

# ILUM2440

## Burn Images

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# OS upgrading

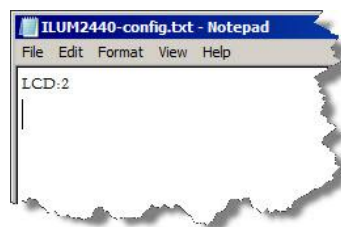
## Install WinCE

### SD card

Do the following:

1. Format the SD card with below options:
  - a. File system → fat 32
  - b. Allocation unit size → default
2. Copy the below files with specified names to the SD card:
  - a. Step loader → ILUM2440-STEPLDR.nb1
  - b. Eboot → ILUM2440-EBOOT.nb0
  - c. Logo → ILUM2440-LOGO.bin
  - d. Nk → ILUM2440-NK.bin
  - e. Config → ILUM2440-config.txt (look at sample "ILUM2440-config.txt" file)

HGP Name	LCDTYPE	Text on config File	Note
<b>I35</b>	3.5" (320x240)	LCD:1	
<b>I43</b>	4.3" (480x272)	LCD:2	
<b>I50</b>	5.0" (480x272)	LCD:3	
<b>I56</b>	5.6" (640x480)	LCD:4	
<b>I70</b>	7.0" (800x480)	LCD:5	
<b>I80</b>	8.0" (800x600)	LCD:6	
<b>I90</b>	9.0" (800x840)	LCD:7	
<b>I104</b>	10.4" (640x480)	LCD:8	
	VGA (640x480)	LCD:9	
	VGA (1024x768)	LCD:10	Not supported in BIOS You may have no Screen on bootloader!
<b>L35</b>	3.5" (240x320)	LCD:11	Another type of 3.5" LCD
<b>U35</b>	3.5" (320x240)	LCD:12	Another type of 3.5" LCD
	VGA (800x600)	LCD:13	



## Burn Images

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3. Insert SD card to the board
4. Connect serial and power cable
5. Configure the putty or other terminal application using below settings:
  - a. Baudrate → 115200
  - b. Stop bit → 1
  - c. No parity
  - d. No flow control
6. Set boot switch to NOR and Reset the board.
7. Wait for time out or press enter

This process may take a long time. When upgrading is finished, winCE is loaded.

### USB

Do the following:

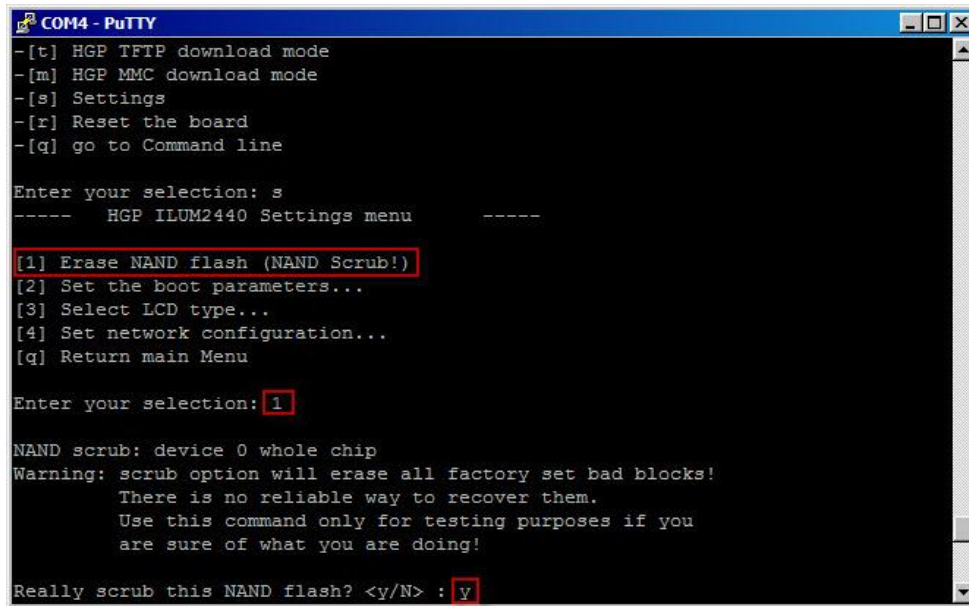
#### Prepare to download

1. Connect serial, power and USB cable
2. Configure the putty or other terminal application with below setting:
  - a. Baudrate → 115200
  - b. Stop bit → 1
  - c. No parity
  - d. No flow control
3. If the USB driver has not installed, you can install it from folder 'Drivers'
4. Set boot switch to NOR and Reset the board.
5. Before time out, press space button

### Format the NAND-Flash

WARNING: After this action all data in the NAND flash will be lost.

1. Press '1'
2. Press 'y' then 'Enter'



```
COM4 - PuTTY
-[t] HGP TFTP download mode
-[m] HGP MMC download mode
-[s] Settings
-[r] Reset the board
-[q] go to Command line

Enter your selection: s
-----  HGP ILUM2440 Settings menu  -----

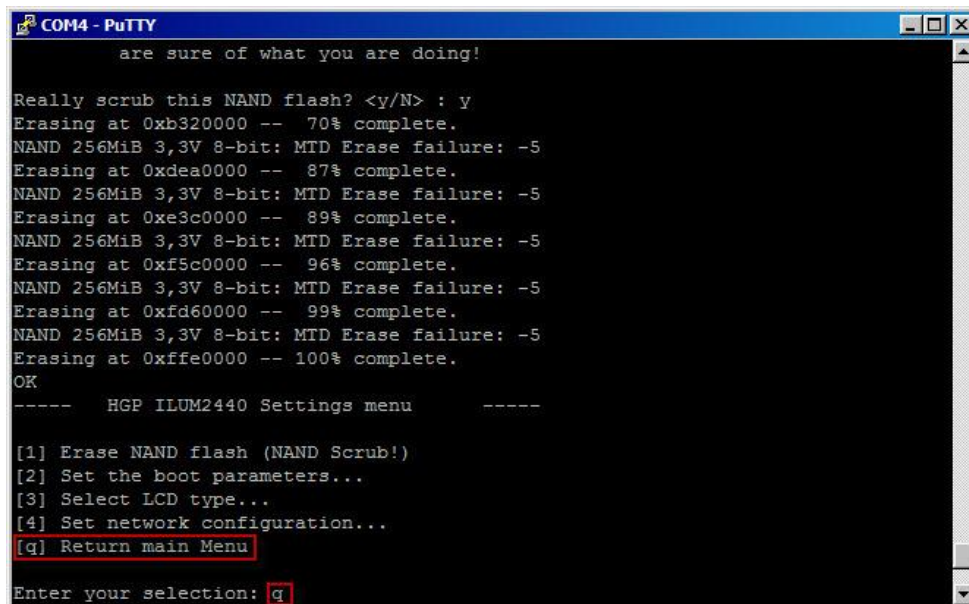
[1] Erase NAND flash (NAND Scrub!)
[2] Set the boot parameters...
[3] Select LCD type...
[4] Set network configuration...
[q] Return main Menu

Enter your selection: 1

NAND scrub: device 0 whole chip
Warning: scrub option will erase all factory set bad blocks!
        There is no reliable way to recover them.
        Use this command only for testing purposes if you
        are sure of what you are doing!

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

3. After returnee menu, press 'q' button for going back to the main menu



```
are sure of what you are doing!

Really scrub this NAND flash? <y/N> : y
Erasing at 0xb320000 -- 70% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xdea0000 -- 87% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xe3c0000 -- 89% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xf5c0000 -- 96% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xfd60000 -- 99% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xffe0000 -- 100% complete.
OK
-----  HGP ILUM2440 Settings menu  -----

[1] Erase NAND flash (NAND Scrub!)
[2] Set the boot parameters...
[3] Select LCD type...
[4] Set network configuration...
[q] Return main Menu

Enter your selection: q
```

### Download images to NAND-Flash

1. Press 'u'
2. To download "Steploader", Press '1'

**Note:** you should see "USB host is connected. Waiting a download." in the terminal. Otherwise there is a problem on USB connection or driver.

```

COM4 - PuTTY
-[u] HGP USB download mode
-[t] HGP TFTP download mode
-[m] HGP MMC download mode
-[s] Settings
-[r] Reset the board
-[q] go to Command line

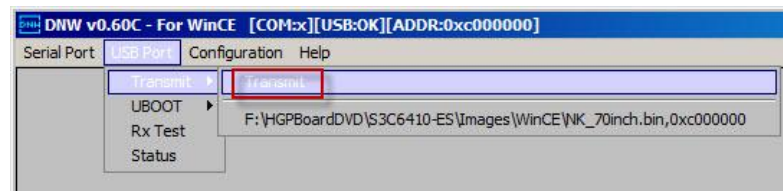
Enter your selection: u
----- HGP USB download mode selected -----

[1] Download u-boot or STEPLDR.nb1 or other bootloader to Nand Flash
[2] Download Eboot (eboot.nb0) to Nand Flash
[3] Download Linux Kernel (zImage.bin) to Nand Flash
[4] Download WinCE NK.bin to Nand Flash
[5] Download CRAMFS image to Nand Flash
[6] Download YAFFS image (root.bin) to Nand Flash
[7] Download Program (uCOS-II or Executable File) to SDRAM and Run it
[8] Boot the system
[9] Download User Program (eg: uCOS-II or Executable File)
[0] Download LOGO Picture (.bin) to Nand Flash
[a] Download u-boot to Nor Flash
[b] Test Linux Image (zImage)
[q] Return main Menu

Enter your selection: 1
USB host is connected. Waiting a download.

```

3. Then do the following on **DNW**:
  - a. Click the transmit submenu from the USB Port menu
  - b. Select Steploader file for NAND-Flash (like "ILUM2440-STEPLDR.nb1")



4. To download Eboot, Press '2'
5. Then do the following on **DNW**:
  - a. Click the transmit submenu from the USB Port menu
  - b. Select Eboot file for NAND-Flash (like "ILUM2440-Eboot-usb.nb0")
6. Set boot switch to NAND and Reset the board.
7. Press "Space" before timeout.
8. Press "f", Then "9" after that press "u"
9. Then do the following on **DNW**:
  - a. Click the transmit submenu from the USB Port menu

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- b. Select NK file for NAND-Flash (like “*ILUM2440-NK.bin*”)

In this step, ILUM2440 burns NK file to the NAND-Flash.

This may take several minuets.



## Install Linux

### SD card

Do the following:

1. Format the SD card with below options:
  - a. File system → fat 32
  - b. Allocation unit size → default
2. Copy the below files with specified names to the SD card:
  - a. Boot loader → ILUM2440-Uboot.bin
  - b. Kernel Image → ILUM2440-Kernel.img
  - c. Logo → ILUM2440-LOGO.bin
  - d. RootFS → ILUM2440-RootFS.img
  - e. Config → ILUM2440-config.txt (to select LCD type, check figure 1)
3. Insert SD card to the board
4. Connect serial and power cable
5. Configure the putty or other terminal app with below setting:
  - a. Baudrate → 115200
  - b. Stop bit → 1
  - c. No parity
  - d. No flow control
6. Set boot switch to NOR and Reset the board.
7. Wait for time out or press enter

This process may take a long time. When is finished, the board will restart after a beep.

### USB

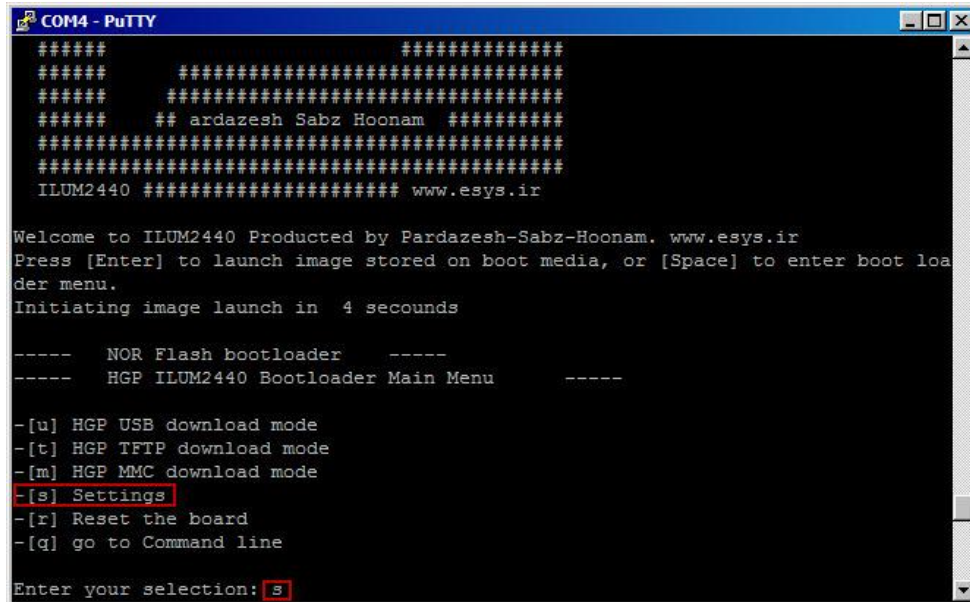
Do the following:

#### Prepare to download

6. Connect serial, power and USB cable
7. Configure the putty or other terminal application with below setting:
  - a. Baudrate → 115200
  - b. Stop bit → 1
  - c. No parity
  - d. No flow control
8. If the USB driver has not installed, you can install it from folder 'Drivers'
9. Set boot switch to NOR and Reset the board.
10. Before time out, press space button

### Select LCD type

1. Press 's' from the appeared menu



```

COM4 - PuTTY
#####
#####
#####  ## ardazesh Sabz Hoonam  #####
#####
#####
ILUM2440 ##### www.esys.ir

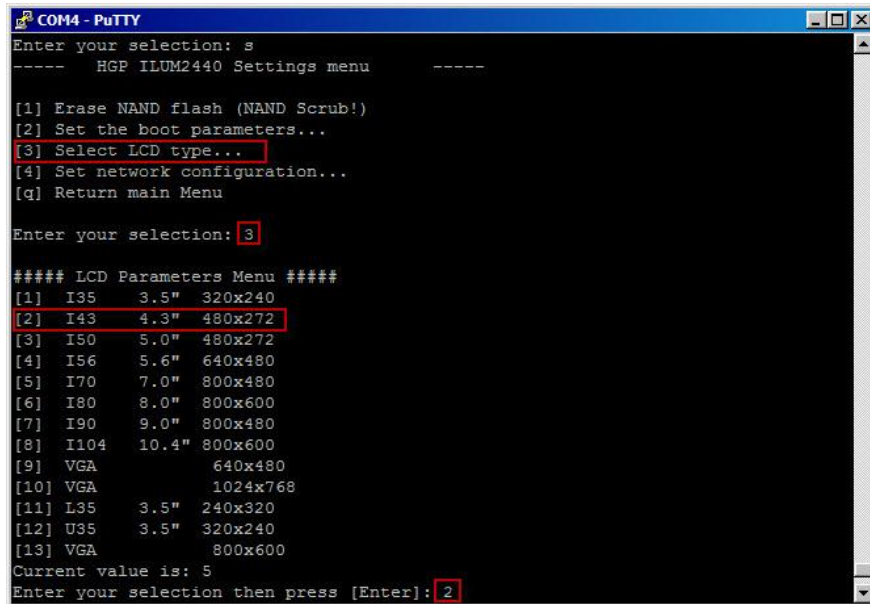
Welcome to ILUM2440 Produced by Pardazesh-Sabz-Hoonam. www.esys.ir
Press [Enter] to launch image stored on boot media, or [Space] to enter boot loader menu.
Initiating image launch in 4 seconds

-----  NOR Flash bootloader  -----
-----  HGP ILUM2440 Bootloader Main Menu  -----

-[u] HGP USB download mode
-[t] HGP TFTP download mode
-[m] HGP MMC download mode
-[s] Settings
-[r] Reset the board
-[q] go to Command line

Enter your selection: s
  
```

2. Press '3'
3. Select type of your LCD depend on size or model (mine is 2) then press 'Enter'



```

COM4 - PuTTY
Enter your selection: s
-----  HGP ILUM2440 Settings menu  -----

[1] Erase NAND flash (NAND Scrub!)
[2] Set the boot parameters...
[3] Select LCD type...
[4] Set network configuration...
[q] Return main Menu

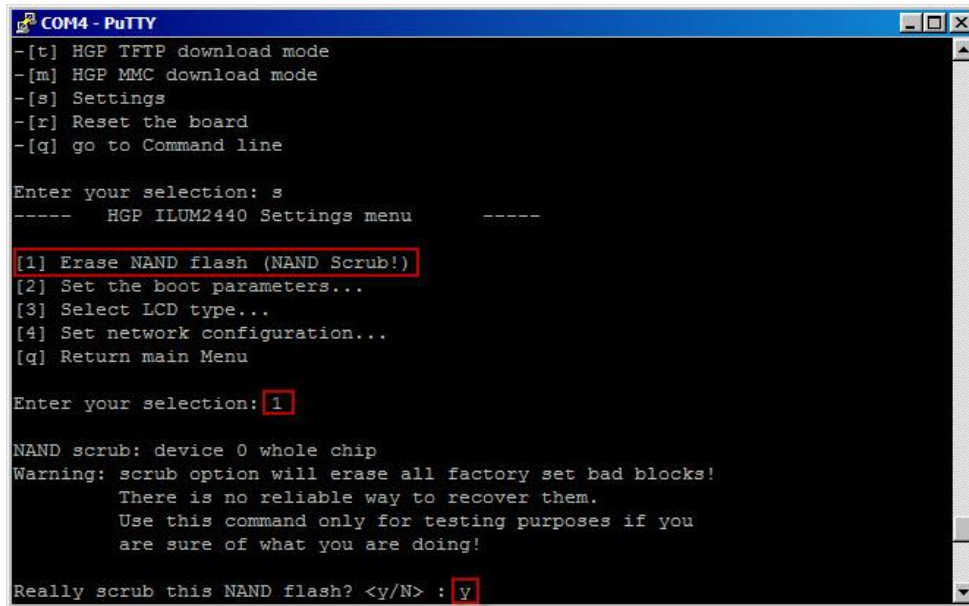
Enter your selection: 3

#### LCD Parameters Menu ####
[1] I35 3.5" 320x240
[2] I43 4.3" 480x272
[3] I50 5.0" 480x272
[4] I56 5.6" 640x480
[5] I70 7.0" 800x480
[6] I80 8.0" 800x600
[7] I90 9.0" 800x480
[8] I104 10.4" 800x600
[9] VGA 640x480
[10] VGA 1024x768
[11] L35 3.5" 240x320
[12] U35 3.5" 320x240
[13] VGA 800x600
Current value is: 5
Enter your selection then press [Enter]: 2
  
```

### Format the NAND-Flash

WARNING: After this action all data in the NAND flash will be lost.

4. Press '1'
5. Press 'y' then 'Enter'



```
COM4 - PuTTY
-[t] HGP TFTP download mode
-[m] HGP MMC download mode
-[s] Settings
-[r] Reset the board
-[q] go to Command line

Enter your selection: s
----- HGP ILUM2440 Settings menu -----

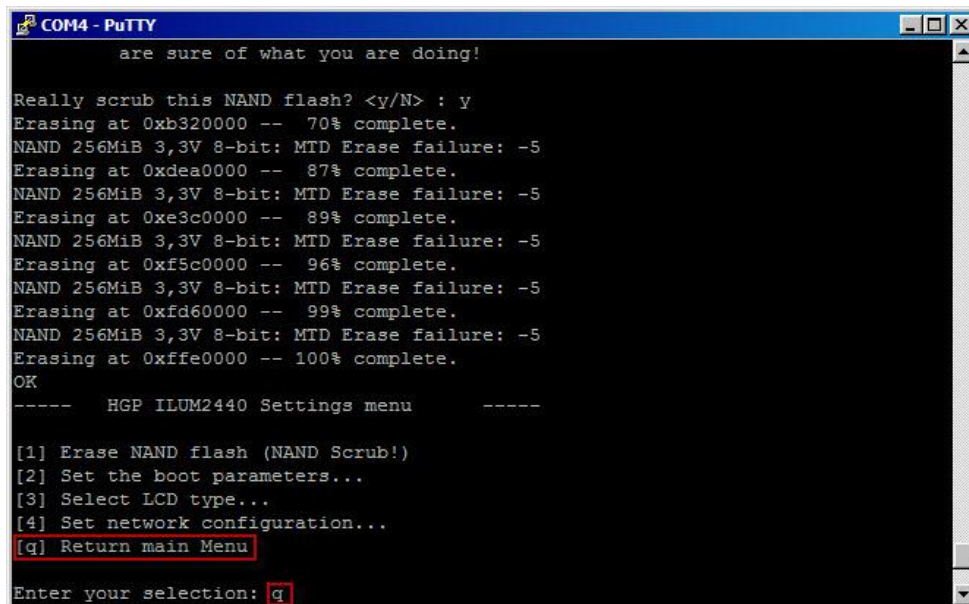
[1] Erase NAND flash (NAND Scrub!)
[2] Set the boot parameters...
[3] Select LCD type...
[4] Set network configuration...
[q] Return main Menu

Enter your selection: 1

NAND scrub: device 0 whole chip
Warning: scrub option will erase all factory set bad blocks!
        There is no reliable way to recover them.
        Use this command only for testing purposes if you
        are sure of what you are doing!

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

6. After returnee menu, press 'q' button for going back to the main menu



```
are sure of what you are doing!

Really scrub this NAND flash? <y/N> : y
Erasing at 0xb320000 -- 70% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xde40000 -- 87% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xe3c0000 -- 89% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xf5c0000 -- 96% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xfd60000 -- 99% complete.
NAND 256MiB 3,3V 8-bit: MTD Erase failure: -5
Erasing at 0xffe0000 -- 100% complete.
OK
----- HGP ILUM2440 Settings menu -----

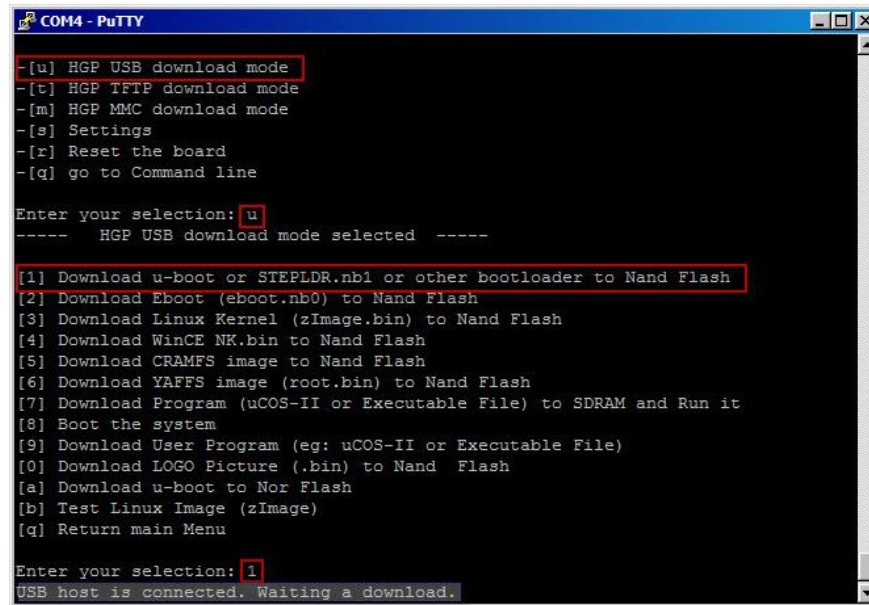
[1] Erase NAND flash (NAND Scrub!)
[2] Set the boot parameters...
[3] Select LCD type...
[4] Set network configuration...
[q] Return main Menu

Enter your selection: q
```

### Download images to NAND-Flash

10. Press 'u'
11. To download Uboot, Press '1'

**Note:** you should see "USB host is connected. Waiting a download." in the terminal. Otherwise there is a problem on USB connection or driver.



```

COM4 - PuTTY

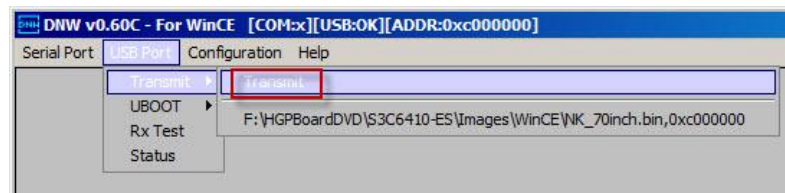
-[u] HGP USB download mode
-[t] HGP TFTP download mode
-[m] HGP MMC download mode
-[s] Settings
-[r] Reset the board
-[q] go to Command line

Enter your selection: u
----- HGP USB download mode selected -----

[1] Download u-boot or STEPLDR.nb1 or other bootloader to Nand Flash
[2] Download Eboot (eboot.nb0) to Nand Flash
[3] Download Linux Kernel (zImage.bin) to Nand Flash
[4] Download WinCE NK.bin to Nand Flash
[5] Download CRAMFS image to Nand Flash
[6] Download YAFFS image (root.bin) to Nand Flash
[7] Download Program (uCOS-II or Executable File) to SDRAM and Run it
[8] Boot the system
[9] Download User Program (eg: uCOS-II or Executable File)
[0] Download LOGO Picture (.bin) to Nand Flash
[a] Download u-boot to Nor Flash
[b] Test Linux Image (zImage)
[q] Return main Menu

Enter your selection: 1
USB host is connected. Waiting a download.
  
```

12. Then do the following on DNW:
  - a. Click the transmit submenu from the USB Port menu
  - b. Select Uboot file for NAND-Flash (like "ILUM2440-Uboot.bin")



13. To download Kernel, Press '3'

## Burn Images

```

COM4 - PuTTY
Erasing at 0x20000 -- 100% complete.
OK

NAND write: device 0 offset 0x0, size 0x307c4

Writing data at 0x30000 -- 100% complete.
198596 bytes written: OK
Erasing Nand...Writing to Nand... done
----- HGP USB download mode selected -----

[1] Download u-boot or STEPLDR.nbl or other bootloader to Nand Flash
[2] Download Eboot (eboot.nb0) to Nand Flash
[3] Download Linux Kernel (zImage.bin) to Nand Flash
[4] Download WinCE NK.bin to Nand Flash
[5] Download CRAMFS image to Nand Flash
[6] Download YAFFS image (root.bin) to Nand Flash
[7] Download Program (uCOS-II or Executable File) to SDRAM and Run it
[8] Boot the system
[9] Download User Program (eg: uCOS-II or Executable File)
[0] Download LOGO Picture (.bin) to Nand Flash
[a] Download u-boot to Nor Flash
[b] Test Linux Image (zImage)
[q] Return main Menu

Enter your selection: 3
USB host is connected. Waiting a download.

```

14. Then do the following on **DNW**:
  - a. Click the transmit submenu from the USB Port menu
  - b. Select Kernel file for NAND-Flash (like "ILUM2440-kernel.img")
15. To download Logo, Press '0'

```

COM4 - PuTTY
NAND erase: device 0 offset 0x200000, size 0x300000
Erasing at 0x4e0000 -- 100% complete.
OK

NAND write: device 0 offset 0x200000, size 0x1da188

Writing data at 0x3da000 -- 100% complete.
1941896 bytes written: OK
----- HGP USB download mode selected -----

[1] Download u-boot or STEPLDR.nbl or other bootloader to Nand Flash
[2] Download Eboot (eboot.nb0) to Nand Flash
[3] Download Linux Kernel (zImage.bin) to Nand Flash
[4] Download WinCE NK.bin to Nand Flash
[5] Download CRAMFS image to Nand Flash
[6] Download YAFFS image (root.bin) to Nand Flash
[7] Download Program (uCOS-II or Executable File) to SDRAM and Run it
[8] Boot the system
[9] Download User Program (eg: uCOS-II or Executable File)
[0] Download LOGO Picture (.bin) to Nand Flash
[a] Download u-boot to Nor Flash
[b] Test Linux Image (zImage)
[q] Return main Menu

Enter your selection: 0
USB host is connected. Waiting a download.

```

16. Then do the following on **DNW**:
  - a. Click the transmit submenu from the USB Port menu
  - b. Select Logo file for NAND-Flash (like "ILUM2440-logo.bin")
17. To download RootFS, Press '6'



## Burn Images

```
COM4 - PuTTY
NAND erase: device 0 offset 0x100000, size 0x100000
Erasing at 0x1e0000 -- 100% complete.
OK

NAND write: device 0 offset 0x100000, size 0x5fa36
Writing data at 0x15f800 -- 100% complete.
391734 bytes written: OK
----- HGP USB download mode selected -----

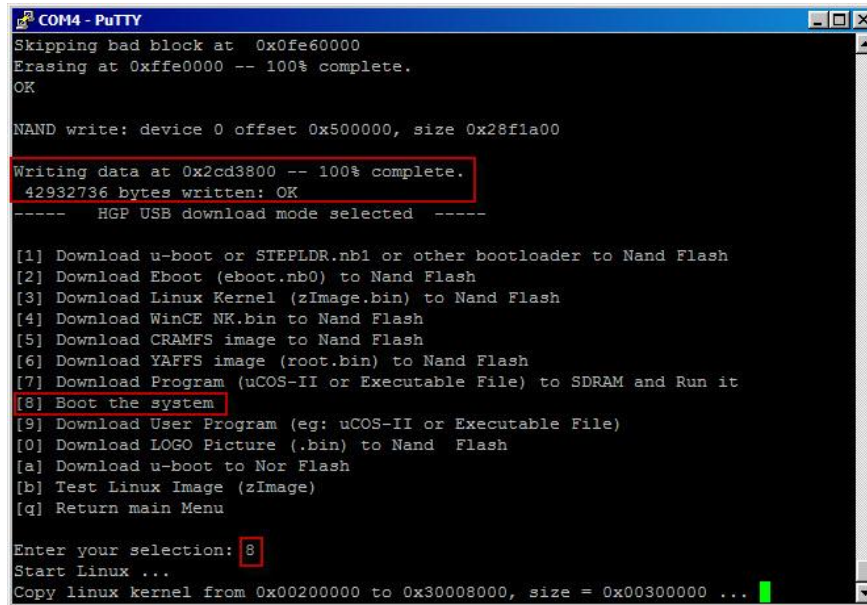
[1] Download u-boot or STEPLDR.nbl or other bootloader to Nand Flash
[2] Download Eboot (eboot.nb0) to Nand Flash
[3] Download Linux Kernel (zImage.bin) to Nand Flash
[4] Download WinCE NK.bin to Nand Flash
[5] Download CRAMFS image to Nand Flash
[6] Download YAFFS image (root.bin) to Nand Flash
[7] Download Program (uCOS-II or Executable File) to SDRAM and Run it
[8] Boot the system
[9] Download User Program (eg: uCOS-II or Executable File)
[0] Download LOGO Picture (.bin) to Nand Flash
[a] Download u-boot to Nor Flash
[b] Test Linux Image (zImage)
[q] Return main Menu

Enter your selection: 6
USB host is connected. Waiting a download.
```

18. Then do the following on **DNW**:
- Click the transmit submenu from the USB Port menu
  - Select RootFS file for NAND-Flash (like "*ILUM2440-RootFS.img*")

## Boot the board

Press '8' or set boot switch to NAND and Reset the board.



```
COM4 - PuTTY
Skipping bad block at 0x0fe60000
Erasing at 0xffe0000 -- 100% complete.
OK
NAND write: device 0 offset 0x500000, size 0x28f1a00
Writing data at 0x2cd3800 -- 100% complete.
42932736 bytes written: OK
----- HGP USB download mode selected -----

[1] Download u-boot or STEPLDR.nb1 or other bootloader to Nand Flash
[2] Download Eboot (eboot.nb0) to Nand Flash
[3] Download Linux Kernel (zImage.bin) to Nand Flash
[4] Download WinCE NK.bin to Nand Flash
[5] Download CRAMFS image to Nand Flash
[6] Download YAFFS image (root.bin) to Nand Flash
[7] Download Program (uCOS-II or Executable File) to SDRAM and Run it
[8] Boot the system
[9] Download User Program (eg: uCOS-II or Executable File)
[0] Download LOGO Picture (.bin) to Nand Flash
[a] Download u-boot to Nor Flash
[b] Test Linux Image (zImage)
[q] Return main Menu

Enter your selection: 8
Start Linux ...
Copy linux kernel from 0x00200000 to 0x30008000, size = 0x00300000 ...
```