



Zoom™ OMAP35x Development Kit User Manual

Logic PD // Products
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Revision History

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
G	JCA	Moved all BSP information to their respective User Manuals;	JCA	12/17/10

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1 Introduction

This document continues where the *Zoom OMAP35x Development Kit QuickStart Guide* concluded. The purpose of this document is to present information that may be useful after you've unpacked your kit, run through the demo, and are ready to begin development work. This document also points you to other resources depending upon your specific development needs.

1.1 What You Will Need

The following items will be needed for the procedures described in this document:

- Zoom OMAP35x Development Kit [registered on Logic PD's website](#)¹
- Host PC (this document was written assuming a Windows XP host PC)
- SD card reader
- SD card
- Active Internet connection
- Serial cable (included in development kit)
- Terminal emulation program (e.g., Tera Term)

2 Formatting a Bootable SD Card

The OMAP35x processor supports booting from SD and several procedures in this document walk you through a process using a bootable SD card. This section describes how to format an SD card so the OMAP35x Development Kit will recognize it as a bootable device.

A requirement of the OMAP processor is that the SD card must be formatted without an extended partition to boot properly. The built-in Windows formatting tool is not always able to do this. It has been found that the HP USB Formatting Tool version 2.0.6 appears to be the best tool for formatting an SD card so it can be used to boot an OMAP35x device. (**NOTE:** If you are using Linux or have access to a Linux box, you can find instructions on [SD/MMC format for OMAP3 boot](#)² on the Texas Instruments Embedded Processors Wiki.)

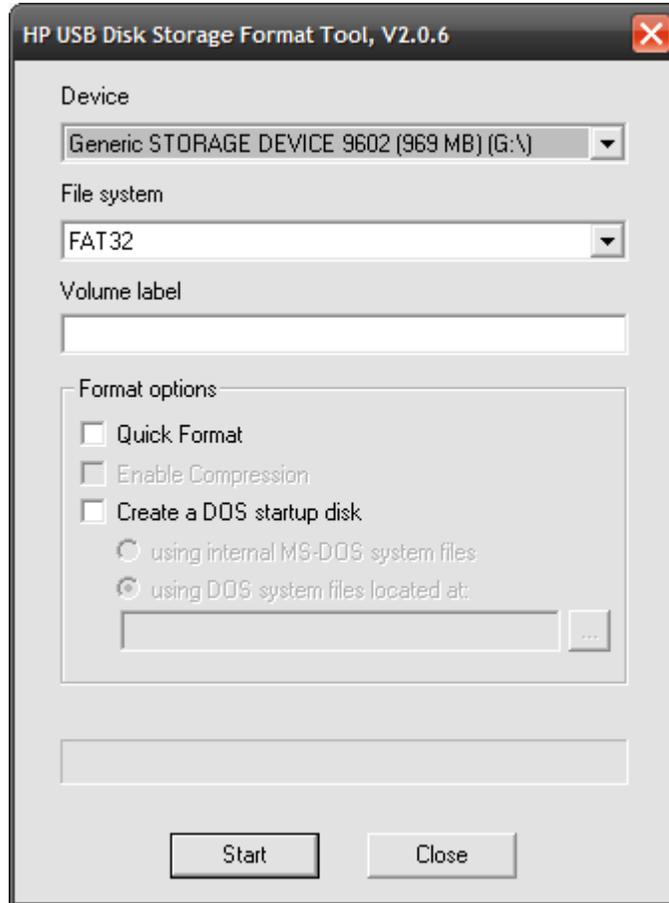
The most recent version of the tool available on HP's site doesn't seem to work as well as version 2.0.6. As such, the tool needs to be downloaded from any number of third-party websites. To find these websites, perform a Google search for: **HP formatting tool 2.0.6**. (**NOTE:** As with downloading anything from the Internet, use caution in what sites you visit and what you download. Logic PD has no association with any of these websites and makes no guarantees to their validity or the usability of downloads from their sites.)

1. After the HP USB formatting tool has been installed on your host PC, insert an SD card into your USB card reader and open the formatting tool. (**IMPORTANT:** Remember that formatting an SD card will erase its entire contents; back-up the SD card's contents before continuing or select a card that doesn't contain vital information.)

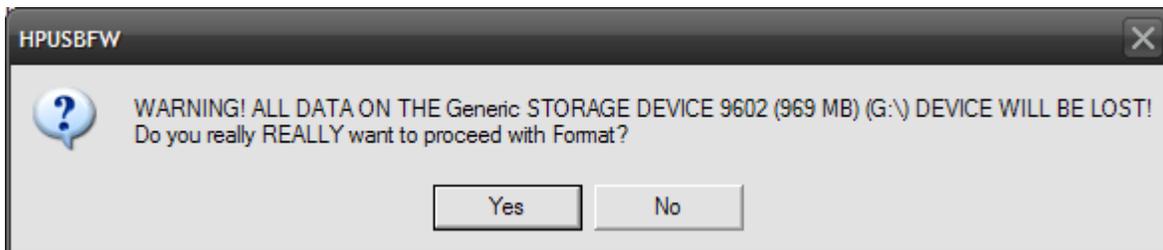
¹ http://support.logicpd.com/auth/register_product.php

² http://processors.wiki.ti.com/index.php/MMC_Boot_Format

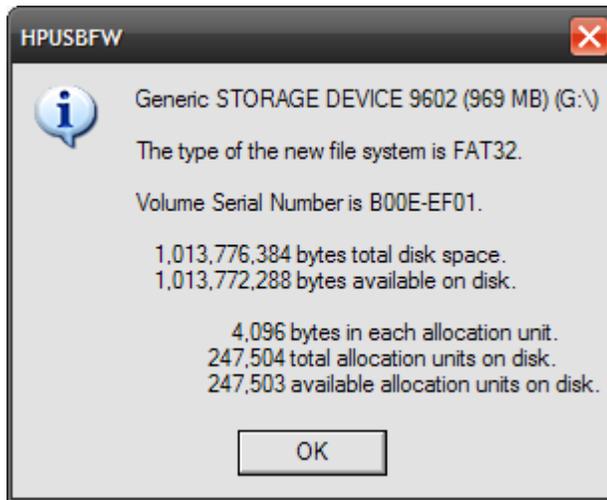
2. Select the SD card device and **FAT32** from the File System drop-down menu. Click **Start**.



3. You will receive a warning that the contents of the card will be erased. Assuming you have backed-up the contents of the SD card, click **Yes**.



4. When formatting completes, you will receive a confirmation screen with the new file system type and the space allocation on the card similar to the window shown below.



You are now ready to add LogicLoader files (see Section 3) or the NAND flash recovery files (see Section 4) to the SD card and boot from SD.

3 Update LogicLoader

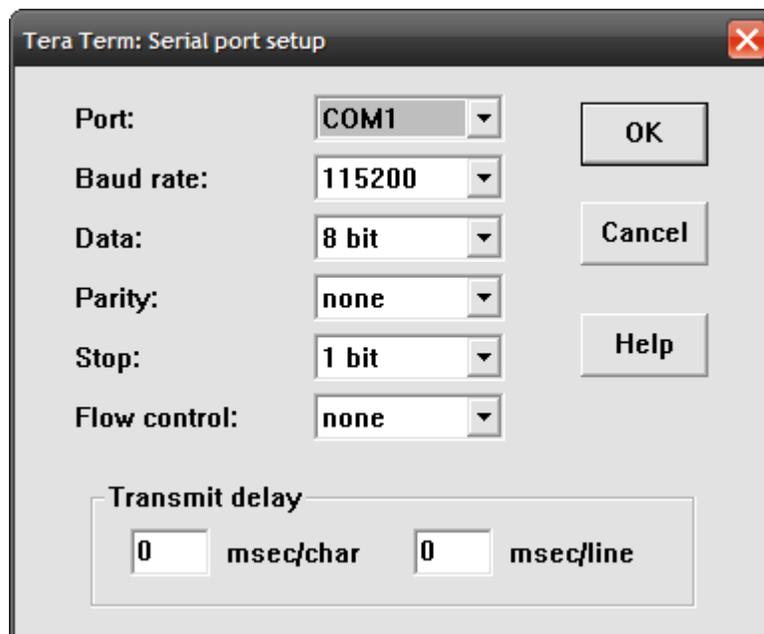
This section will walk you through the process for updating the LogicLoader bootloader software on your OMAP35x SOM-LV.

3.1 Setup Tera Term

Tera Term is a terminal emulation program available as a free download from the Internet. Logic PD recommends the use of Tera Term over HyperTerminal as it appears to be a more stable program; the instructions in this document assume the use of Tera Term.

All Tera Term settings are controlled by an .ini file that you can modify as needed to make your time in Tera Term as efficient as possible. For example you can preset the port settings.

1. Start the Tera Term program
2. From the menu, select **Setup > Serial port**
3. Select the appropriate COM port for your workstation and then change the port settings to:
 - a. Baud rate: 115200
 - b. Data: 8 bit
 - c. Parity: None
 - d. Stop: 1 bit
 - e. Flow control: None

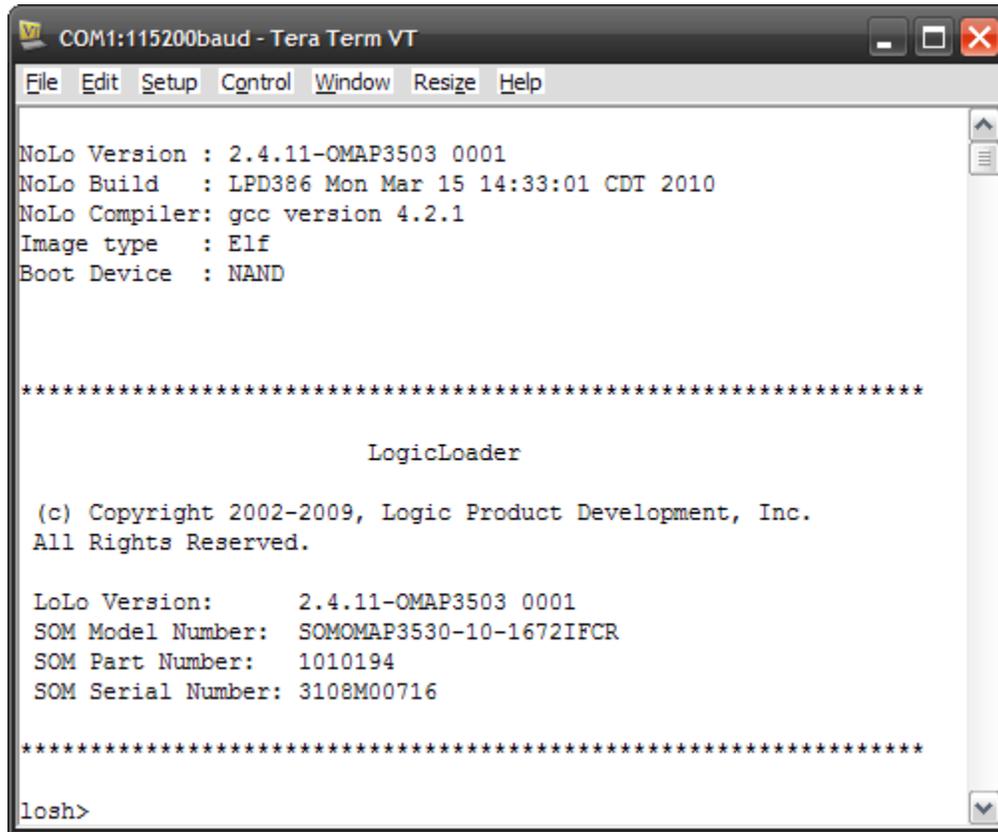


4. Click **OK**

3.2 Connect the Kit to the Host PC

1. Use the serial cable included with your kit to connect the serial port on the baseboard to the appropriate port on your host PC.

2. Power on your kit and hold down the **v** key on the keyboard. Doing this will provide specific boot information in the LogicLoader output. For instance, in the image below you see that the image type is `Elf` and it booted from the `NAND` device. This is a helpful trick to use to determine if your development kit is booting from the onboard NAND flash or the SD card.



```

COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help
NoLo Version : 2.4.11-OMAP3503 0001
NoLo Build   : LPD386 Mon Mar 15 14:33:01 CDT 2010
NoLo Compiler: gcc version 4.2.1
Image type  : Elf
Boot Device  : NAND

*****

                        LogicLoader

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LoLo Version:      2.4.11-OMAP3503 0001
SOM Model Number:  SOMOMAP3530-10-1672IFCR
SOM Part Number:   1010194
SOM Serial Number: 3108M00716

*****

losh>

```

3. Take note of what LoLo Version number appears in this welcome prompt. This will help you know if you need to upgrade to a new version.
4. Power off your kit.

3.3 Download New Version of LogicLoader

1. Log into Logic PD's [download site](http://support.logicpd.com/auth/)³ using your username and password.
2. Click on the **All Downloads** link for the *OMAP35x Zoom Development Kit*.
3. Scroll down until you find the section header *LogicLoader Bootloader/Monitor*.
4. Click on the **+** icon next to **LogicLoader for the OMAP35x SOM-LV** link; this expands the list of all available LogicLoader versions. If the current version is newer than what is on your OMAP35x SOM-LV, you should update.
5. Click on the version number marked (*current*) and save the file to your host PC.
6. After the .zip file finishes downloading, extract all files of the folder to a location on your host PC that you can access later on.

Now that you have downloaded the latest version of LogicLoader to your computer, you can update LogicLoader on your development kit using a bootable SD card.

³ <http://support.logicpd.com/auth/>

3.4 Update LogicLoader Using a Bootable SD card

1. Prepare a bootable SD card as described in Section 2.
2. Locate the LogicLoader files that you downloaded to your host PC (see Section 3.3).
3. Copy the *MLO* file from that folder to the SD card. **IMPORTANT: This file must be the first added to the SD card for the kit to boot properly.**
4. Next, copy the *lboot.elf* file to the SD card.
5. Remove the SD card from your USB card reader and insert it into the SD card slot on your OMAP35x Development Kit.
6. Press the POWER ON/OFF button to power the kit on and you should see a screen similar to what is shown below. (**Hint:** You can hold down the **v** key on the keyboard during boot-up to verify the Boot Device is `SDMMC` indicating the kit booted from the SD card.)

```

COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help
NoLo Version : 2.4.13P2-OMAP3503 0001
NoLo Build   : MPLSWKS386 Wed Oct 20 12:16:31 CDT 2010
NoLo Compiler: gcc version 4.2.1
Platform    : OMAP35x SOM-LV
Image type  : Elf
Boot Device  : SDMMC

*****

                        LogicLoader

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LoLo Version:      2.4.13P2-OMAP3503 0001
SOM Model Number:  SOMOMAP3530-10-1672IFCR
SOM Part Number:   1010194
SOM Serial Number: 3108M00716

*****

losh>

```

Notice that the LoLo Version number now shows the version you downloaded from the Logic PD website. This is because you have booted from the SD card containing that version.

7. Because LogicLoader resides in NAND, it is necessary to erase the old LogicLoader on the OMAP35x SOM-LV before updating. Type `erase /dev/nand0 B0 B2048` and press the Enter key.

```

COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help

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All Rights Reserved.

LoLo Version:      2.4.13P2-OMAP3503 0001
SOM Model Number:  SOMOMAP3530-10-1672IFCR
SOM Part Number:   1010194
SOM Serial Number: 3108M00716

*****

losh> erase /dev/nand0 B0 B2048
erasing nand: 100%
Warning some of the blocks were not erased
erased '/dev/nand0' start=0x0: len=0x7f5 bytes/blocks skipped 11
losh>

```

8. Type **update** and press the Enter key.

```

COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help

All Rights Reserved.

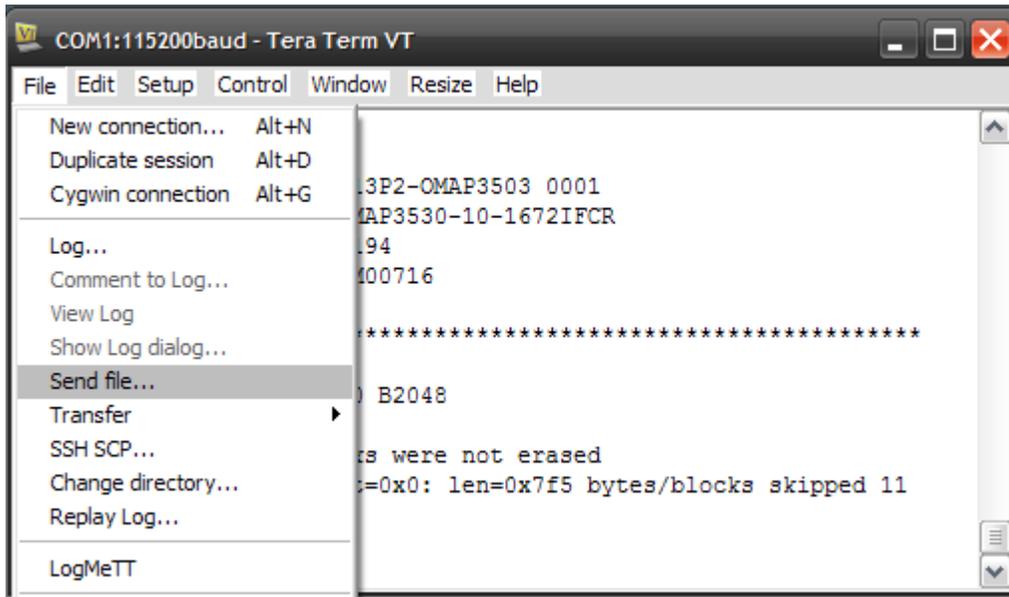
LoLo Version:      2.4.13P2-OMAP3503 0001
SOM Model Number:  SOMOMAP3530-10-1672IFCR
SOM Part Number:   1010194
SOM Serial Number: 3108M00716

*****

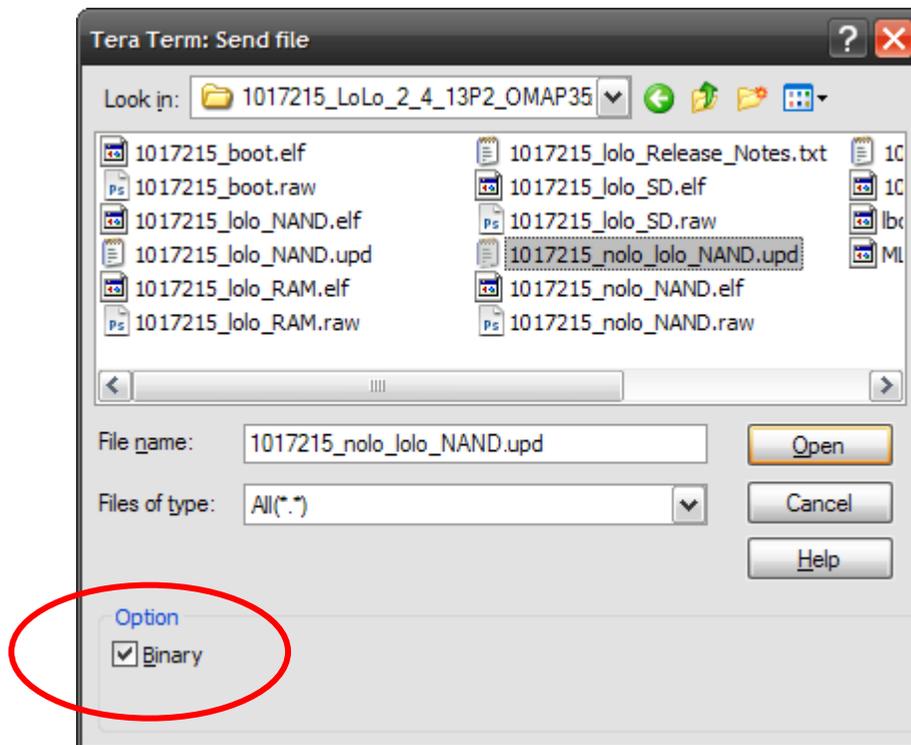
losh> erase /dev/nand0 B0 B2048
erasing nand: 100%
Warning some of the blocks were not erased
erased '/dev/nand0' start=0x0: len=0x7f5 bytes/blocks skipped 11
losh> update
send update file:
█

```

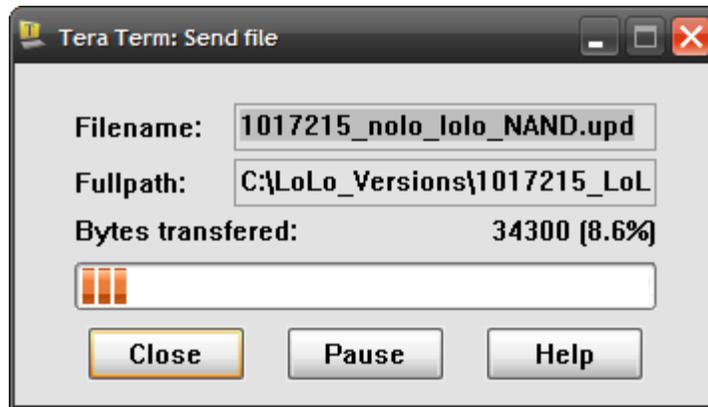
- LogicLoader is waiting for you to send the new version over the serial port. From the menu, select **File > Send file** to send the new LogicLoader version to your OMAP35x SOM-LV.



- Navigate to the location where you extracted the LogicLoader files and select the file that includes *nolo_lolo_NAND.upd*. This file contains both NoLo and LoLo components necessary for updating LogicLoader. If you do not see a file that includes *nolo_lolo_NAND.upd*, please refer to the *Release_Notes.txt* included in the LogicLoader version download for special instructions.
- Verify that the Binary checkbox is checked. Click **Open**.



12. Tera Term will begin sending the file to the OMAP35x SOM-LV.



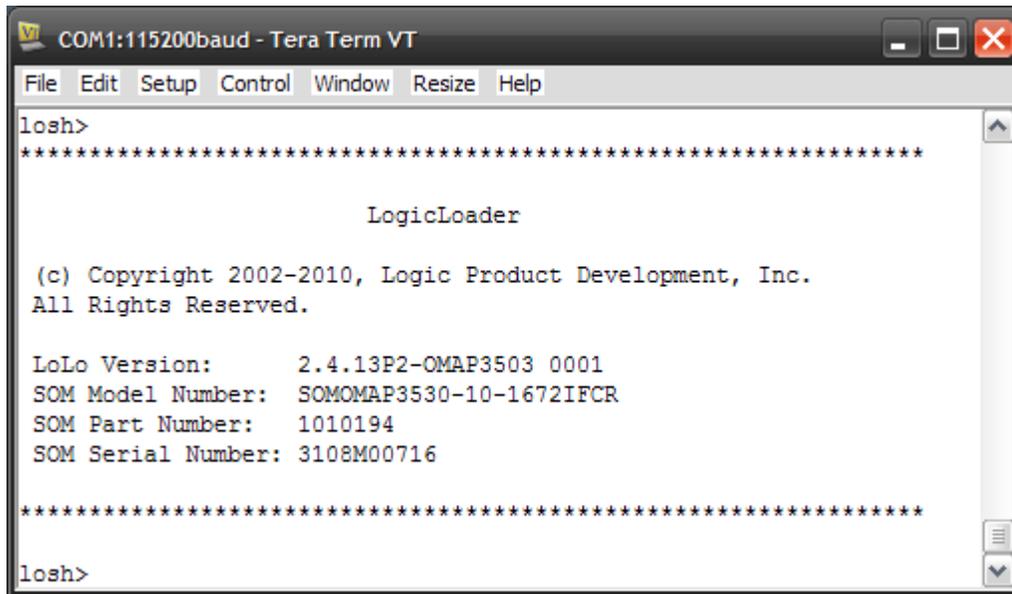
13. Verify that the download was successful by waiting for an `update done` message to appear.

```

COM1:115200baud - Tera Term VT
File Edit Setup Control Window Resize Help
SOM Serial Number: 3108M00716
*****
losh> erase /dev/nand0 B0 B2048
erasing nand: 100%
Warning some of the blocks were not erased
erased '/dev/nand0' start=0x0: len=0x7f5 bytes/blocks skipped 11
losh> update
send update file:
.....
.....
YAFFS core: yaffs: Mounting temp
YAFFS core: save exit: isCheckpointed 1
update done.
losh>

```

14. Remove the SD card from your development kit and press the RESET button on the baseboard.

A screenshot of a terminal window titled "COM1:115200baud - Tera Term VT". The window has a menu bar with "File", "Edit", "Setup", "Control", "Window", "Resize", and "Help". The terminal content shows a "losh>" prompt, followed by a line of asterisks, then the text "LogicLoader", "(c) Copyright 2002-2010, Logic Product Development, Inc. All Rights Reserved.", and a list of system information: "LoLo Version: 2.4.13P2-OMAP3503 0001", "SOM Model Number: SOMOMAP3530-10-1672IFCR", "SOM Part Number: 1010194", and "SOM Serial Number: 3108M00716". This is followed by another line of asterisks and a final "losh>" prompt. The terminal has a scrollbar on the right side.

15. If the new version number is displayed, you now have the updated version of LogicLoader installed on your OMAP35x SOM-LV.

4 Recover Corrupt Boot NAND Flash

This section describes how to recover corrupt boot NAND flash on the OMAP35x Development Kit by using a bootable SD card.

4.1 Recovery via SD Card Procedure

1. Prepare a bootable SD card as described in Section 2.
2. Log into Logic PD's [download site](#) using your username and password.
3. Click on the **All Downloads** link for the *OMAP35x Zoom Development Kit*.
4. Scroll down until you find the section header *LogicLoader Bootloader/Monitor*.
5. Click on the **NAND Flash Recovery for OMAP35x SOM-LV** link and save the ZIP file to your host PC.
6. Extract all the files contained in the ZIP file; then copy the *MLO* file from that folder to the SD card. **IMPORTANT: This file must be the first added to the SD card for the kit to boot properly.**
7. Next, copy the remaining files to the SD card.
8. Eject the SD card from the host PC.
9. Power off the development kit and insert the SD card into the SD card socket on the development kit.
10. Power on the development kit.
11. The development kit shows an image on the 4.3" LCD display while the NAND flash is being reprogrammed.
12. When the process completes, the LCD display shows an updated image that indicates the process is complete.
13. Remove the SD card from the development kit and press the RESET button on the baseboard.
14. Your development kit should now boot from onboard NAND into the latest LogicLoader.
15. If the process fails, copy the entire Tera Term serial output and email the text to technical support using our [Ask A Question](#)⁴ web form.

⁴ <http://support.logicpd.com/support/askaquestion.php>

5 Software Documentation

A number of documents and resources are available from the Zoom OMAP35x Development Kit [downloads page](#)⁵. Below is a listing of the main software documents.

5.1 LogicLoader

- [LogicLoader User Manual](#)⁶ :: An overview of the LogicLoader bootloader, its capabilities, and how to use it
- [OMAP35x SOM-LV LogicLoader User Manual Addendum](#)⁷ :: LogicLoader details specific to the OMAP35x SOM-LV
- [LogicLoader Command Description Manual](#)⁸ :: Descriptions of all the LogicLoader commands
- [OMAP35x LogicLoader Labs](#)⁹ :: A series of informal labs that walk through LogicLoader basics

5.2 Windows Embedded CE

- [OMAP35x Windows CE 6.0 BSP User Manual](#)¹⁰ :: An overview of the Logic PD Windows CE BSP for the OMAP35x platforms

5.3 Linux

- [OMAP35x Linux BSP User Manual](#)¹¹ :: An overview of the Logic PD Linux BSP for the OMAP35x platforms

⁵ <http://support.logicpd.com/auth/downloads/OMAP35x%20Zoom%20Development%20Kit/>

⁶ <http://support.logicpd.com/downloads/1094/>

⁷ <http://support.logicpd.com/downloads/1103/>

⁸ <http://support.logicpd.com/downloads/1095/>

⁹ <http://support.logicpd.com/downloads/1096/>

¹⁰ <http://support.logicpd.com/downloads/1347/>

¹¹ <http://support.logicpd.com/downloads/1346/>