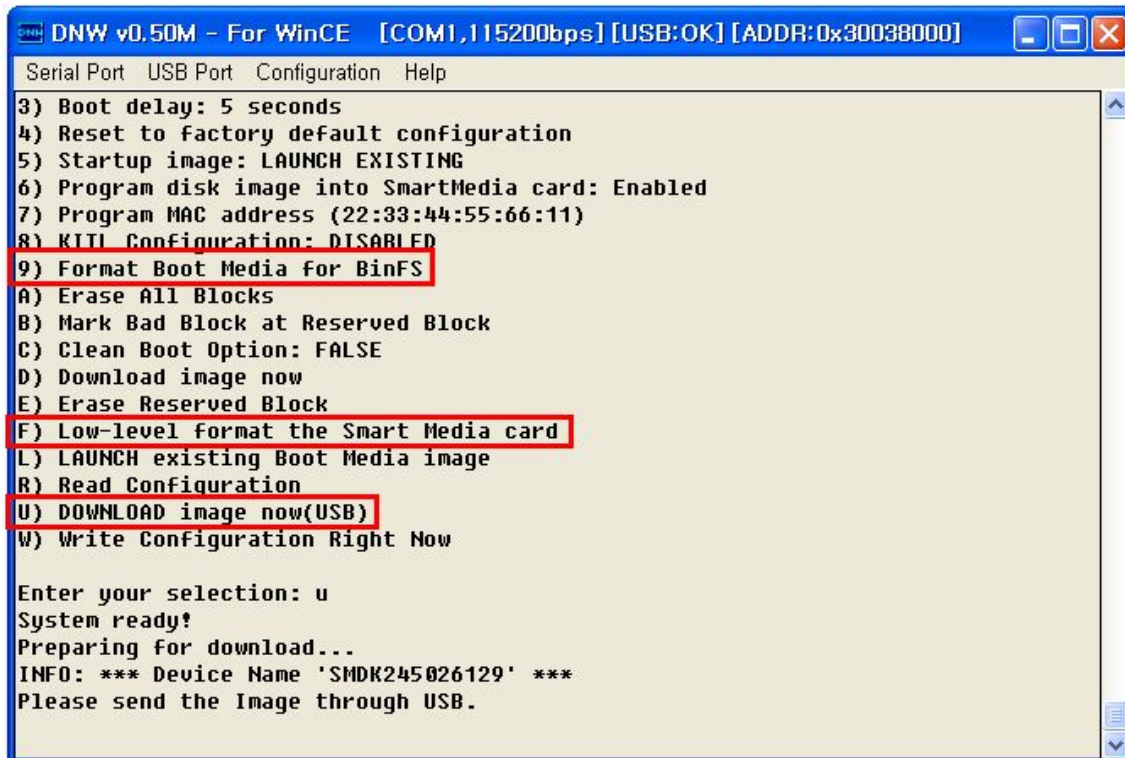


Setting switch Main of board

NAND Flash mode



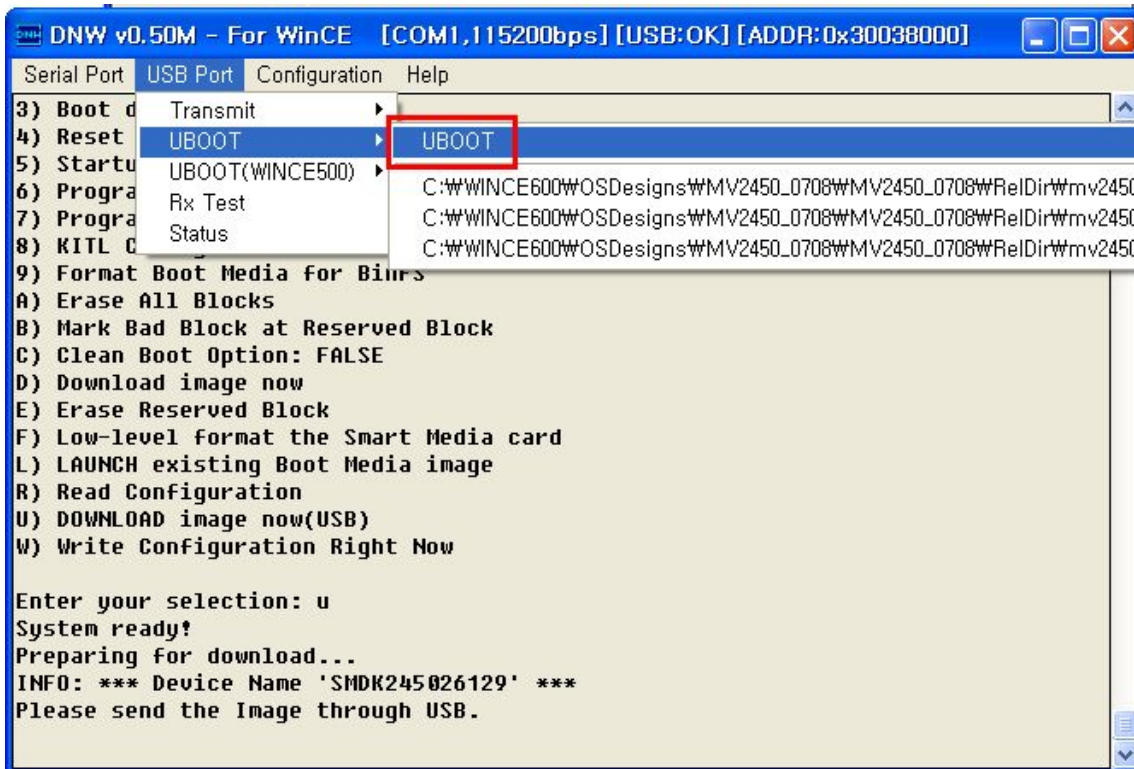
Turn on, The following window appears on your screen. First make sure number 6 “Enabled” and then Select F -> 9 -> U.



```
Serial Port  USB Port  Configuration  Help
3) Boot delay: 5 seconds
4) Reset to factory default configuration
5) Startup image: LAUNCH EXISTING
6) Program disk image into SmartMedia card: Enabled
7) Program MAC address (22:33:44:55:66:11)
8) KITT Configuration: DISABLED
9) Format Boot Media for BinFS
A) Erase All Blocks
B) Mark Bad Block at Reserved Block
C) Clean Boot Option: FALSE
D) Download image now
E) Erase Reserved Block
F) Low-level format the Smart Media card
L) LAUNCH existing Boot Media image
R) Read Configuration
U) DOWNLOAD image now(USB)
W) Write Configuration Right Now

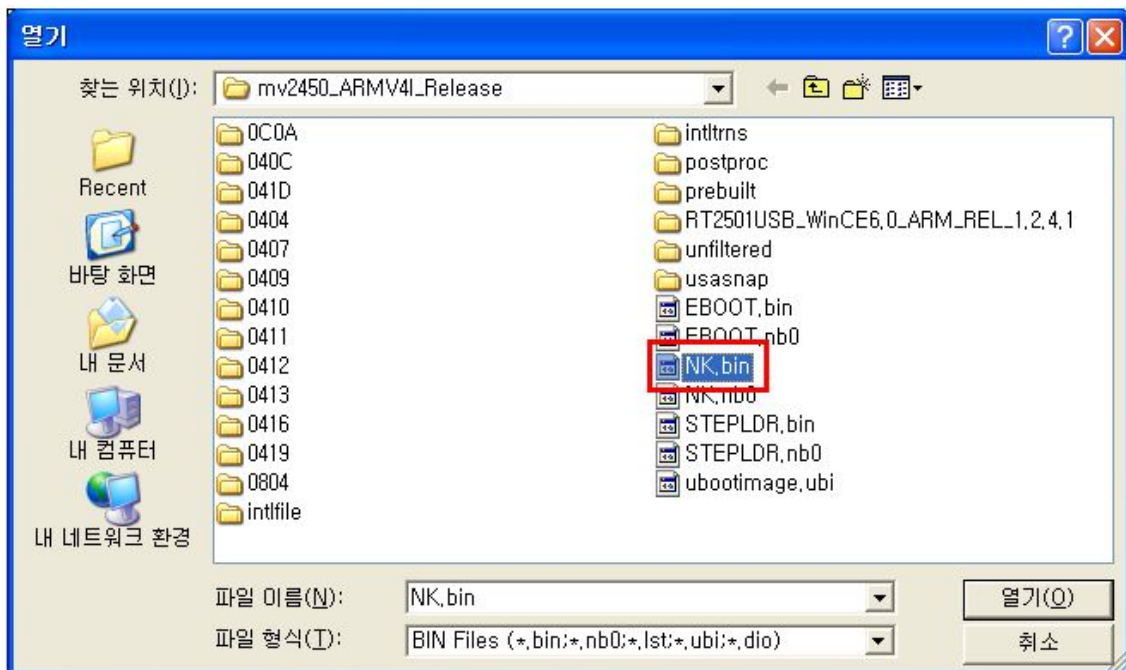
Enter your selection: u
System ready!
Preparing for download...
INFO: *** Device Name 'SMDK245026129' ***
Please send the Image through USB.
```

Select USB Port -> UBOOT -> UBOOT

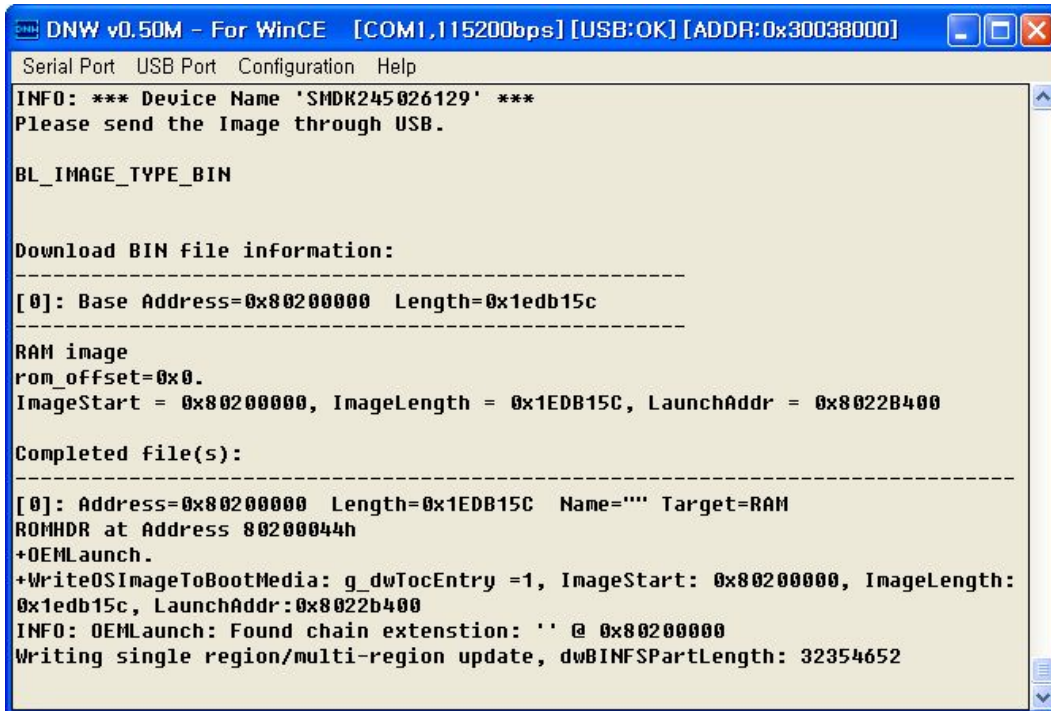


Select NK.bin file from C:\WINCE600\OSDesigns\MV2450_0708\MV2450_0708\ReDir\mv2450_ARMV4I_Release directory and then click "Open"

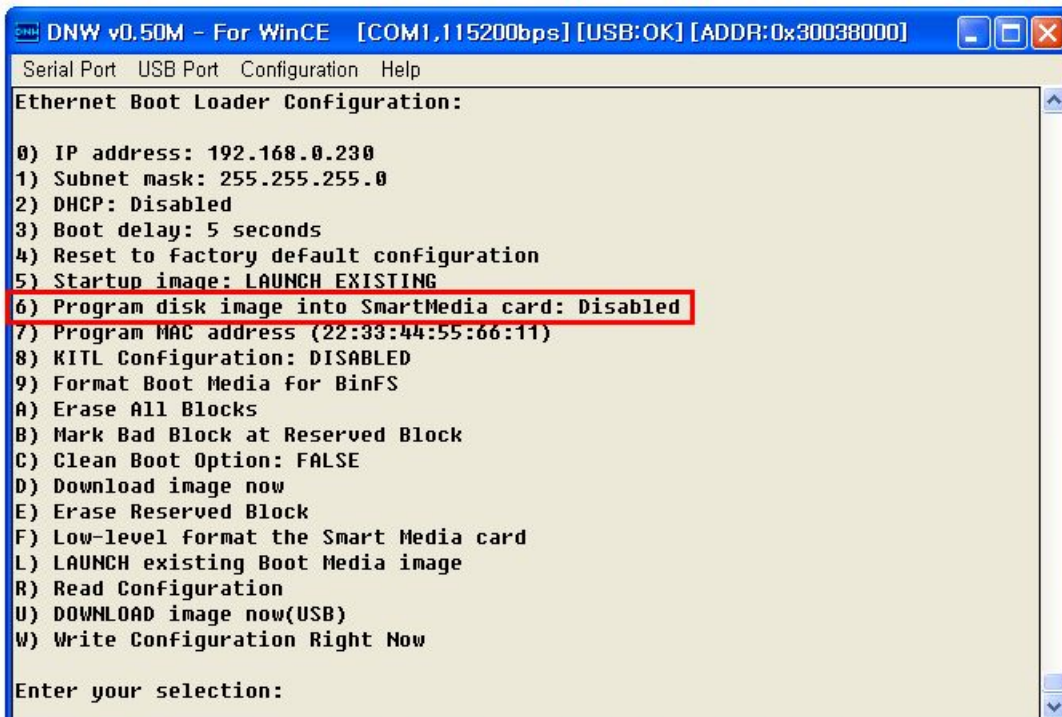
But you want to work NK.nb0 without eboot.nb0 through the NOR Flash that have to setup address 0x30200000 on the DNW.



It is programming.



Done



5. Doing Camera Application

Please connect Camera with Board as a picture.
You can see folder “My Device” on a screen. .



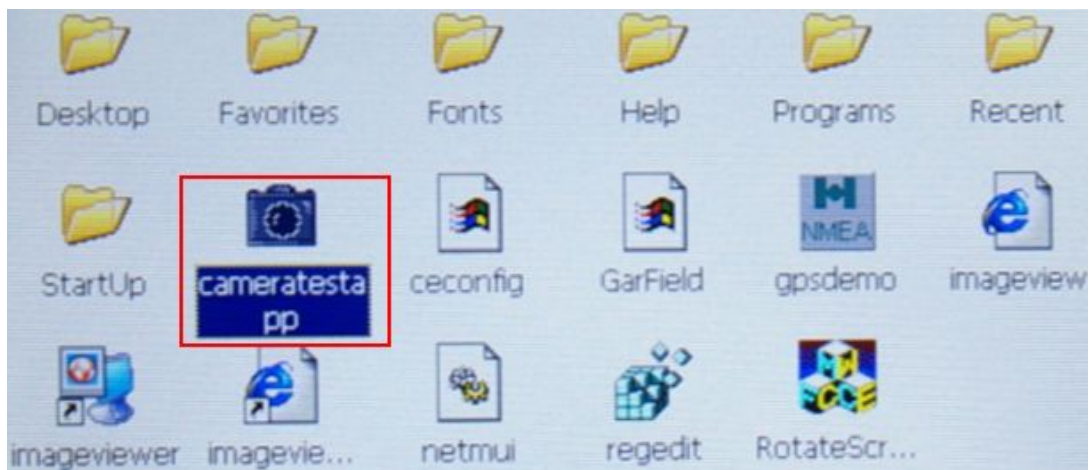
Please click “My Device”



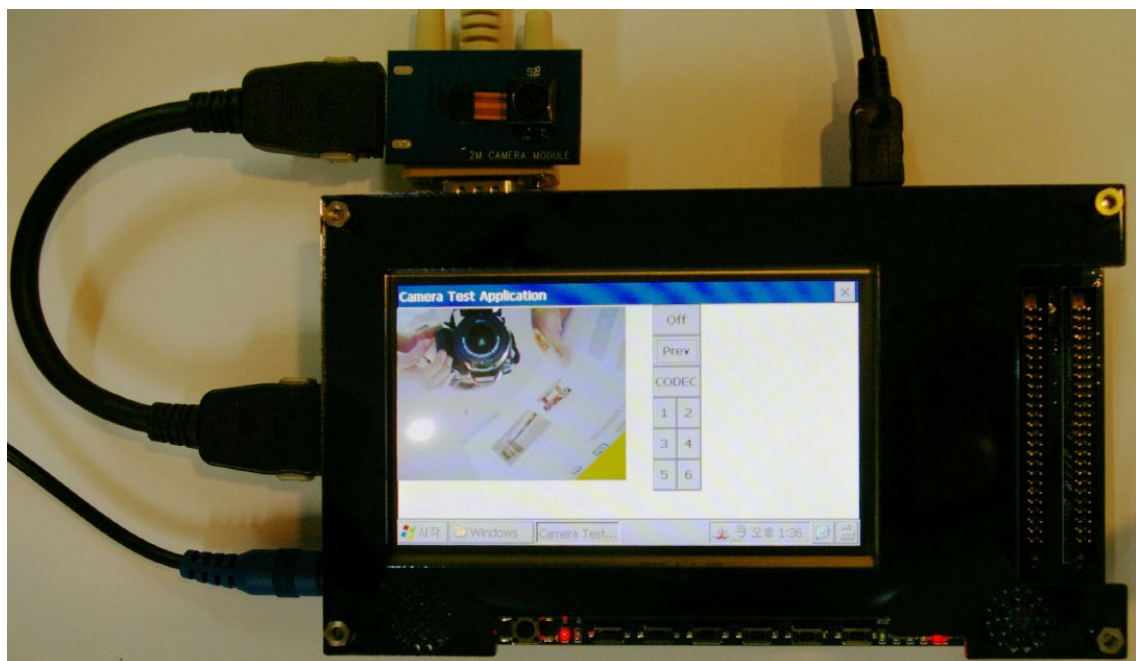
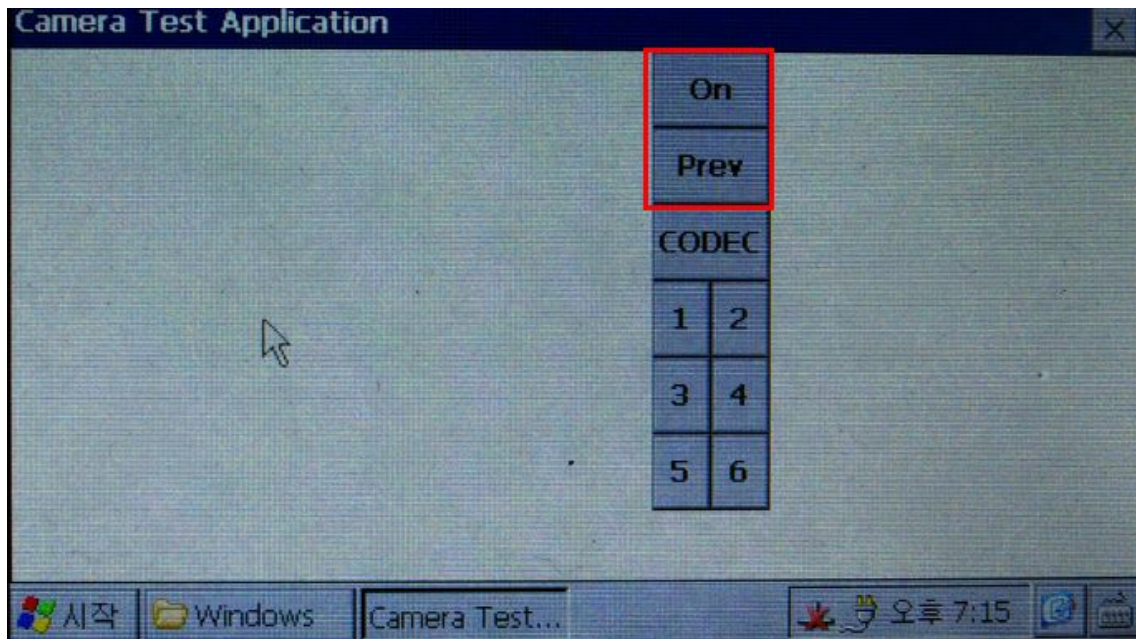
Click "Windows"



Click "cameratestapp"



Please click buttons “On” -> “Prev”, so that you can see camera of working



<Working>