

IBoot System Software User's Guide

for use with the

Innovator™ Development Kit



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Preface

Read This First

About This Manual

This manual describes the integrated bootloader application, IBoot System Software, initially developed for and used on the Innovator™ Development Kit. This manual also describes how to load and use the IBoot Core and IBoot Host program.

Chapter 1	Introduction Provides an overview of IBoot System Software for the Innovator™ Development Kit.
Chapter 2	Tools Setup This chapter describes how to load and set up the software tools needed to load and use IBoot Core, IBoot Applets and IBoot Host.
Chapter 3	Loading IBoot Core This chapter shows how to load IBoot Core software using Code Composer Studio.
Chapter 4	Using IBoot Host This chapter describes how to load operating system image files and applets into memory using IBoot Host. It also explains how to update the IBoot Core software.
Chapter 5	IBoot Internal Test Software Provides instructions on how to use IBoot System Software, the embedded diagnostic package shipped with each Innovator™ Development Kit.

Please read each caution and warning carefully.

FCC Warning

This equipment is intended for use in a laboratory test environment only. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment in other environments may cause interference with radio communications, in which case the user at their own expense will be required to take whatever measures may be required to correct this interference.

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Change History

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Chapter 1 – Introduction

1.0 Introduction

This manual describes the integrated bootloader application, IBoot System Software, initially developed for and used on the Innovator™ Development Kit. It also describes how to load and use the IBoot programs.

The IBoot System Software is partitioned into two sub-systems the IBoot Core, which runs on an ARM MCP, and IBoot Host, which is a user application that runs on a PC. IBoot Core is resident in the Innovator™ Development Kit at all times, and is accessed by setting a dipswitch on the Processor Module and cycling the Innovator Module power switch or pressing the reset button on the Processor Module.

IBoot Host and IBoot Core support various connection types such as USB, Ethernet and Serial. The USB connection is the only connection type currently supported by this version of the IBoot Core and IBoot Host.

1.1 IBoot Overview

IBoot Core is a boot loader and event driven core that is feature expandable via Applets. Applets are dynamically loadable modules (DLM) that execute on the IBoot Core and may have a graphical user interface. Applets may be used to test chip features or peripheral devices or may serve as demonstration software.

1.1.1 IBoot Features

IBoot Core is a resident application that executes on an ARM MCP and:

- Is capable of running as a standalone application.
- Is updateable.
- Provides the user a means to test the peripherals and features of the product.
- Provides the user a means to diagnose problems.
- Utilizes a command interface and data link protocol.

1.2 IBoot Host Overview

IBoot Host provides a Graphical User Interface, running on a host machine that allows the user to load OS Images, IBoot Core files and IBoot Applets via the USB to an Innovator™ Development Kit device.

1.2.1 IBoot Host Features

IBoot Host is a user application that runs on a PC and provides connectivity to IBoot Core and:

- Employs Microsoft GUI standards.
- Allows the user to specify the connection type to the target device.
- Allows the user to select and download an OS image to the target device.
- Provides a user-friendly means for loading Applets.
- Provides an efficient mechanism for updating IBoot Core and Applets.
- Utilizes a command interface and data link protocol.
- Supports USB, RS232 Serial, JTAG and Ethernet connection types. (USB connection is the only connection type currently supported).

1.3 Host PC Requirements

Productivity Systems, Inc. recommends using a host PC with the following specifications:

- 400MHz or higher Pentium II processor or equivalent
- 30MB of free hard disk space
- 128MB of RAM
- SVGA (800 x 600) display minimum (1024x768 recommended)
- Local CD-ROM drive

Productivity Systems, Inc. supports the IBoot Host software on the following operating systems:

- Windows 2000 Pro: with all updates and Service Package 2 <http://windowsupdate.microsoft.com/>
- Windows XP Pro: with all updates
- Windows NT 4.0

NOTE: To install the IBoot System Software, you may need Administrator rights on your computer. See your Systems Administrator for assistance.

WARNING! - Installing the IBoot Host software on other operating systems is at the users own risk and may cause unpredictable behavior. Windows 95, 98, and XP are not supported at this time.

Chapter 2 – Tools Setup

2.0 Tools Setup

This chapter describes how to load and set up the tools used by the IBoot System Software. These include:

- IBoot Host
- USB Driver for the Innovator Module
- Spectrum Digital XDS510PP+ Drivers
- Code Composer Studio
- Code Composer Studio GEL Scripts

Before starting the installation of the required software packages, the user installing the software may need to have administrative rights on the computer.

NOTE: NT User's must use the NT Installation procedures; the USB driver will be loaded automatically during IBoot Host Installation.

2.1 IBoot Host Installation from the Innovator™ Development Kit CD

Before software downloads can be performed using the IBoot System Software, IBoot Host must be loaded on the host PC. After IBoot Host has been loaded, it will be necessary to load an Innovator USB driver in order to connect the Innovator Module to the host PC. To load IBoot Host, proceed as follows:

Step 1: Locate the setup.exe file on the Innovator™ Development Kit CD. The path is: D:\DCB_Install\Setup_1.3.6.

Step 2: Double-click on the setup file. Click **Next** when the InstallShield Wizard Welcome screen appears.

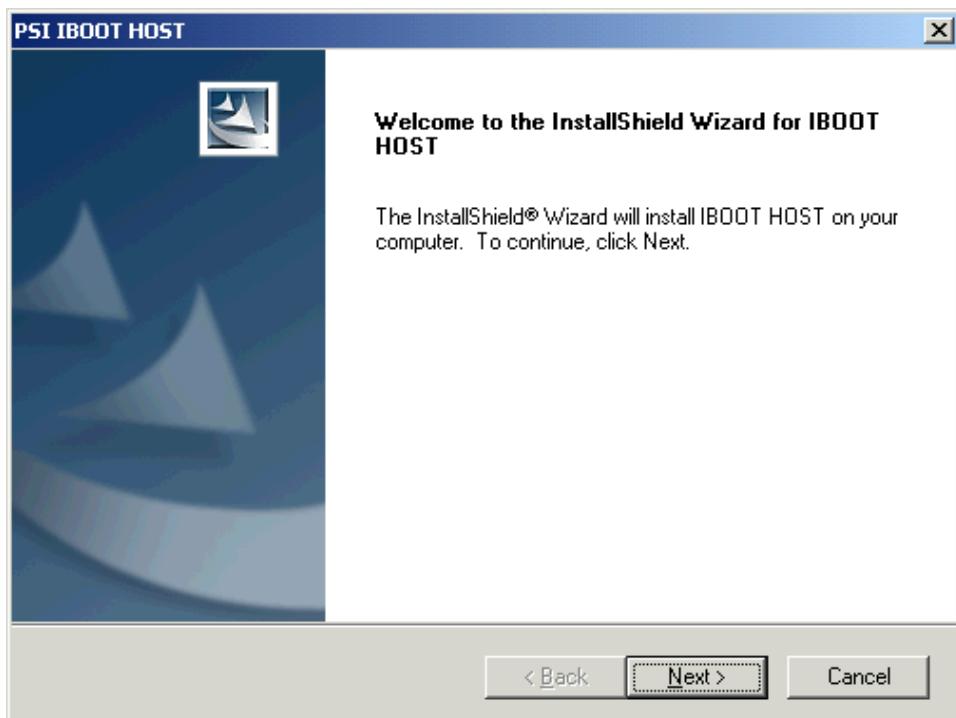


Figure 1. InstallShield Wizard Welcome Screen

Step 3: Enter a location for the IBoot Host program, or use the default setting. Click **Next**.

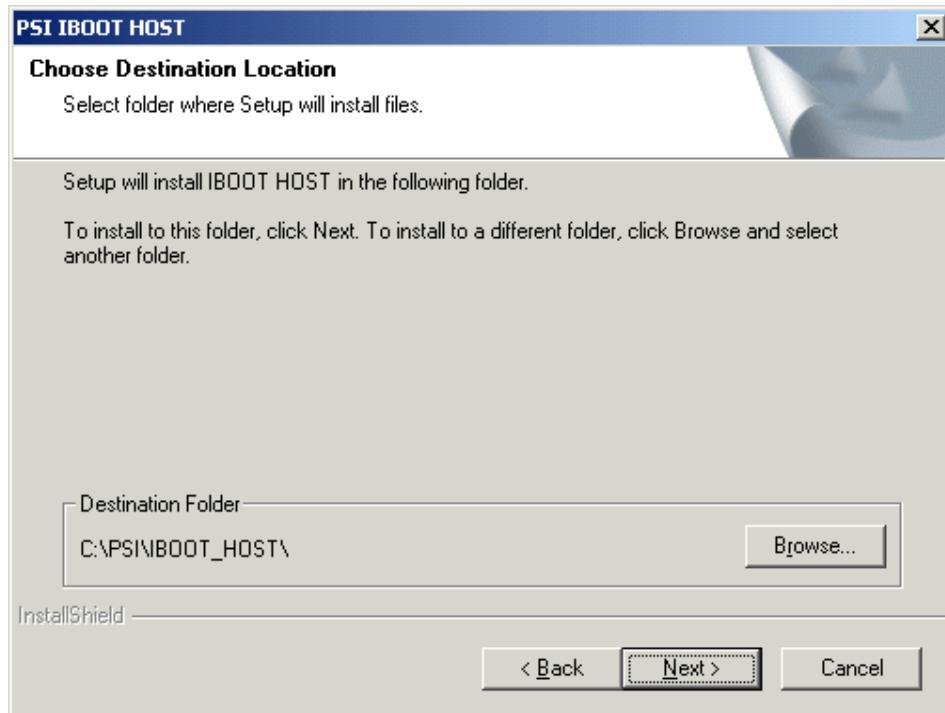


Figure 2. Destination Folder Screen

Step 4: Select the Setup Type. *Typical* is recommended in most cases. Click **Next**.

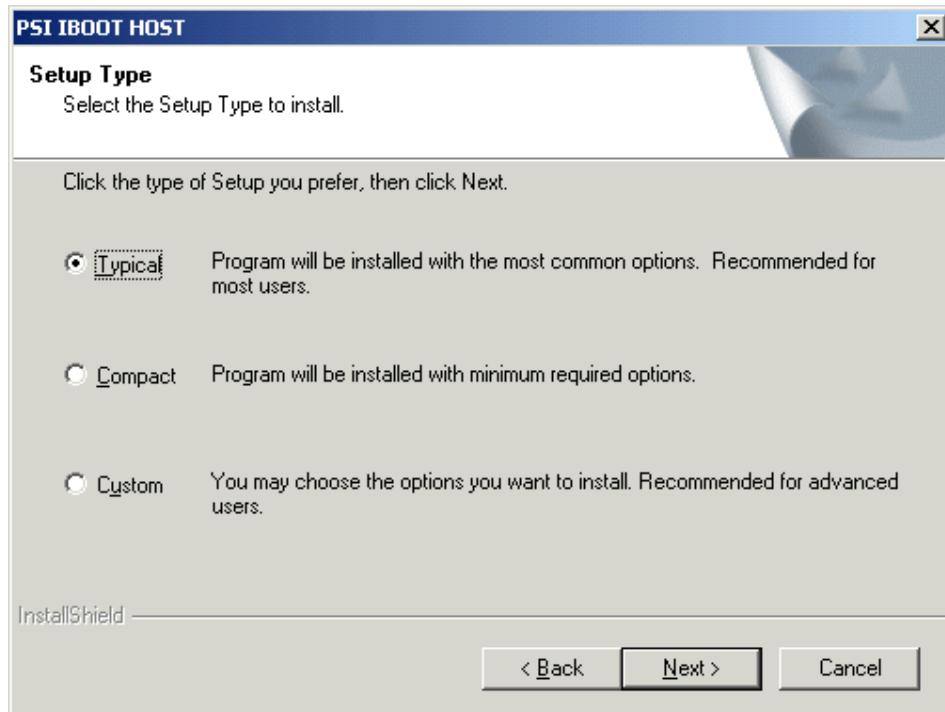


Figure 3. Installation Type Screen

Step 5: The setup status is displayed while the program is being loaded. Setup can be stopped at any time using the **Cancel** button.

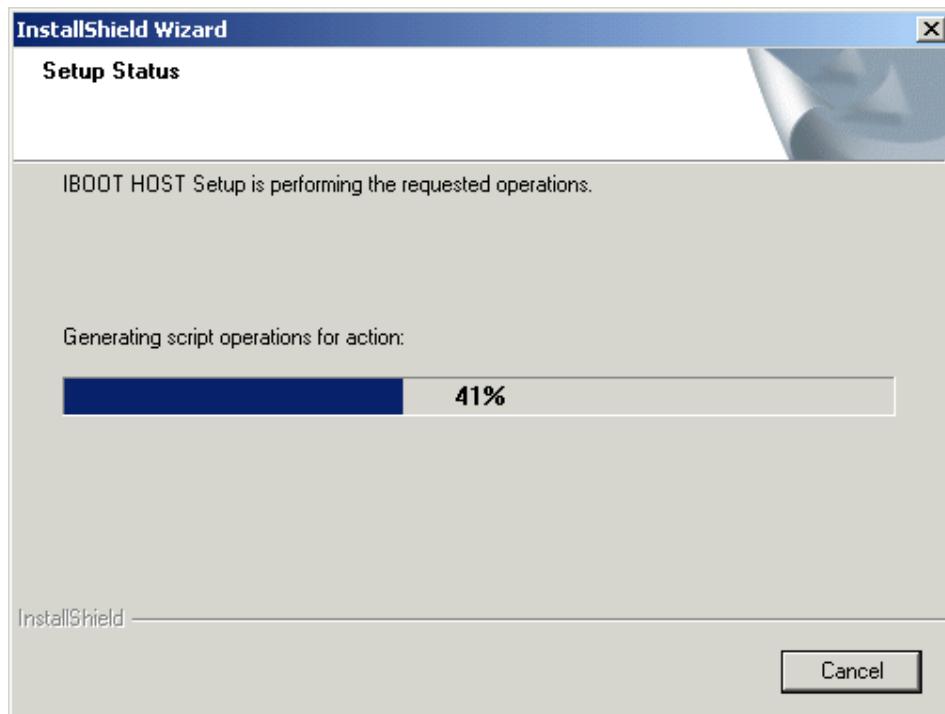


Figure 4. Setup Status Screen

Step 6: Click on **Finish** to complete the installation. You will not have to reboot your PC.

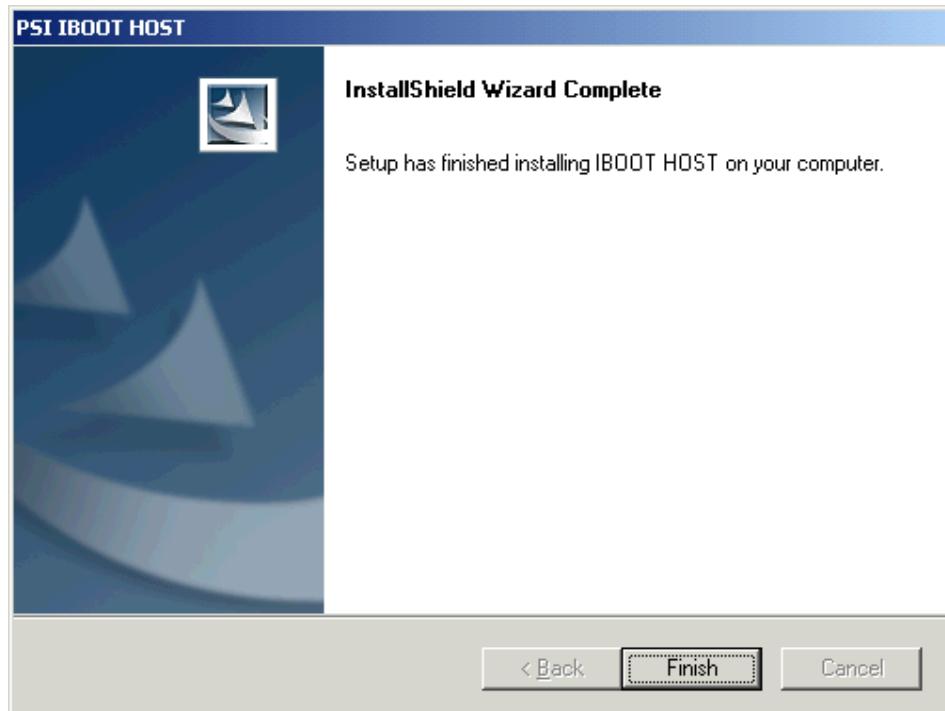


Figure 5. InstallShield Wizard Complete Screen

2.2 IBoot Host Installation from the PSI website

To load IBoot Host from the website, proceed as follows:

Step 1: Navigate to the IBoot Host page under Software.

Step 2: Click on the IBootHost Loader [IBoot 1.3.6 Host](#) link.

Step 3: When the **File Download** screen appears, click **Open** to unzip the setup files to your PC.



Figure 6. IBoot Host Setup Download Screen

Step 4: When the WinZip Self-Extractor screen appears, enter **C:** in the Unzip to folder window.

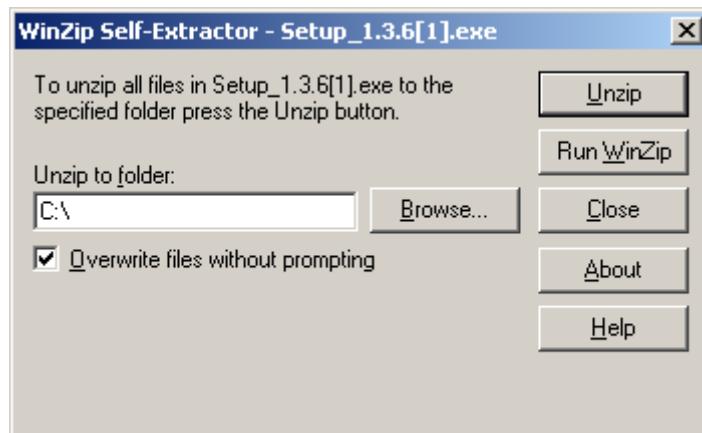


Figure 7. WinZip Self-Extractor Screen

Step 5: Click the **Unzip** button to extract the setup files.

Step 6: When the unzipped successfully message appears, click **OK** and **Close** on the WinZip Self-Extractor Screen.



Figure 8. Unzipped Successfully Screen

Step 7: Locate the setup.exe file in the C:\Setup_1.3.6 folder and double-click on the file to load IBoot Host. This will launch the InstallShield Wizard to take you through the IBoot Host installation.

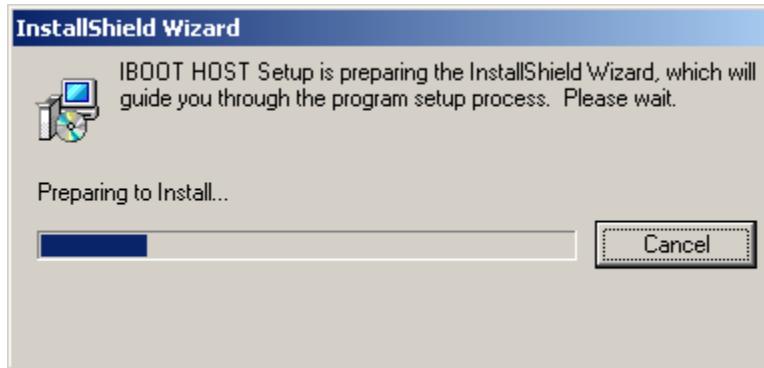


Figure 9. IBoot Host InstallShield Wizard Initialization Screen

Step 8: Click **Next** when the InstallShield Wizard Welcome screen appears.

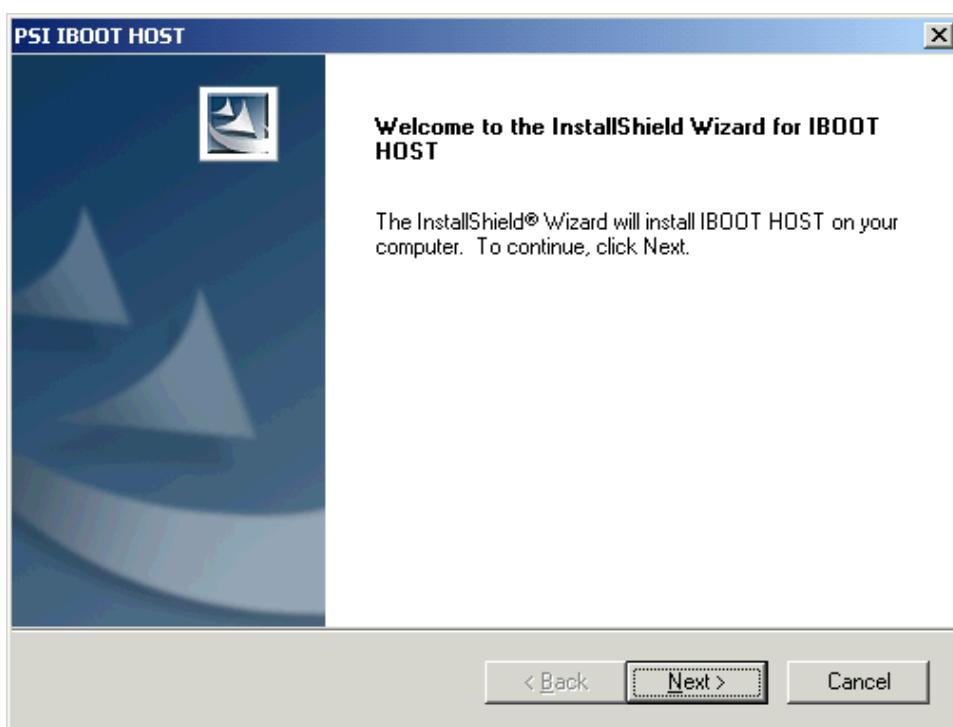


Figure 10. InstallShield Wizard Welcome Screen

Step 9: Enter a location for the IBoot Host program, or use the default setting (recommended). Click **Next**.

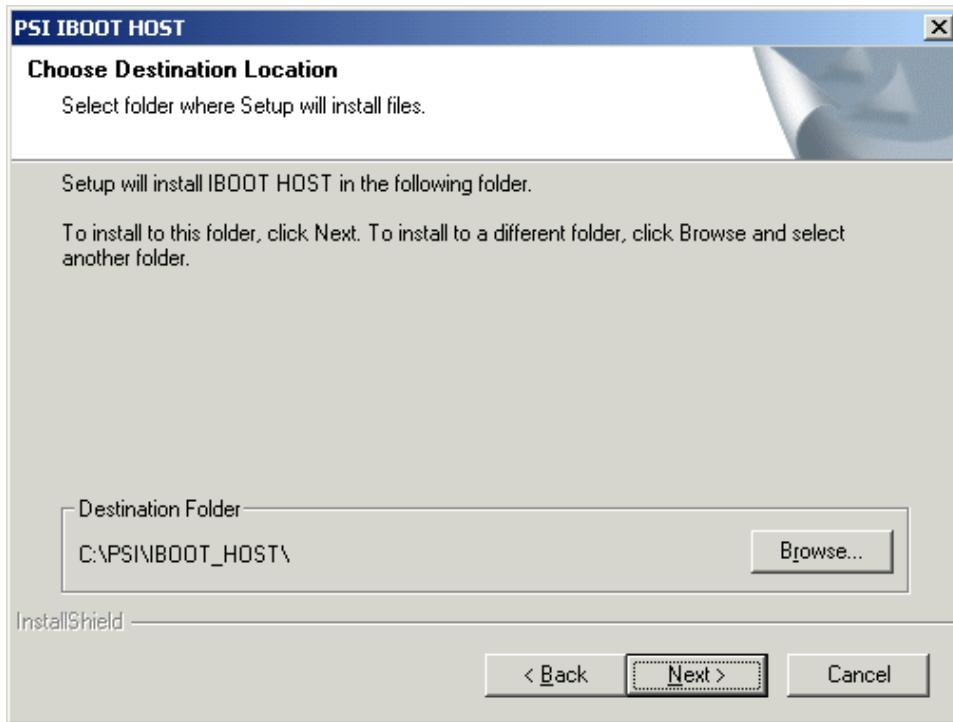


Figure 11. Destination Folder Screen

Step 10: Select the Setup Type. *Typical* is recommended in most cases. Click **Next**.

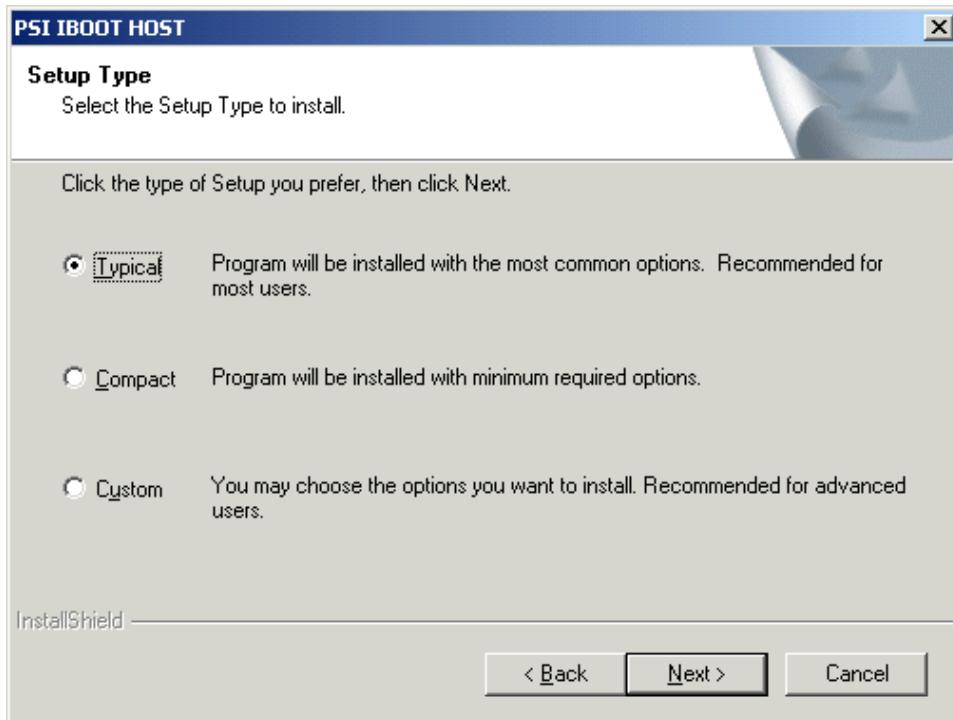


Figure 12. Installation Type Screen

Step 11: The setup status is displayed while the program is being loaded. Setup can be stopped at any time using the **Cancel** button.

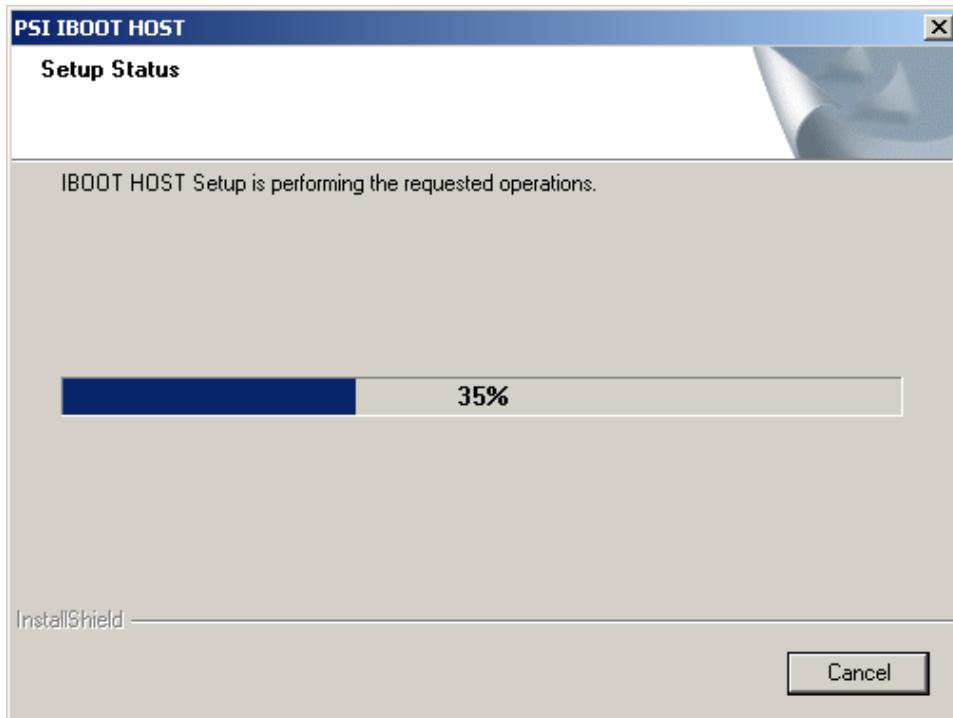


Figure 13. Setup Status Screen

Step 12: Click on **Finish** to complete the installation. You do not have to reboot your PC.

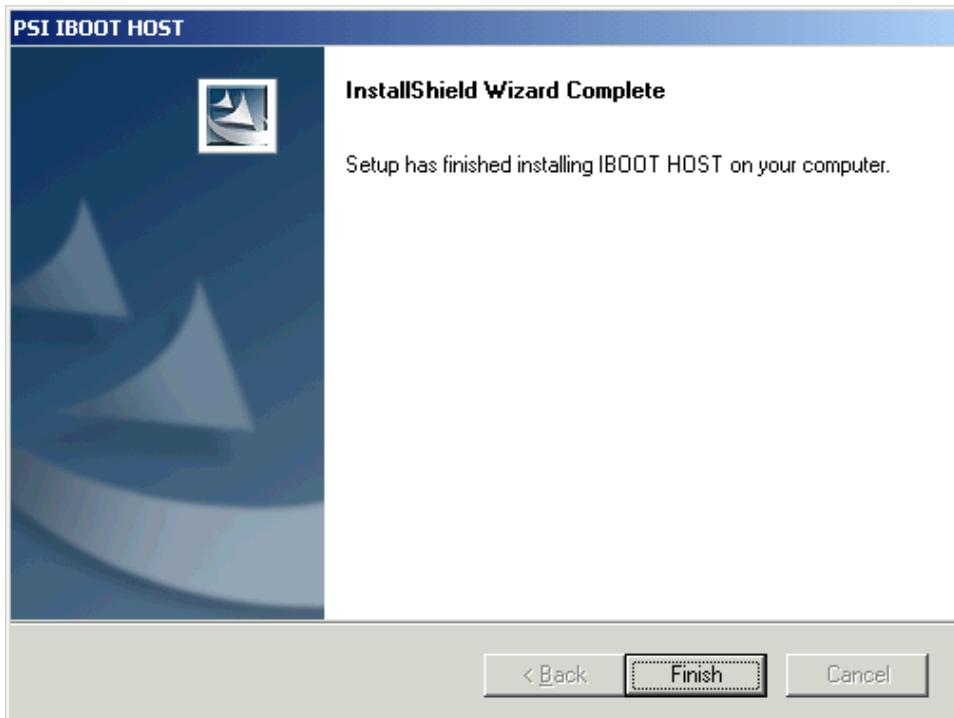


Figure 14. InstallShield Wizard Complete Screen

2.3 USB Driver Installation

The Innovator USB driver must be installed before the Innovator Module can communicate with the host PC. To load the USB driver, proceed as follows:

Step 1: With Windows running on the host PC, connect a USB cable from the host PC to the Innovator Module via the Client USB Port.



Figure 15. Client USB Port Cable Connection

Step 2: Turn on the Innovator Module.

Step 3: Windows will detect the hardware by acknowledging a new USB Device has been found (this might take a few minutes).



Figure 16. Found New Hardware Screen

Step 4: Once the device has been acknowledged, the Hardware Wizard will appear.



Figure 17. Found New Hardware Wizard Screen

Step 5: On the second screen of the Hardware Wizard, select the first option “Search for a suitable driver for my device” and click on **Next**.



Figure 18. USB Driver Search Screen

Step 6: On the Locate Driver Files screen check the second option “**CD-ROM drives**” and press **Next**.

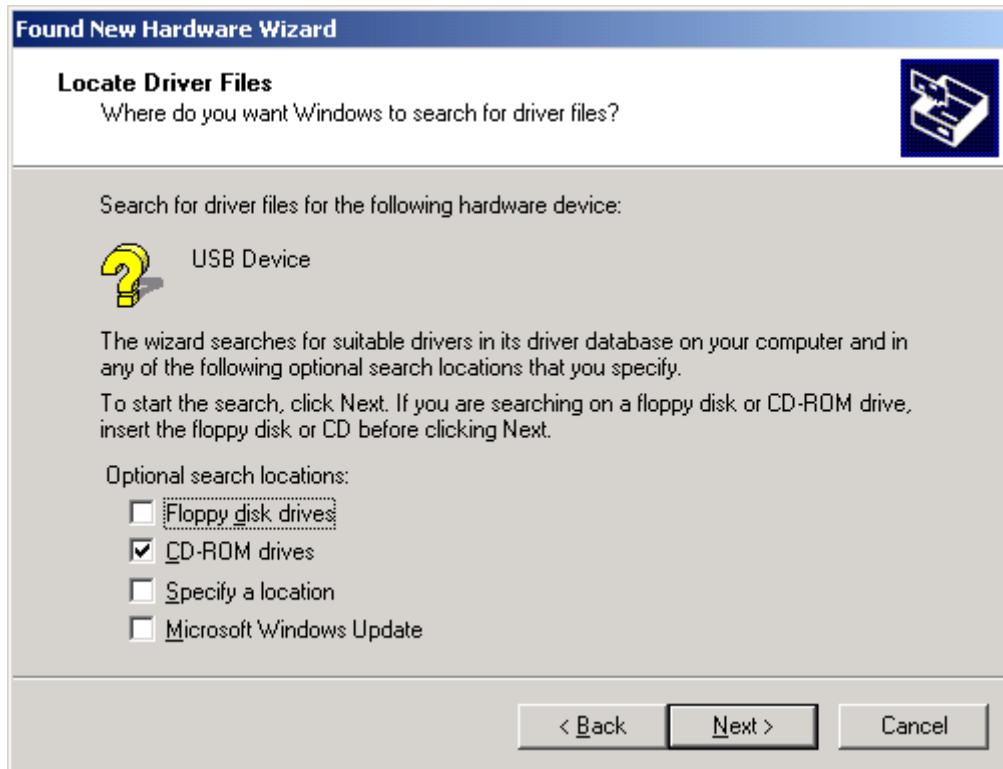


Figure 19. Specify Driver Location Screen

Step 7: A dialog box will appear asking for the directory where the driver is located. Browse to the Innovator™ Development Kit CD and open the Driver folder.



Figure 20. Driver Folder Location Screen

Step 8: In the Driver folder open the InnovatorUSB.inf file.

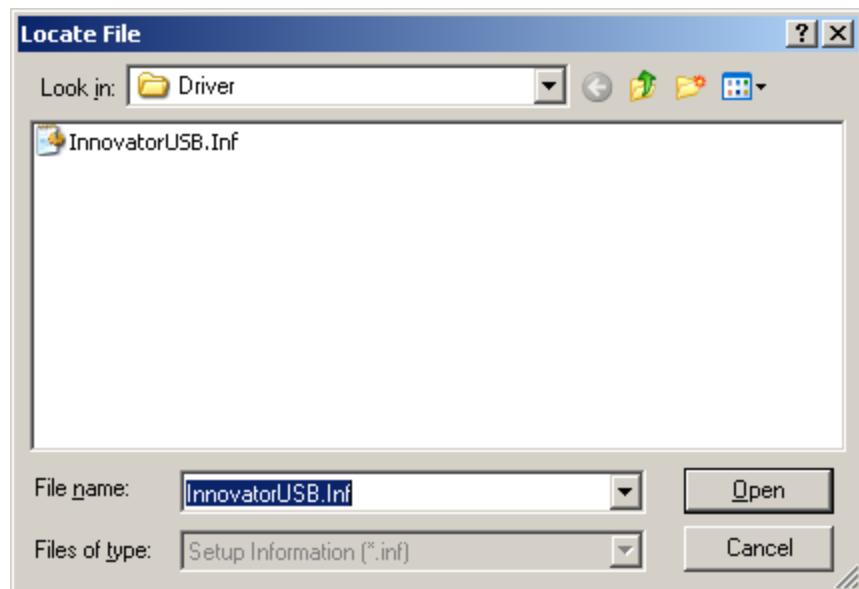


Figure 21. Driver Folder Screen

Step 9: The Wizard will notify you when it has found the corresponding driver. Once this is done, click on **Next** and the Wizard will finish the Driver installation.

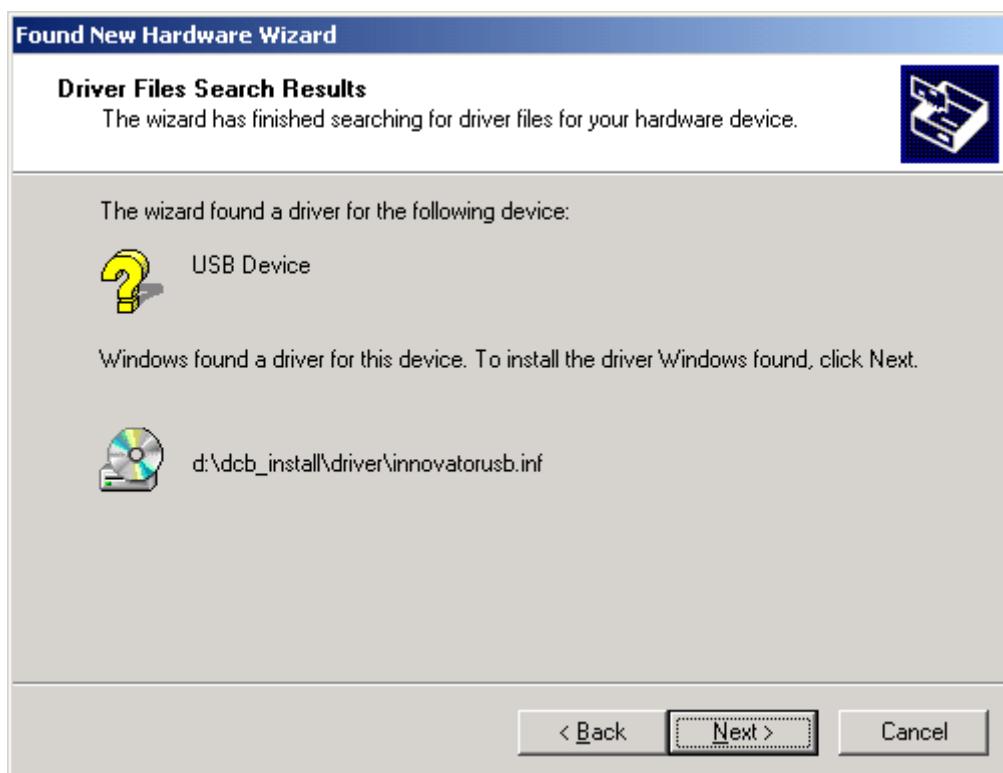


Figure 22. Search Results Screen

Step 10: Once the driver is installed, you will be able to find the Innovator hardware on your system's Device Manager under the Universal Serial Bus Controllers as Innovator.

Step 11: Open Windows Control Panel and double-click on the System icon.



Figure 23. System Icon

Step 12: Click the **Hardware tab** on the System Properties screen.

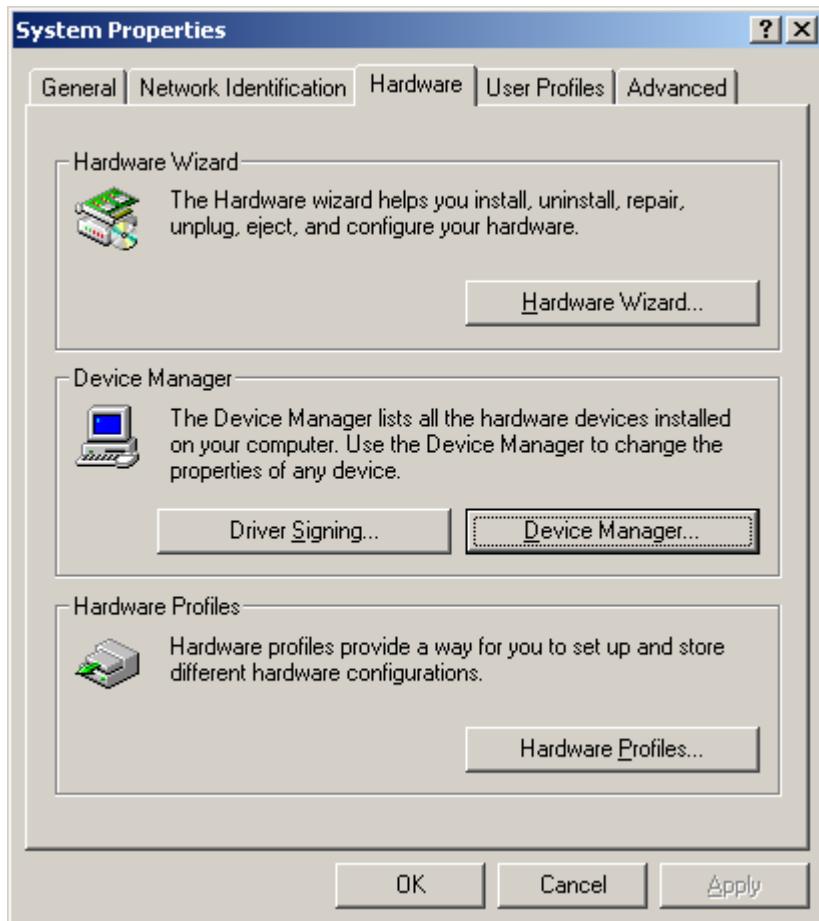


Figure 24. System Properties Screen

Step 13: Click the **Device Manager** button to view the Device Manager screen.

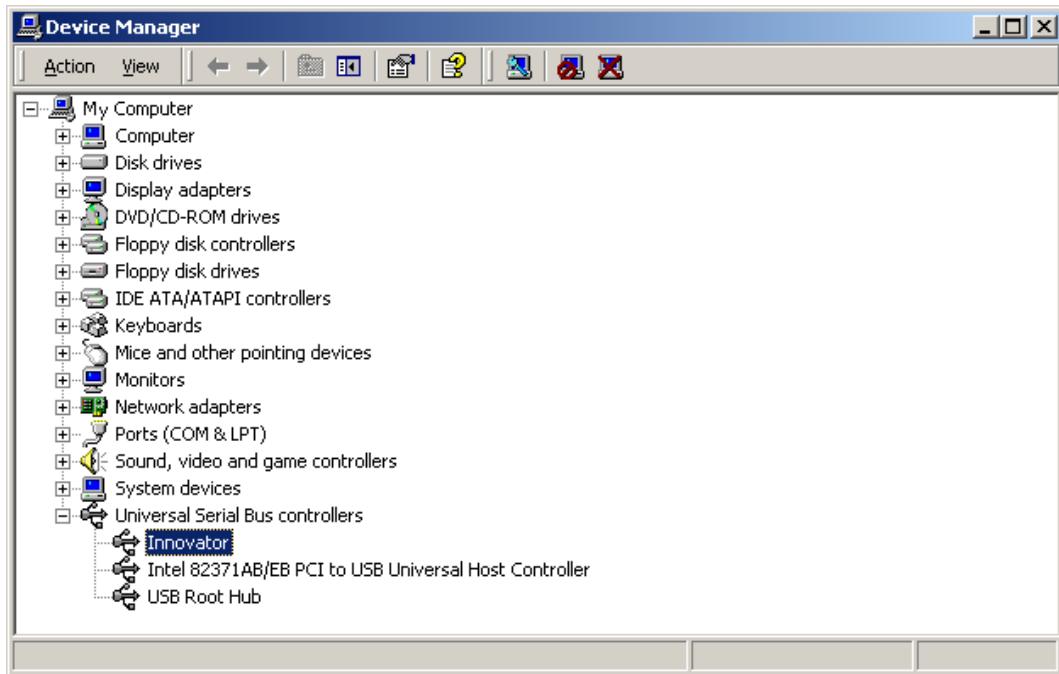


Figure 25. Device Manager Screen

2.3.1 Updating the USB Driver

This process should provide a work around when experiencing problems using the USB Wizard when the recommended USB driver file is not automatically selected.

Step 1: On the Device Manager screen, right click the USB icon labeled “**Innovator**” and select **Properties** from the popup menu.

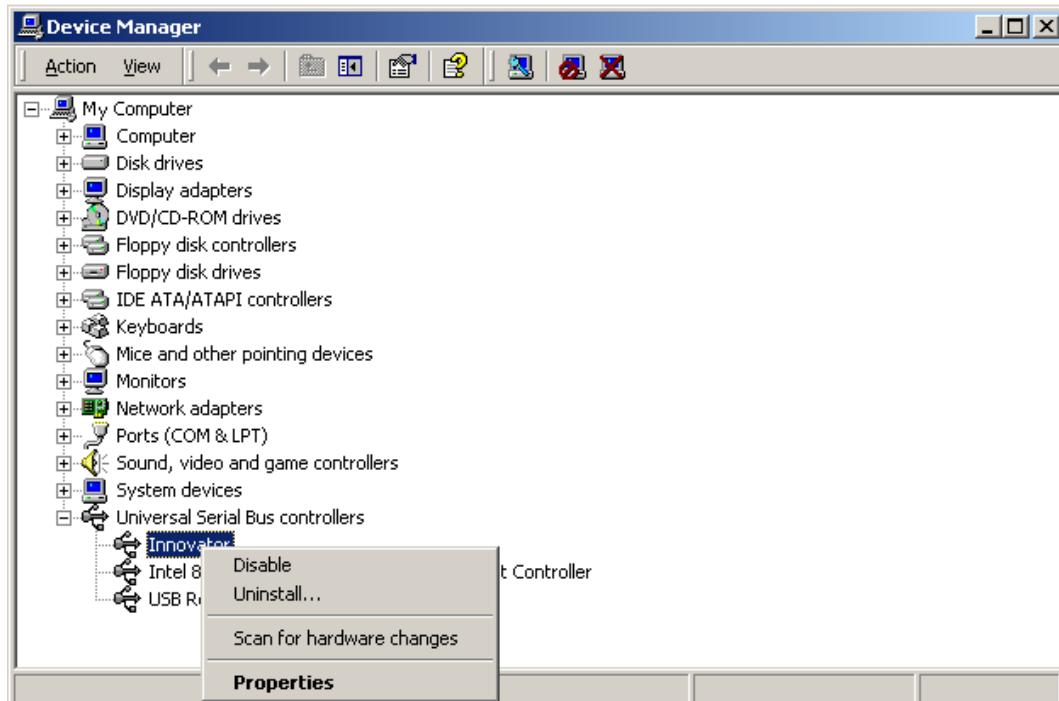


Figure 26. Device Manager Popup Menu

Step 2: Next select the **Driver** tab and click on the **Update Driver** button.



Figure 27. Innovator Properties

Step 3: When the Hardware Update Wizard will appears, select the “**Install from a list or specific location**” option and click the **Next** button.



Figure 28. Hardware Update Wizard Screen

Step 4: On the Search and Installation Options screen, click on the “***Don't search. I will choose the driver to install***” option and click **Next**.

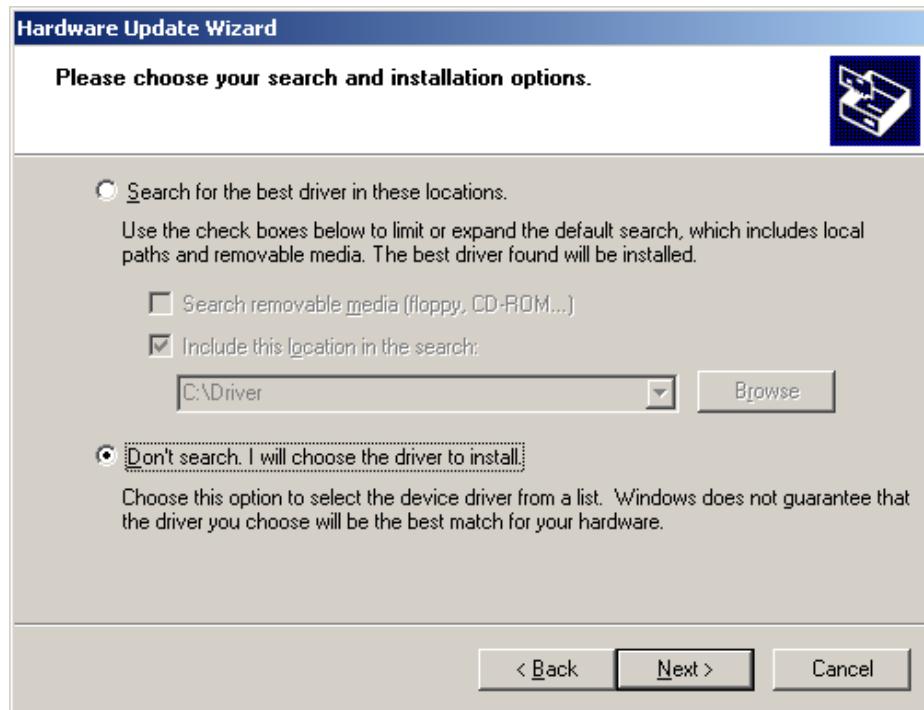


Figure 29. Search and Installation Options Screen

Step 5: A screen will appear containing a list of the drivers to install for the Innovator device. Click on the **Have Disk** button.

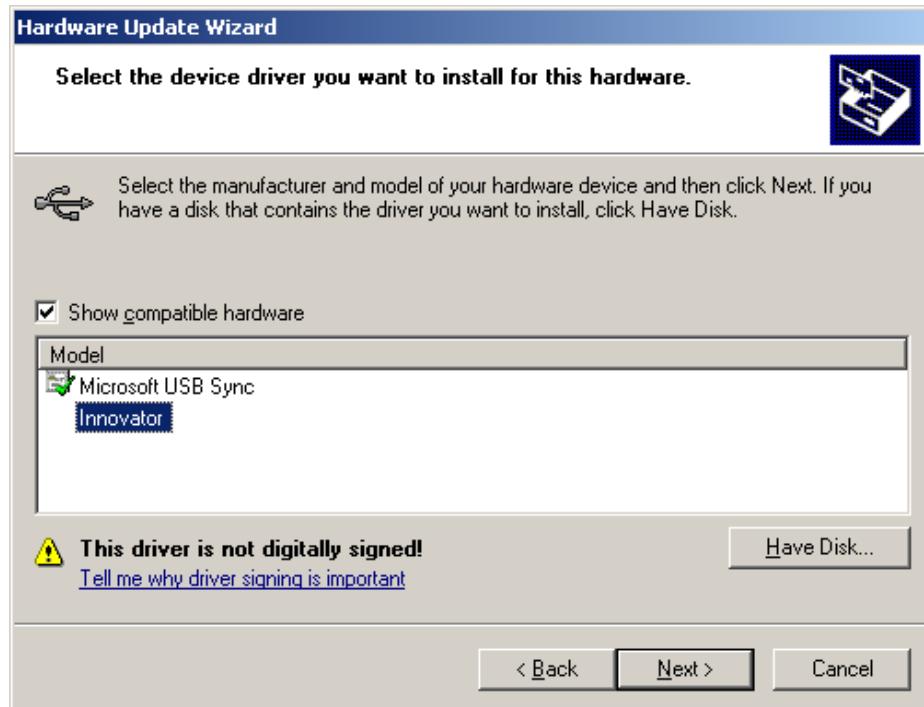


Figure 30. Device Driver Selection Screen

Step 6: On the Install From Disk window select **Browse** and go to the directory containing the Innovator USB driver.



Figure 31. Install From Disk Window

Step 7: Once the USB driver has been found, the Wizard will begin installation. A warning will appear to inform you that the driver is not digitally signed, Click "**Continue Anyway**".



Figure 32. Window Logo Testing Notice Screen

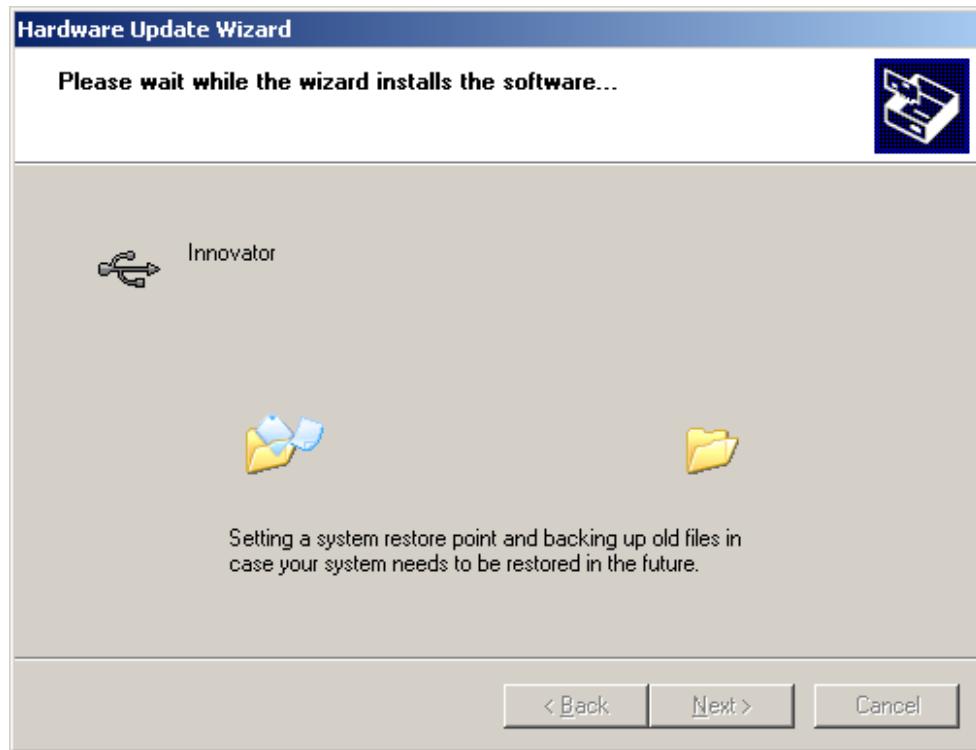


Figure 33. Hardware Installation Screen

Step 8: Once the installation is complete, click Finish.



Figure 34. Hardware Update Finish Screen

Step 9: The Innovator entry under the USB Devices should look like the image below. If any exclamation or question marks appear on the icon next to the Innovator label, contact PSI for technical support.

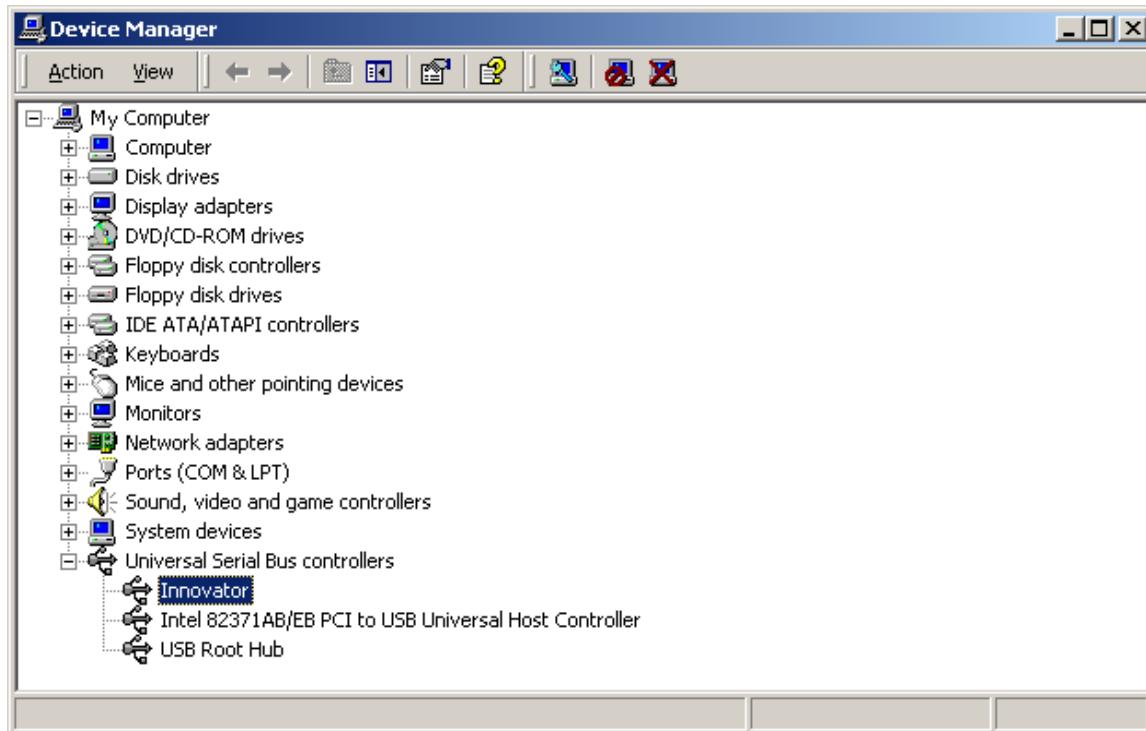


Figure 35. Device Manager Screen

2.4 IBoot Host Installation, NT Version

On this version of IBoot Host, the Windows NT 4.0 USB driver will be installed during the IBoot Host installation.

- When running IBoot Host, you must wait 10 seconds before connecting to the device, it will take Windows NT 4.0 at least 10 seconds to recognize and load the correct driver for the device.

Step 1: Locate the setup.exe file on the Innovator™ Development Kit CD. The path is: D:\DCB_Install\SetupNT40_1.3.7.

Step 2: Double-click on the setup file (**setup.exe**).

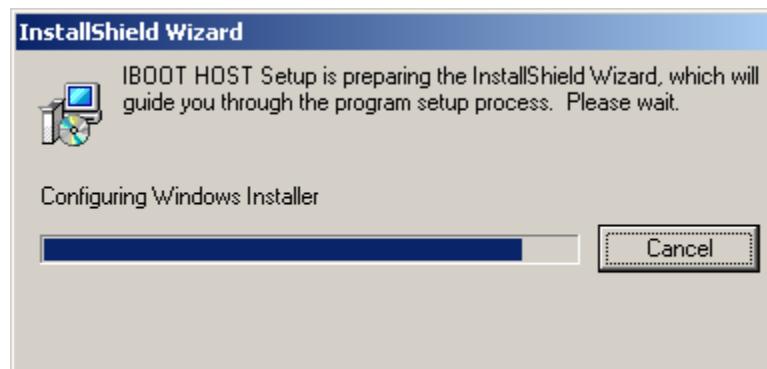


Figure 36. InstallWizard Initialization Screen

Step 3: Click **Next** when the InstallShield Wizard Welcome screen appears.

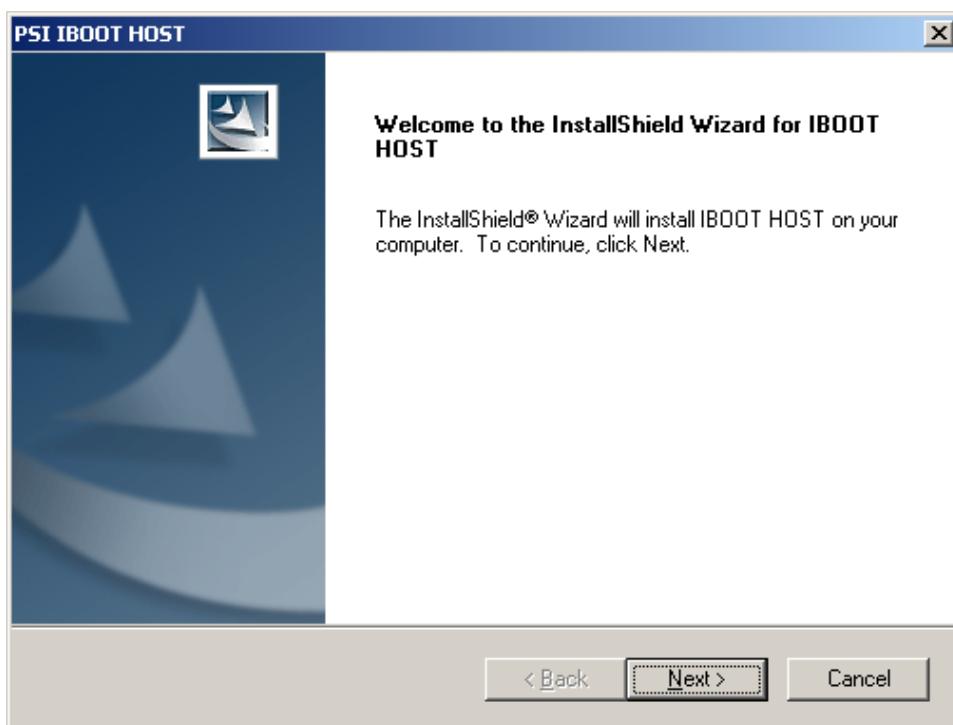


Figure 37. InstallShield Welcome Screen

Step 4: Enter a location for the IBoot Host program, or use the default setting. Click **Next**.

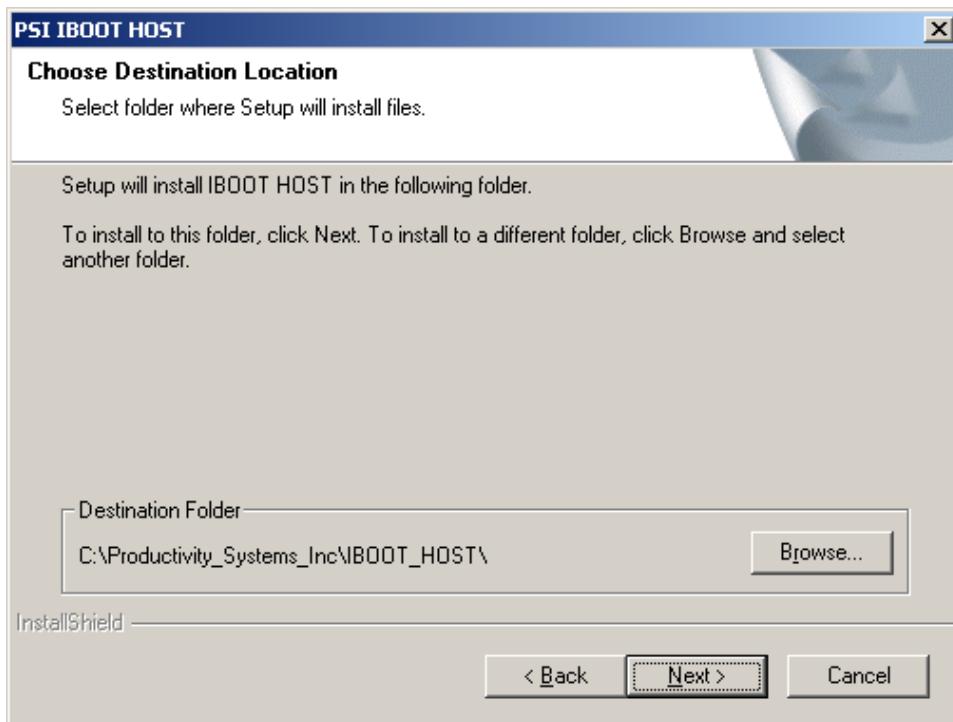


Figure 38. Destination Folder Screen

Step 5: Select the Setup Type. *Typical* is recommended in most cases. Click **Next**.

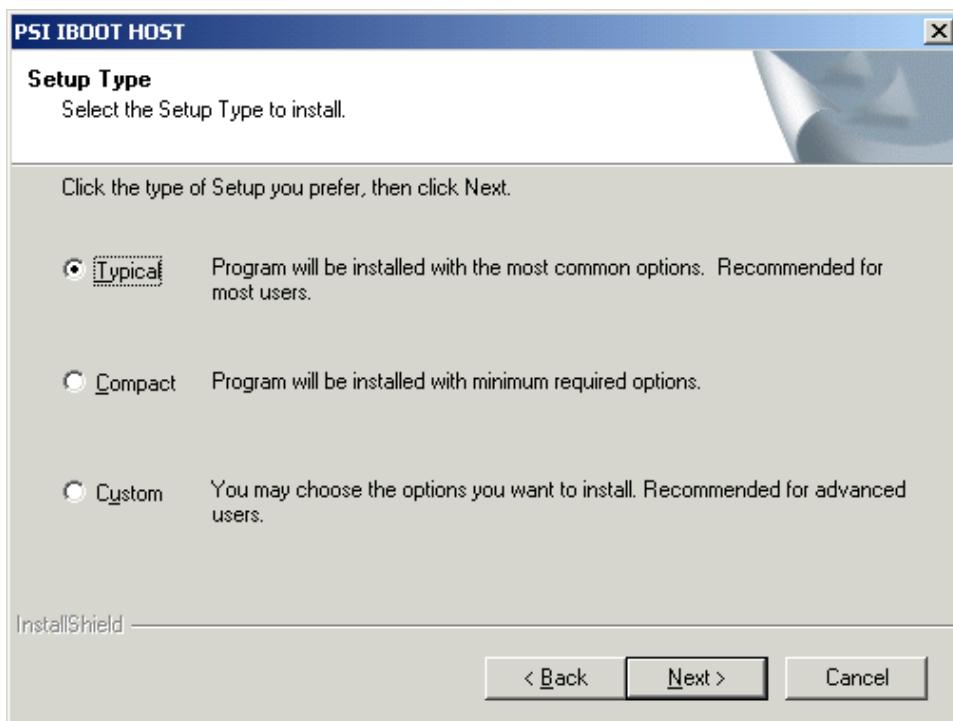


Figure 39. Installation Type Screen

Step 6: The setup status is displayed while the program is being loaded. Setup can be stopped at any time using the **Cancel** button.

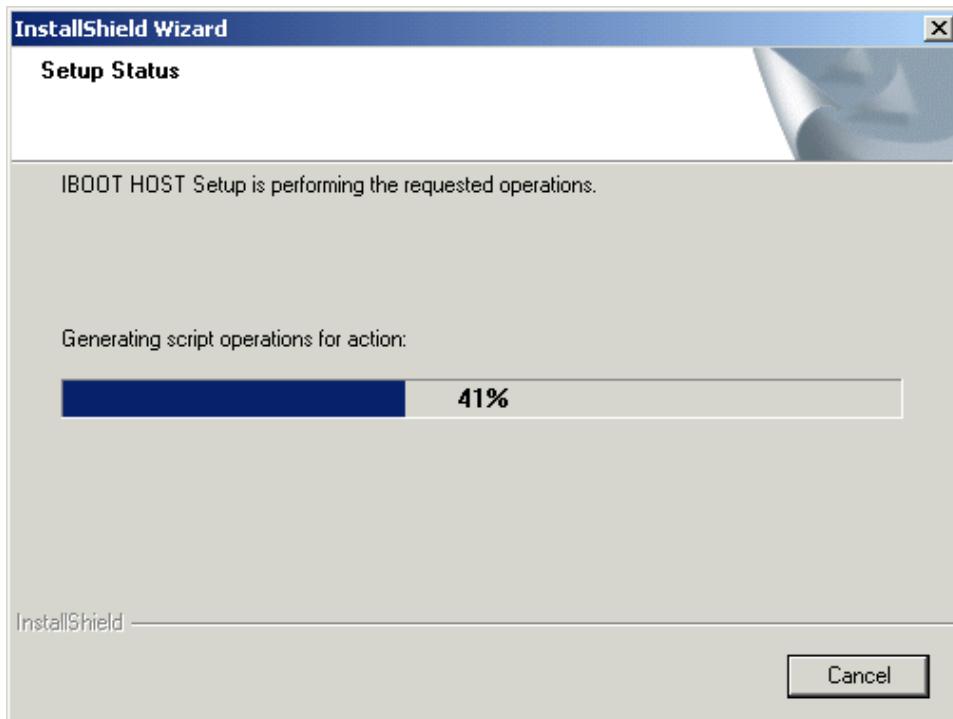
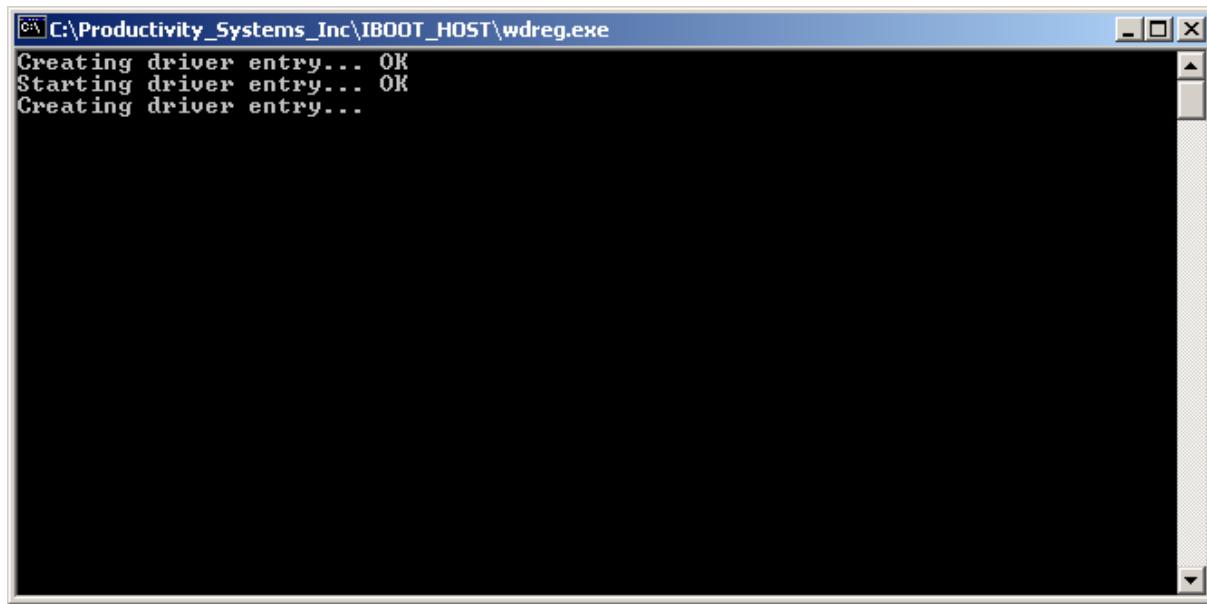


Figure 40. Setup Status Screen



```
C:\Productivity_Systems_Inc\IBOOT_HOST\wdreg.exe
Creating driver entry... OK
Starting driver entry... OK
Creating driver entry...
```

Figure 41. NT Driver File Installation

Step 7: Click on **Finish**.

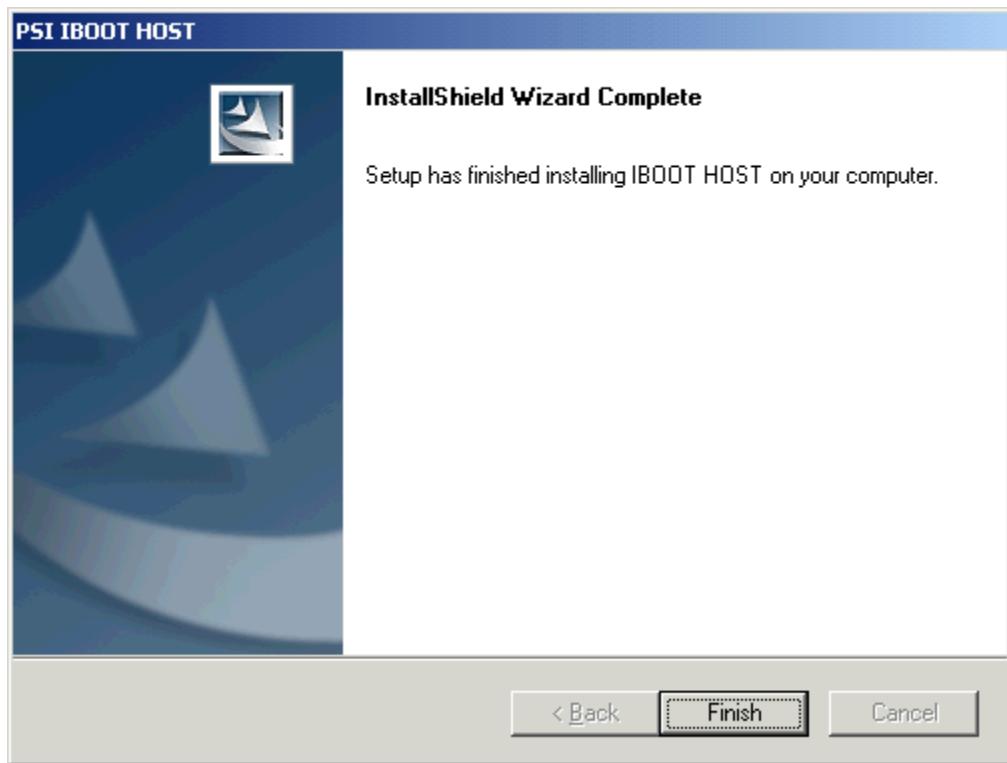


Figure 42. InstallShield Wizard Complete Screen

Step 8: When the restart computer screen appears, you must restart your computer in order for the drivers to be loaded properly and to complete the IBoot Host installation.

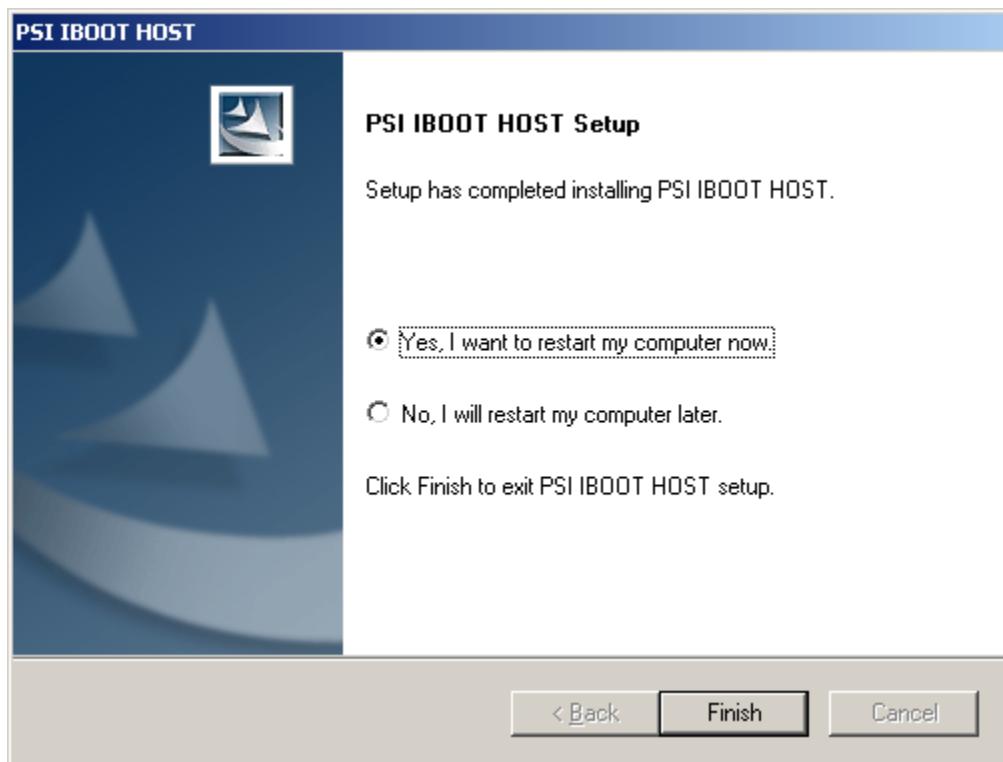


Figure 43. Restart Computer Screen

Step 9: Make sure the **"Yes, I want to restart my computer now"** is selected and click on the **Finish** button.

NOTE: Disconnect the USB cable from the target device before cycling power, this will allow the USB drivers to be restarted properly once power returns to the target device and the USB cable is reconnected. Failure to disconnect the USB cable when cycling power on the target device will result in the IBoot Host application having problems establishing communications with the device.

2.4.1 IBoot Host Installation, NT Version, from the Website

When installing from the website, the setup files are zipped (using WinZip.exe) and must be unzipped to a location that you specify.

Step 1: Navigate to the IBoot Host page under Software.

Step 2: Click on the **IBootHost Loader for NT 4.0 [IBoot 1.3.7 Host](#)** link.

Step 3: When the **File Download** screen appears, click **Open** to unzip the setup files to your PC.

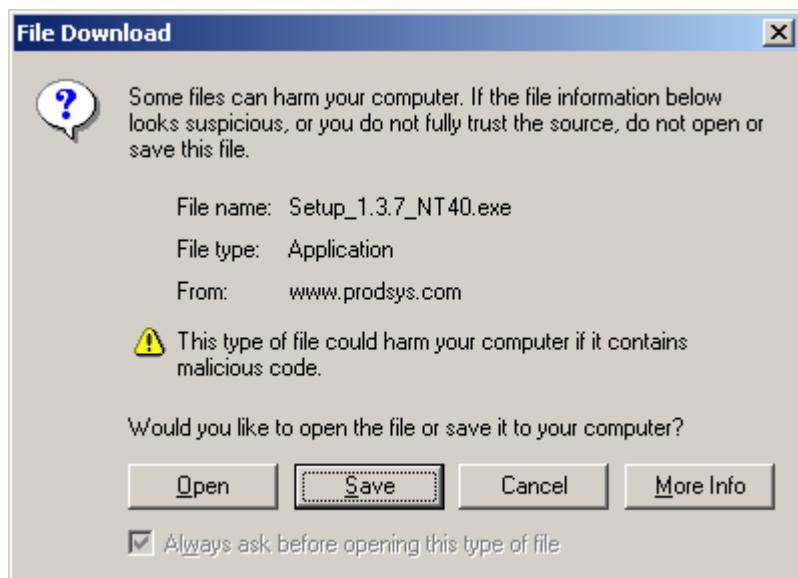


Figure 44. IBoot Host NT Setup Download Screen

Step 4: When the WinZip Self-Extractor screen appears, enter a location to unzip the files and click on the **Unzip** button. In this example, C:\IbootHost_NT will be used.

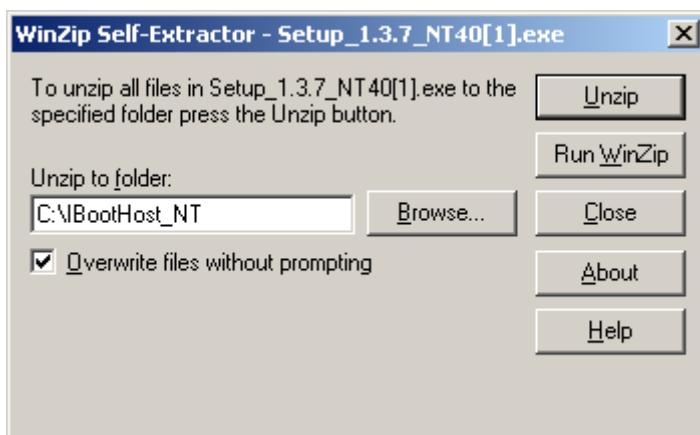


Figure 45. WinZip Self-Extractor Screen

Step 5: After the files have been unzipped, the following notification will appear. Click **OK**.



Figure 46. Unzipped Successfully Notification

Step 6: Click the **Close** button to close the WinZip Self-Extractor screen.

Step 7: In the folder created above, locate the **setup.exe** file in the C:\IBootHost_NT\Setup_1.3.7_NT40.

Step 8: Go to paragraph **2.4, Step 2** to finish the rest of the installation process.

2.5 Code Composer Studio (CCS) Evaluation

If you do not already have Code Composer Studio installed, you may purchase a copy from Texas Instruments, request a Code Composer Studio 90-day Evaluation Tools CD, or obtain an evaluation copy from their website – www.ti.com

If you use the Tools CD, refer to the installation guide included on the CD Insert with Code Composer Studio 90-day Evaluation Tools.

It is recommended that CCS be installed on a PC that has Internet access. Follow the on screen instructions. Use the default settings for the installation.

2.6 Installing Spectrum Digital XDS510PP+ Drivers

To load the Spectrum Digital XDS510PP+ Drivers, proceed as follows:

Step 1: Open the computers Internet browser and navigate to the following address:

[ftp://ftp.spectrumdigital.com/pub/Software-Releases/CodeComposer-5.x/omap/Release-1.52/](http://ftp.spectrumdigital.com/pub/Software-Releases/CodeComposer-5.x/omap/Release-1.52/)

Step 2: Right click on the file named **SetupCCOMAP.exe** and select **Save Target As** or **Copy To Folder**.

Step 3: Save the file in a location where it can be easily accessed.

Step 4: After downloading the SetupCCOMAP.exe file, navigate to the folder containing the program and run the program by double clicking on it. The program will install the drivers required by Code Composer Studio and the XDS510PP+ emulator to allow the emulator to communicate with the ARM and DSP processor package. When the installation program asks where it should be installed the user should place the files in the default location.

Please note that the following changes are needed for use of the Spectrum Digital emulator. By changing these settings the user may cause undesirable effects to other installed software that use the Parallel Port for communications.

Step 5: When the installation is complete, reboot the computer and enter the BIOS setup for the computer.

Step 6: Check that the parallel port is setup as ECP. If ECP is not available try to set the parallel port for SPP or SPP8. As a last resort set the parallel port to Bi-Directional. Once the port has been properly set, save the settings and reboot the computer.

Step 7: Connect the DB25-pin cable to the parallel port of the computer.

Step 8: Connect the other end of the DB25-pin cable to the parallel port connector on the XDS510PP+ emulator.

Step 9: Connect the power supply to the Innovator.

Step 10: Connect the JTAG connector from the emulator to the JTAG connector on the Processor Module.

NOTE: Pin 6 has been removed from the connector on the Processor Module and is used as a key for the JTAG Emulator connector.

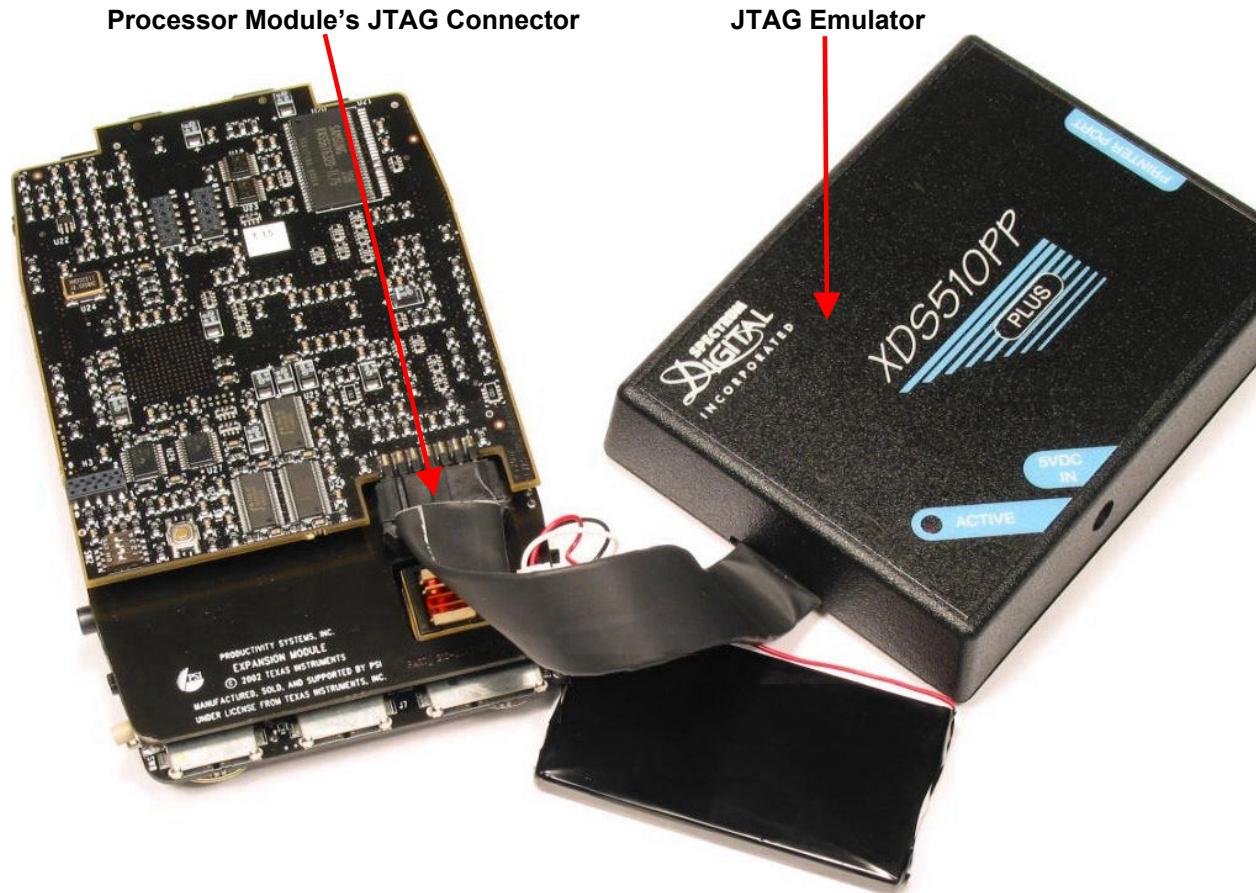


Figure 47. JTAG Connection

Step 11: Connect the emulator power supply to the emulator.

Step 12: Turn on the Innovator power switch.

Step 13: The hardware is now setup and the required software has been installed.

2.7 Configuring and Testing the XDS510PP+

From the installation of the Spectrum Digital software there should be an “SDConfig” icon on the desktop of the computer. Double click on the icon to start the SDConfig program.



Step 1: In the SDConfig program select the port in the left window that has 378 next to it. This is the standard parallel port LPT1 for most computers. Double click on the 378. Two sub folders should appear. The first is Emu. The second is Data Log.

Step 2: Single click on the Emu folder. Match the settings to the example to the right.

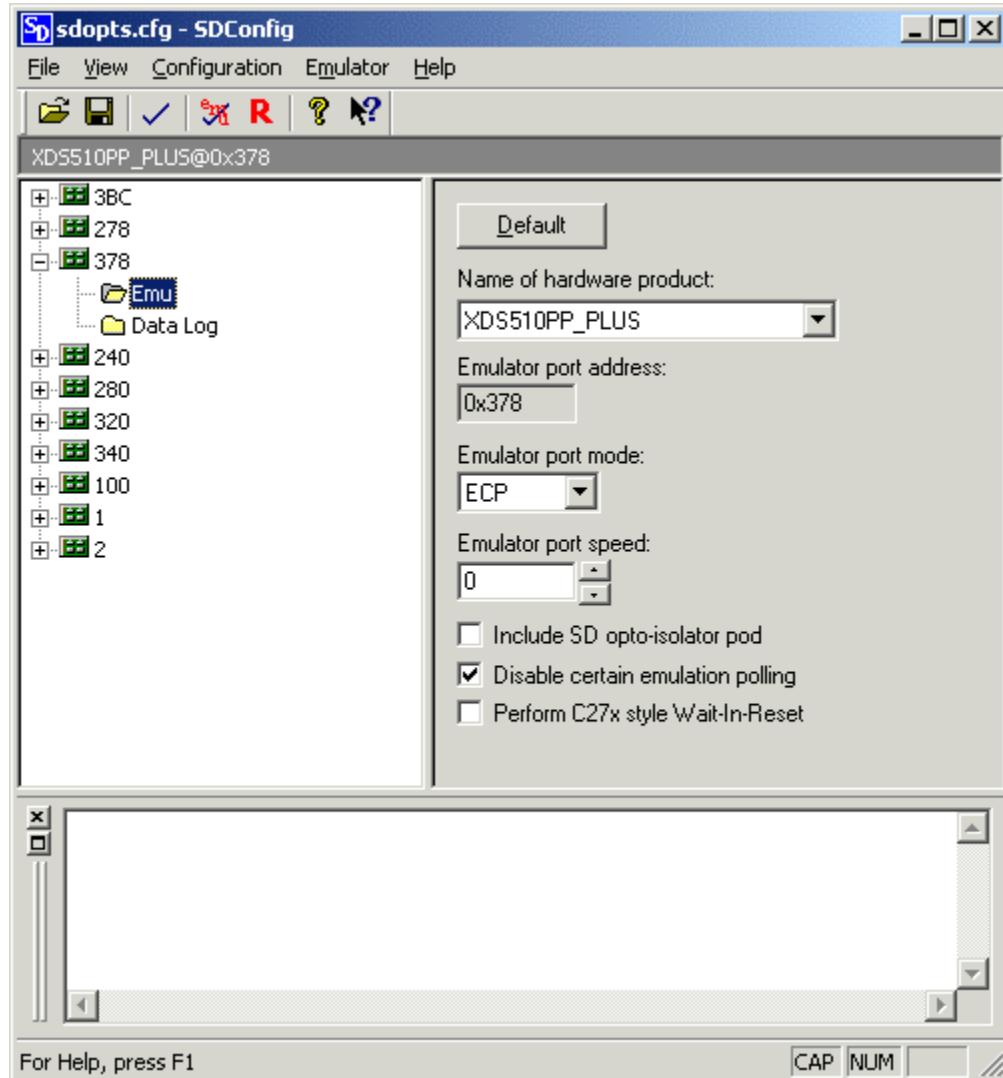


Figure 48. Emu Settings

Step 3: Once the settings are correct, select the **File** option on the top menu bar and select **Save**.

Step 4: Select the **File** option on the top menu bar again and select **Exit**.

Step 5: From the desktop, restart the SDConfig program by double clicking on the SDConfig icon. Just as was done previously, open the 378 port and verify the settings are correct. If the settings are not correct, repeat the steps on this page or contact PSI for assistance. If the settings are correct, continue to the next step.

Step 6: On the icon menu, mouse over the verify connection, , icon and click it once. The following information should appear in the bottom window of the SDConfig tool.

*** Checking for a valid emulator/eZdsp*

```
## You are connected to:  
## EmuProductName=XDS510PP_PLUS  
## EmuPortAddr=0x378  
## EmuPortMode=SPP8  
## ProductId=10  
## ProductVersion=02
```

Step 7: Click on the Emulator Test, , icon. The following information should appear in the bottom window.

*** Emulator Scan Test*

```
-- Found JTAG IR length of 50  
-- Found 3 JTAG device(s) in the scan chain
```

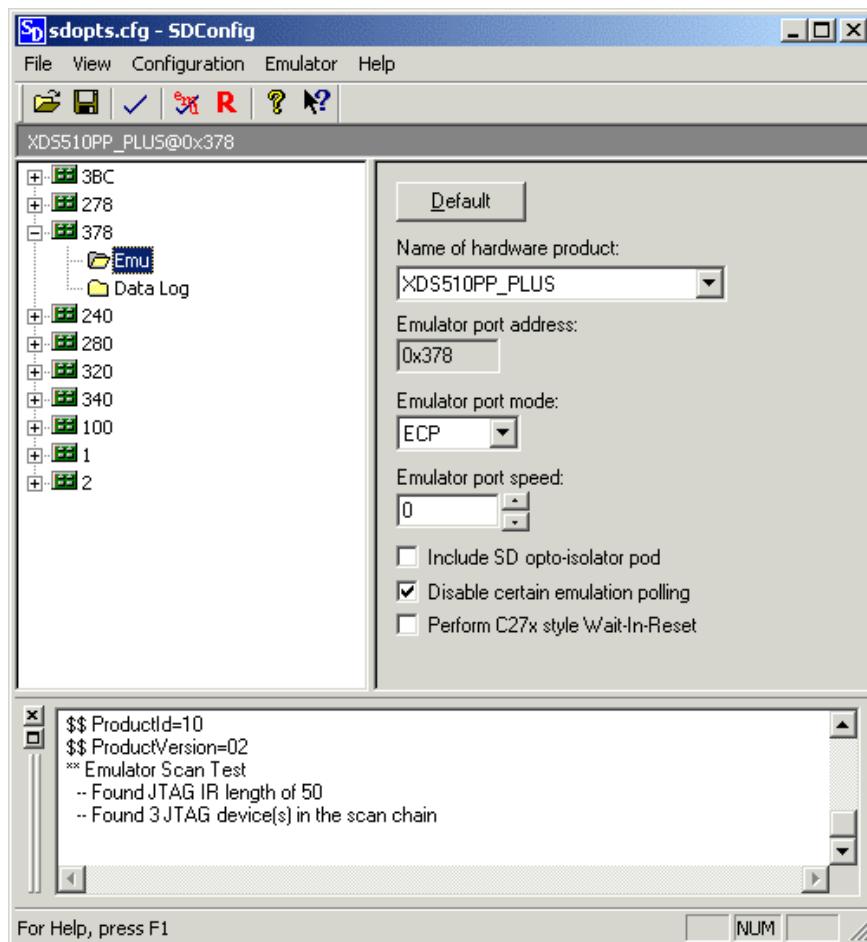


Figure 49. Emu Scan Test

Step 8: Finally, click on the Emulator Reset, , icon. The following information should appear in the bottom window.

***Emulator is reset*

Step 9: Select **File** from the top menu and **Exit** the SDConfig program. The emulator has successfully been connected to the computer and the EVM.

2.8 Code Composer Studio Installation

The following steps should be followed to properly install the OMAP™ Code Composer Studio (CCS) for use with Innovator. You must start with Innovator turned **OFF**.

NOTE: This software is not included in the Innovator™ Development Kit. Please contact your TI Sales Representative about purchasing this software if you do not have it.

Step 1: Uninstall any previous versions of code composer tools through *Control Panel->Add/Remove Programs* utility.

Step 2: Click on *Setup.exe* and an *Install* window will appear. Choose **OK**. Leave check mark in *Minimize during install* box. You will now see Code Composer Studio OMAP™ Setup window.

Step 3: Keep Choosing **Next** and **Yes** for all set-up screens until install is complete. This will install your CCS tools in to the C:\ti directory. This process may take a few minutes. If a screen pops up saying a DLL file update is not needed, then simply choose **OK**.

Step 4: At the end of install, choose “**No, I do not want to restart my computer.**” Close WinZip and then restart your computer. If you restart your computer before closing WinZip you may get incomplete install error messages on your screen.

2.9 Copying Code Composer Studio GEL Scripts

The following steps describe how to copy GEL Scripts and configure GEL files.

2.9.1 GEL Scripts

Step 1: Access the Innovator™ Development Kit CD and copy iARM.gel and iDSP.gel GEL Scripts from:

\BIN Files

to:

C:\ti\cc\gel.

Step 2: Use the CCS Setup, as described below, to configure Startup GEL files.

2.10 Configuring Code Composer Studio

From the installation of Code Composer Studio, there should be two icons on the desktop for CCS. Double-click on the Setup icon to start the setup program for CCS. If you want to save existing System Configurations, click the **Close** button when prompted from the Import Configuration window and follow the procedures outlined below. If you want to clear your system configuration(s), click **Clear** button in the Import Configuration window, then select **Yes** and **Close** and follow the procedures outlined below. In this example, we will start with the System Configuration cleared.



Step 1: Under System Configuration, right click on any board configuration that may be installed and select **Remove**. Respond by clicking **Yes** to confirm the configuration is to be removed.

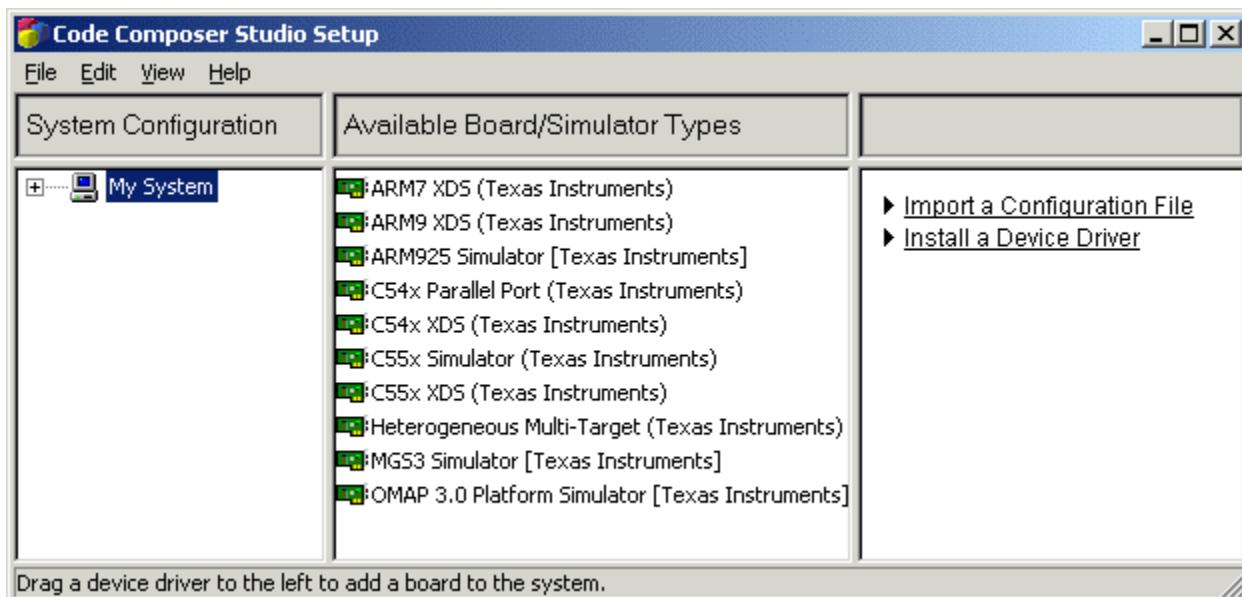


Figure 50. Code Composer Studio Setup

Step 2: In the right window, select **Install a Device Driver**.

Step 3: Navigate to the C:\tieval2\drivers folder. CCS Setup may already place you there.

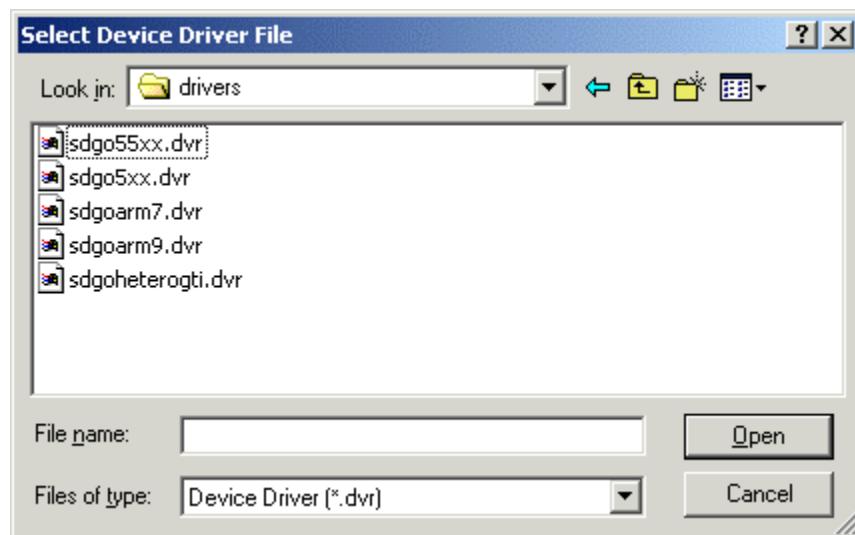


Figure 51. Select Device Driver File

Step 4: Select the sdgo5xx.drv and click on the **Open** button.

Step 5: In the Device Drivers properties window, click on the **Ok** button.

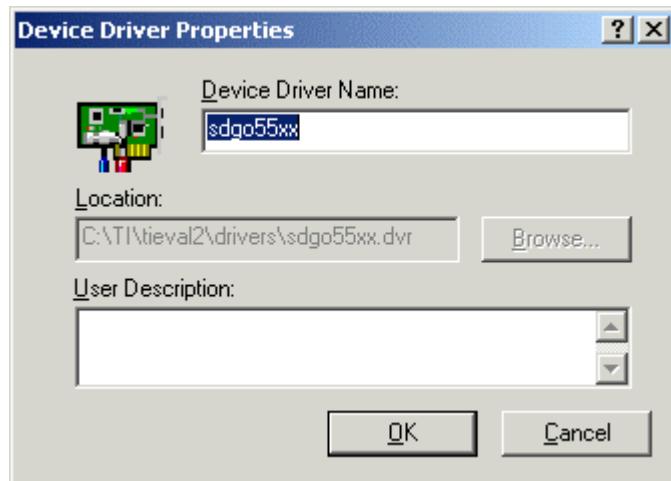


Figure 52. Device Driver Properties

Step 6: Repeat the driver installation process until all of the sdgoxxxx.drv driver files have been installed.

NOTE: As each sdgoxxxx driver is installed, they will not disappear from the drivers folder window. Each new driver added will appear in the Available Board/Simulator Types center window.

Step 7: Once all the drivers are installed, select **Save** from the **File** menu.

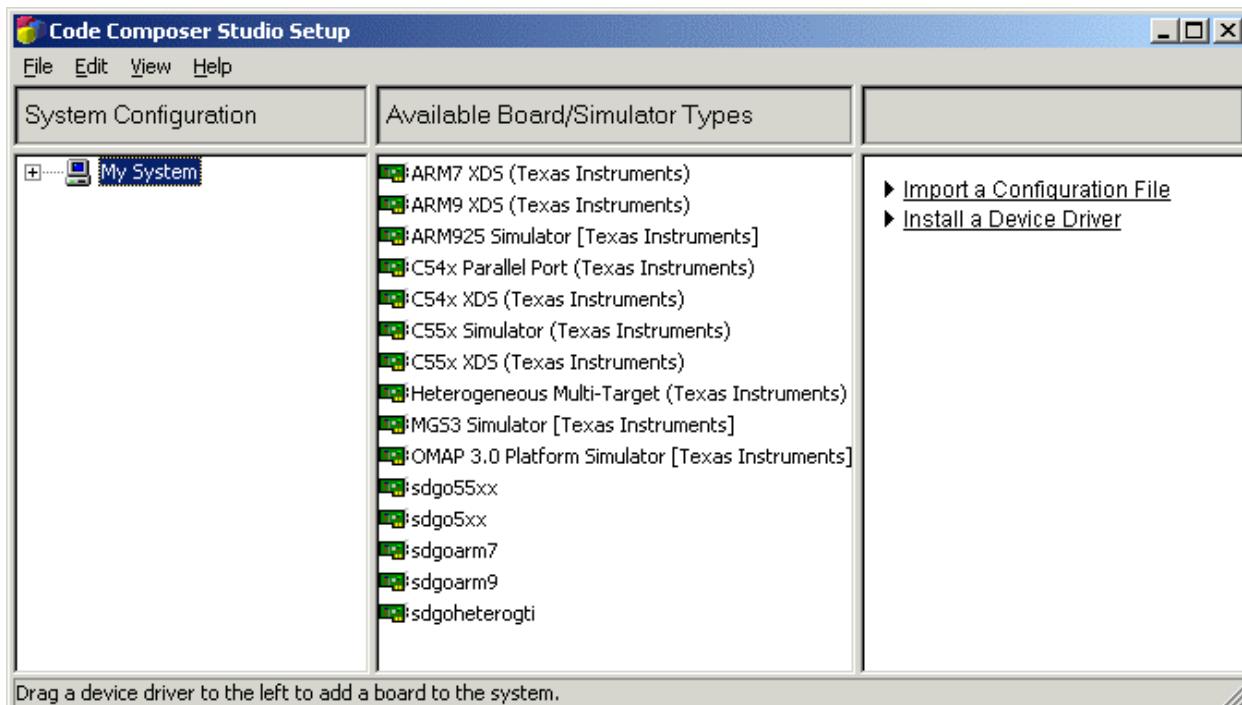


Figure 53. Device Drivers Loaded

Step 8: Select **File** again and select **Exit**.

Step 9: Upon exiting the setup program, CCS Setup will ask if the user wishes to start CCS, select **No** and exit the program.

Step 10: From the desktop icon, start the CCS Setup program again. Click on the **Close** button when prompted from the Import Configuration window.

Step 11: Highlight the *sdgoheterogti* driver in the Available Board/Simulator Types window. In the right hand window, scroll if needed down to where *Processor(s) Supported*: is displayed. The supported processors should match the list shown below.

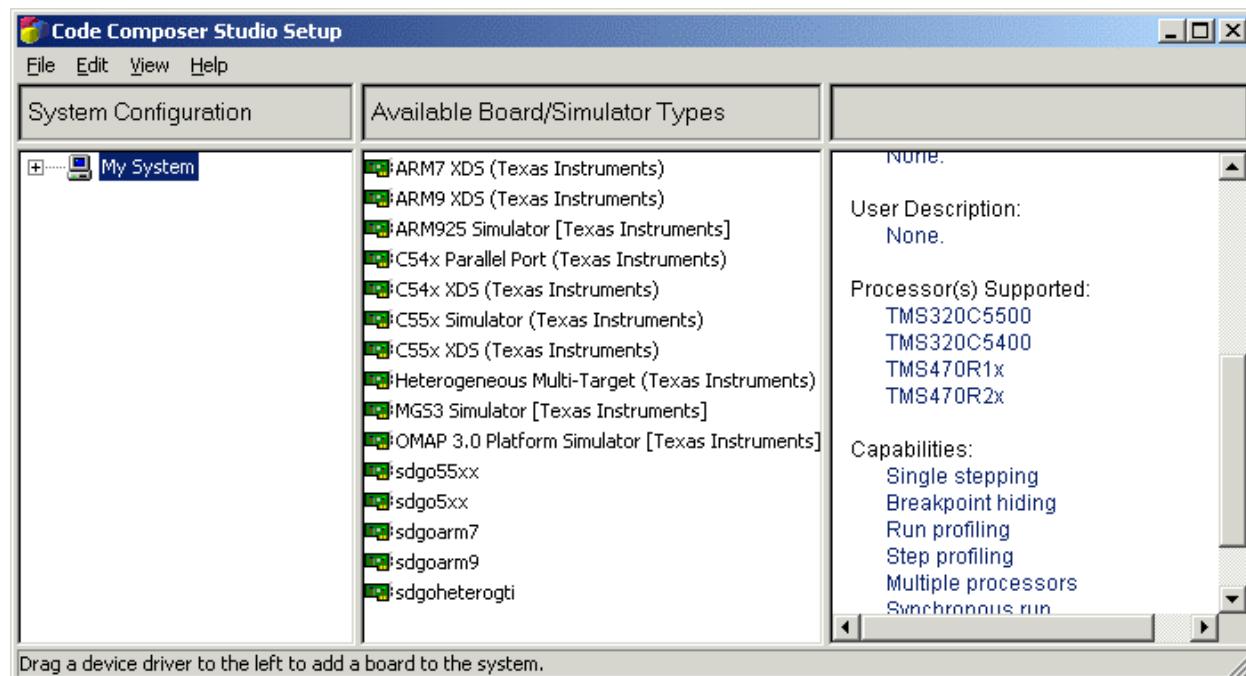


Figure 54. Processors Supported

Step 12: Drag the sdgoheterogti driver into the System Configuration window and release. A Board Properties window will appear.

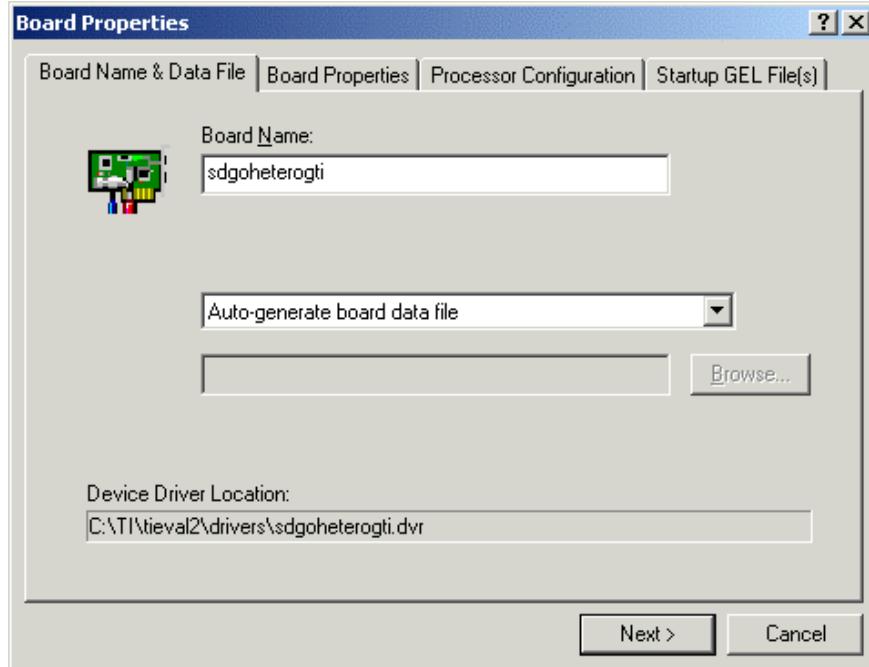


Figure 55. Board Properties Window

Step 13: Click the **Next >** button.

Step 14: Click on the I/O Port value and change it to 0x378.

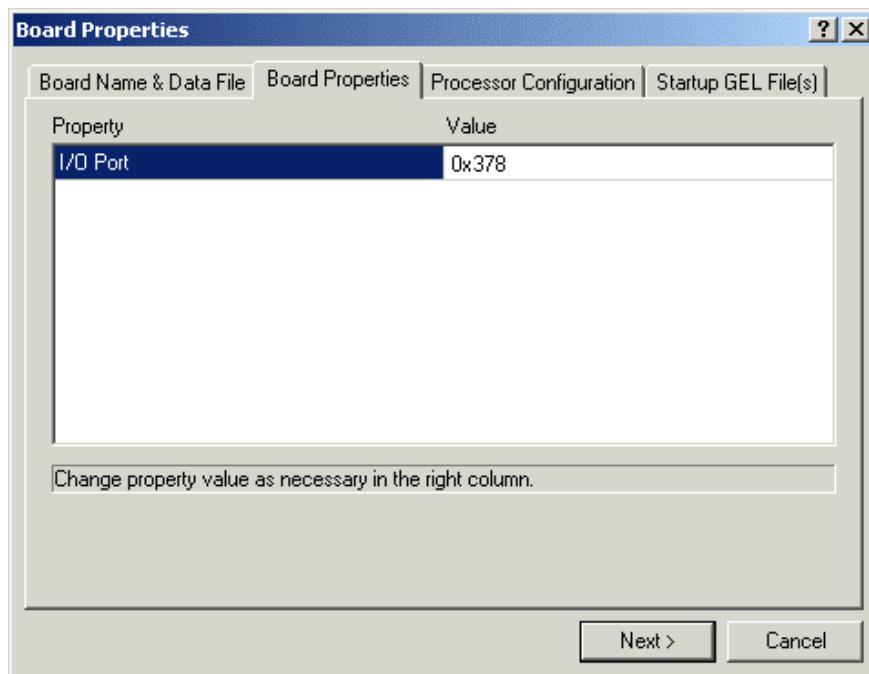


Figure 56. I/O Port Value Window

Step 15: Click on the **Next>** button.

Step 16: For the processor configuration, use the **Add Single** button and add a BYPASS. Accept the default settings by clicking on the Ok button for the Bypass.

Step 17: Use the same **Add Single** button to add the TMS470R2x ARM processor. Before adding the processor, in the Processor Name window type “ARM” and press the **Add Single** button.

Step 18: Finally, use the same **Add Single** button to add the TMS320C5500 DSP processor and change the name to DSP in the Processor Name window.

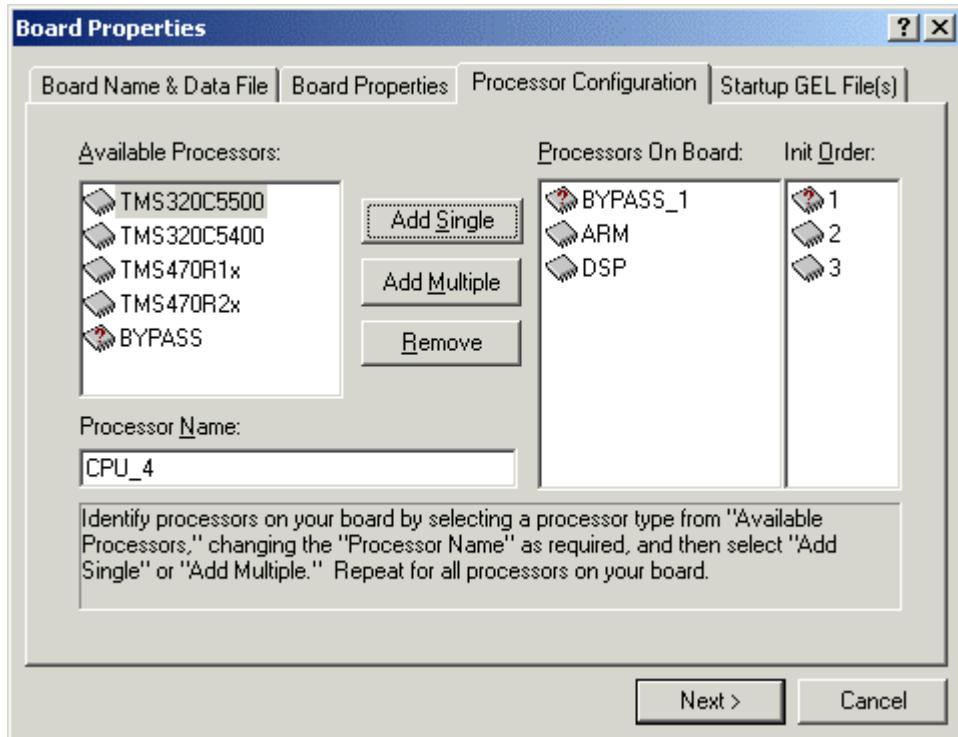


Figure 57. Processor Configuration Window

Step 19: Under the *Init Order* panel, change the initialization order to 3, 1, 2 by clicking on the Init Order number and changing its value. This will initialize the ARM first, the DSP second and Bypass third.

Step 20: Click on the **Next>** button.

Step 21: Using the double dot button on the right of each CPU, select the appropriate .gel file for that CPU.

Step 22: For CPU_1, which is the TMS470R2x, use iARM.gel file.

Step 23: For CPU_2, which is the TMS320C5500, use iDSP.gel file.

Step 24: Click on the **Finish** button.

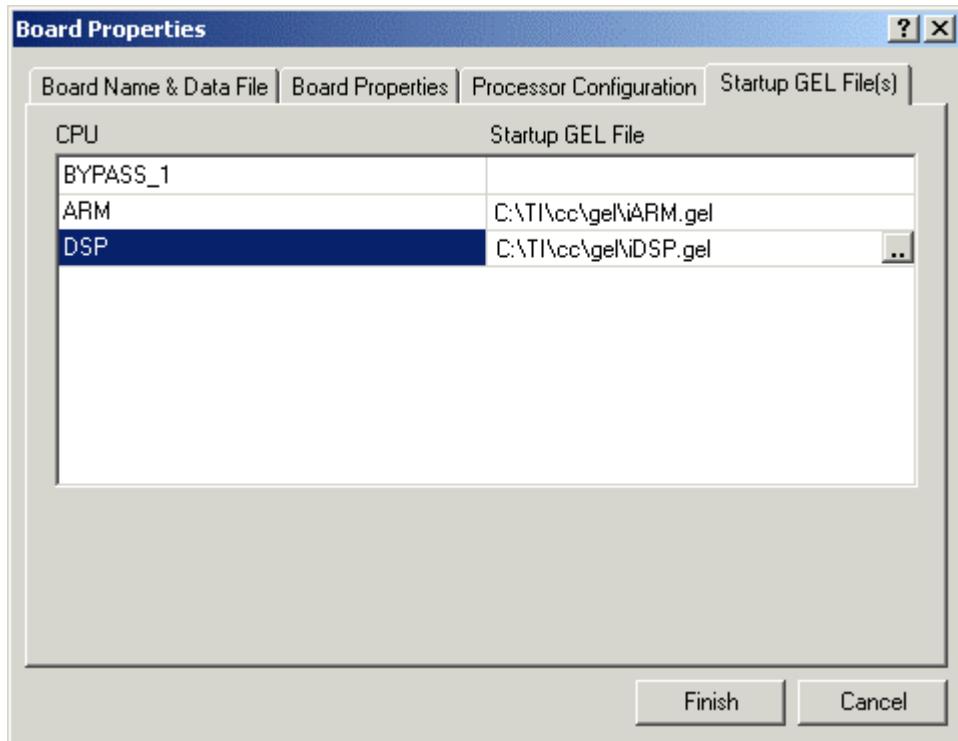


Figure 58. Startup GEL Files Window

Step 25: Select Save from the File menu.

Step 26: From the File menu again, select Exit.

Step 27: When prompted to start Code Composer Studio, make sure the Innovator is powered up and the emulator has power connected to it. Select **Yes** to start Code Composer Studio.

Step 28: If everything is working correctly, the following will appear:



Figure 59. Parallel Debug Manager

If CCS reports an error, repeat procedure beginning at Step 1. If after several unsuccessful attempts the problem persists, please contact PSI for assistance.

When Code Composer Studio is launched, the Parallel Debug Manager utility will be displayed. The emulator should now be configured and verified as working. Code Composer Studio has been configured and verified as working. You may begin using CCS by selecting **Open**, and choosing either the ARM or DSP session. Or select File and Exit.

Chapter 3 – Loading IBoot Core Software

3.0 Loading IBoot Core Software

This chapter describes how to load the IBoot Core software for the first time. IBoot Core software is preloaded on the Innovator and should not have to be loaded unless there is a problem with it or it has been accidentally erased. IBoot Core Software is updated using IBoot Host. Refer to Chapter 4 for instructions on how this is done.

NOTE: The example below uses the PCI JTAG. Your particular JTAG may indicate a different port address.

3.1 IBoot Core Software Locations

The IBoot Core Software, LoadCore.out, can be obtained from the Innovator™ Development Kit Product Support CD or the PSI Website.

3.1.1 IBoot Core Software CD Distribution

The LoadCore.out file can be found in D:\Software\CORE folder on the Innovator™ Development Kit CD. The file can be loaded from the CD or copied to a folder on your hard drive.

3.1.2 IBoot Core Software Website Distribution

The LoadCore.out file must be saved to a location on your hard drive. It is recommended that you download the file to the same folder that was created when IBoot Host was loaded on your PC. The following procedure assumes that will be the case.

Step 1: Navigate to the IBoot Host page under Software.

Step 2: Click on the **IBoot Core used with Code Composer: LoadCore.out** link.

Step 3: When the **File Download** screen appears, click **Open** to launch the Save As window.

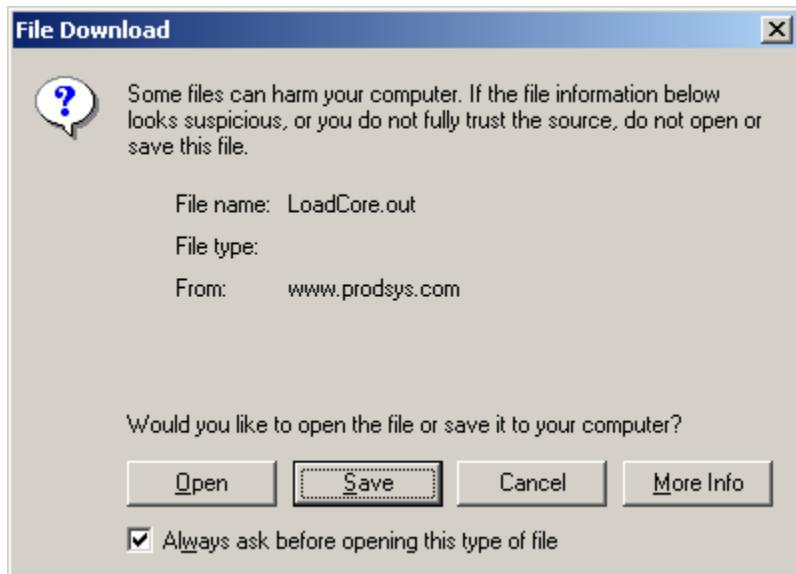


Figure 60. File Download Screen

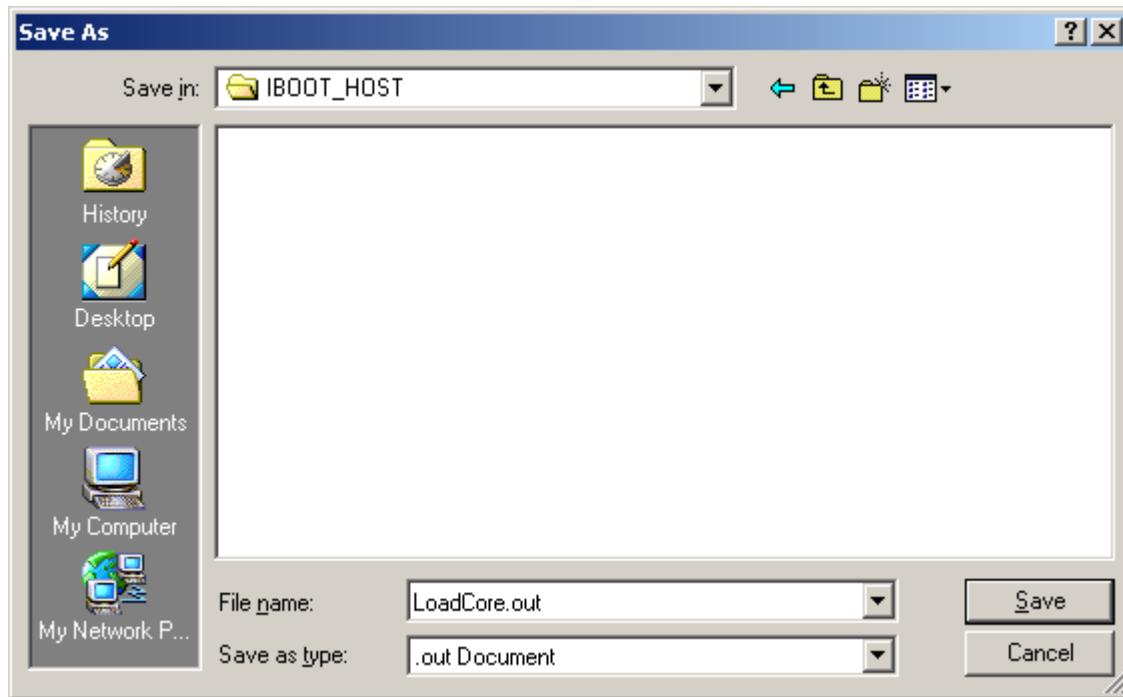


Figure 61. File Save As Screen

Step 4: When the File Save As screen appears, place the file in the same folder that was created when IBoot Host was loaded: **C:\PS\IBOOT_HOST** (or **C:\Productivity_Systems_Inc\IBOOT_HOST** for NT users).

3.2 Loading IBoot to Flash Using Code Composer Studio

Step 1: Set the Innovator Memory Configuration switches:

SW1 – Off
SW2 – Off
SW3 – Off
SW4 – Off

Step 2: Connect JTAG to Innovator Processor Module.

Step 3: Start SDConfig.exe by double-clicking on the icon.



Step 4: Turn Innovator Module power switch on.

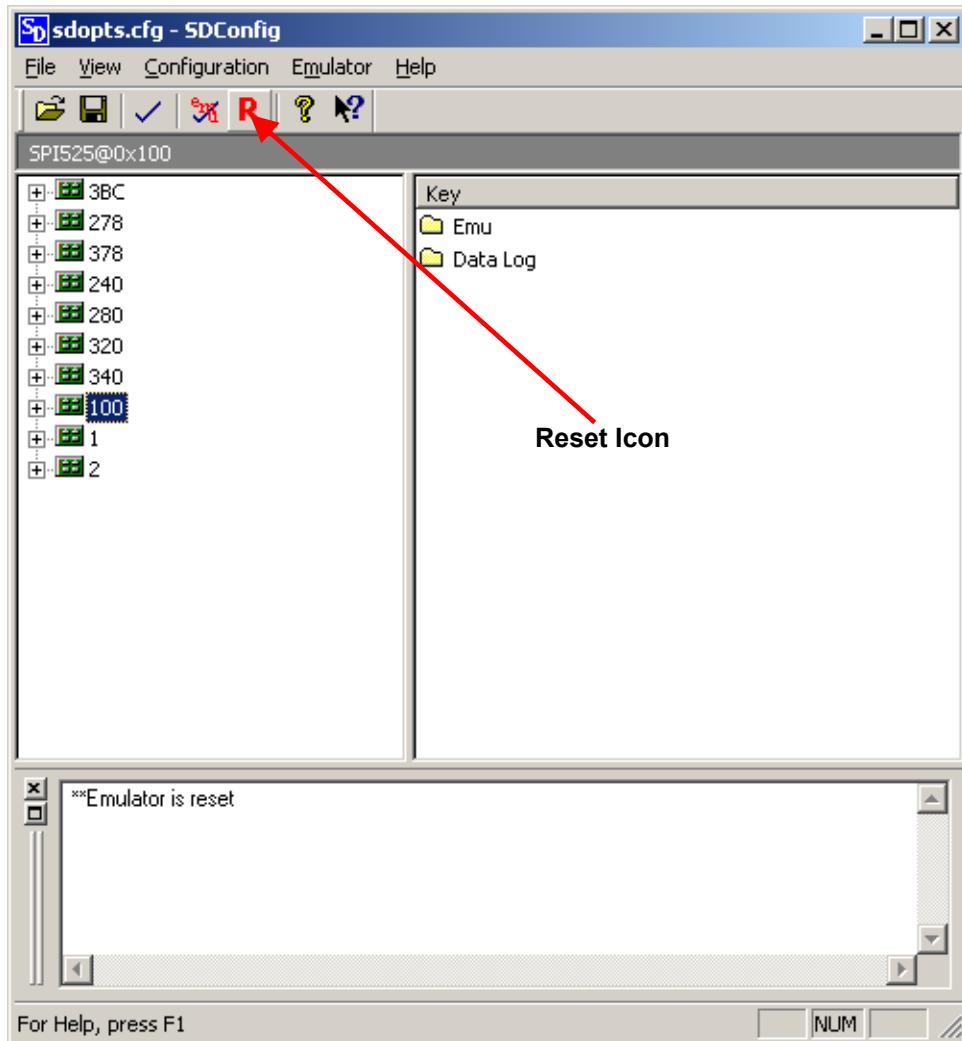


Figure 62. Emulator Reset

Step 5: Reset the JTAG Emulator by clicking on the Reset Emulator, , icon shown above.

Step 6: Click on the Emulator Test, , icon (see figure below) and verify bottom two lines of text read:

- Found JTAG IR length of 50
- Found 3 JTAG device(s) in the scan chain

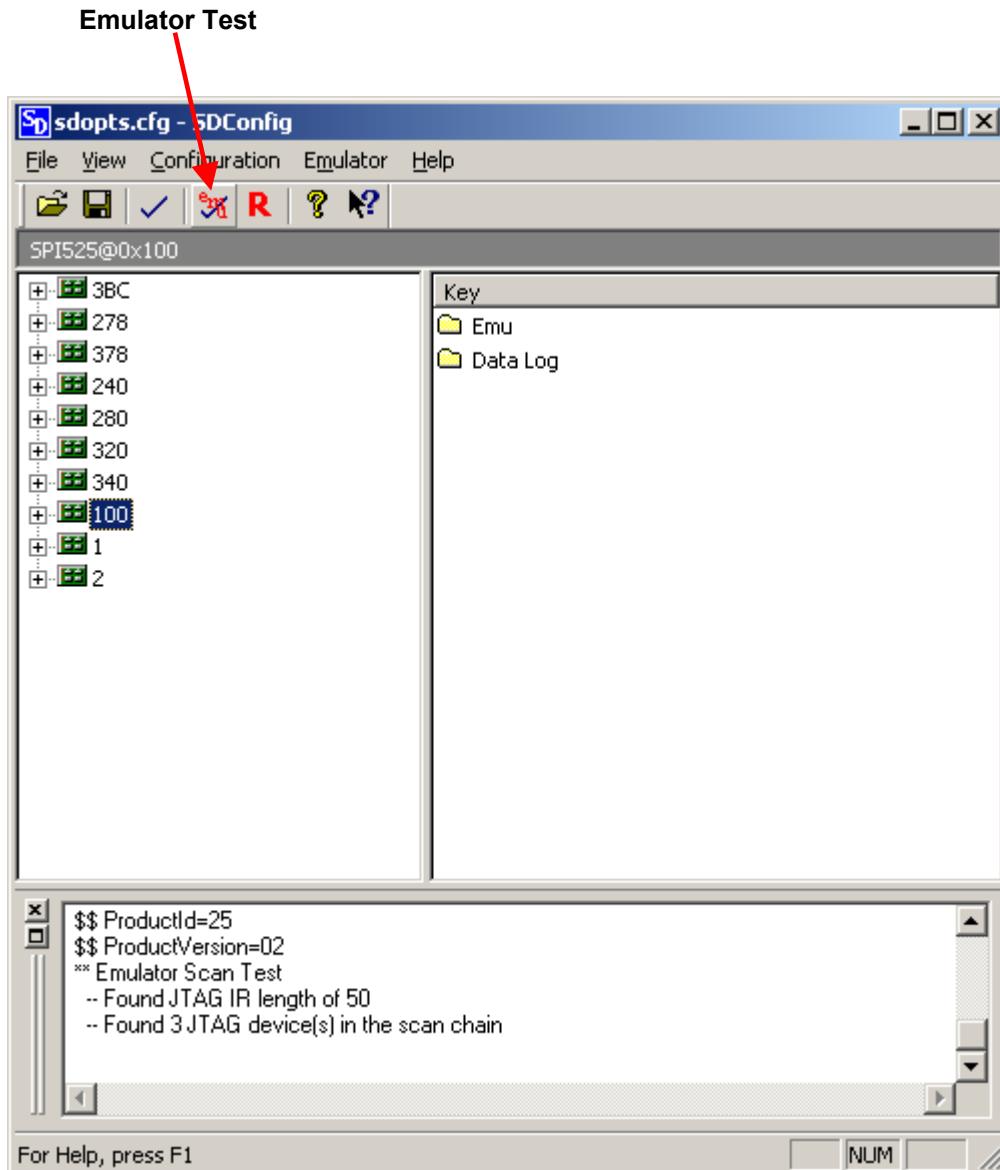


Figure 63. Emulator Test

Step 7: Reset JTAG again using the Emulator Reset, , icon.

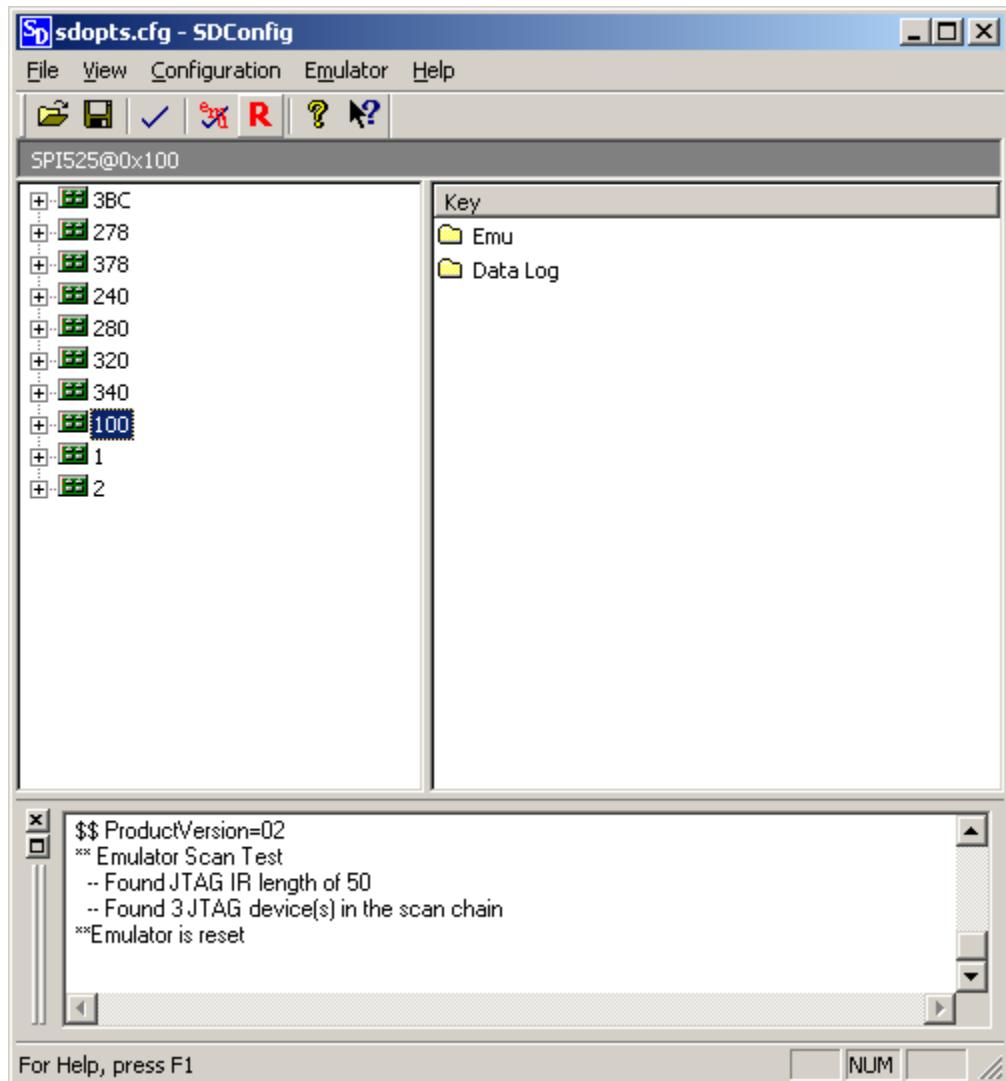


Figure 64. JTAG Reset

Step 8: Open Code Composer Studio using the ARM-side.



Figure 65. Opening Code Composer Studio

Step 9: Load Program file LoadCore.out.

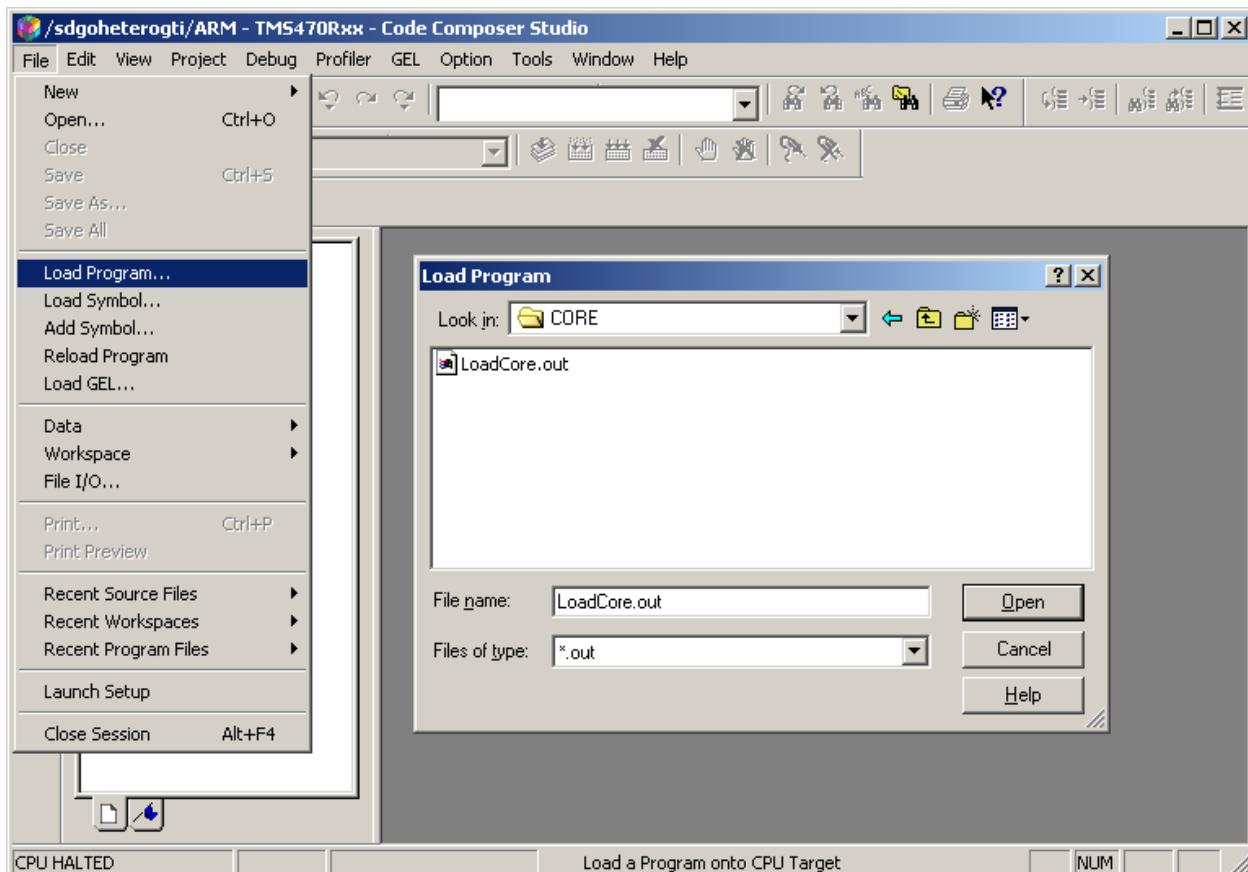


Figure 66. Loading IBoot Core Program

A progress bar will appear to show the status of the program loading.

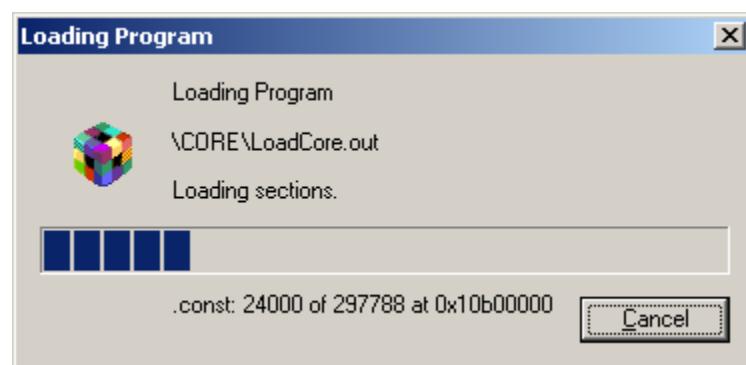


Figure 67. Program Loading Progress

Step 10: After program file loads, select **Run** from the Debug menu (or press F5) to download the program to the Innovator.

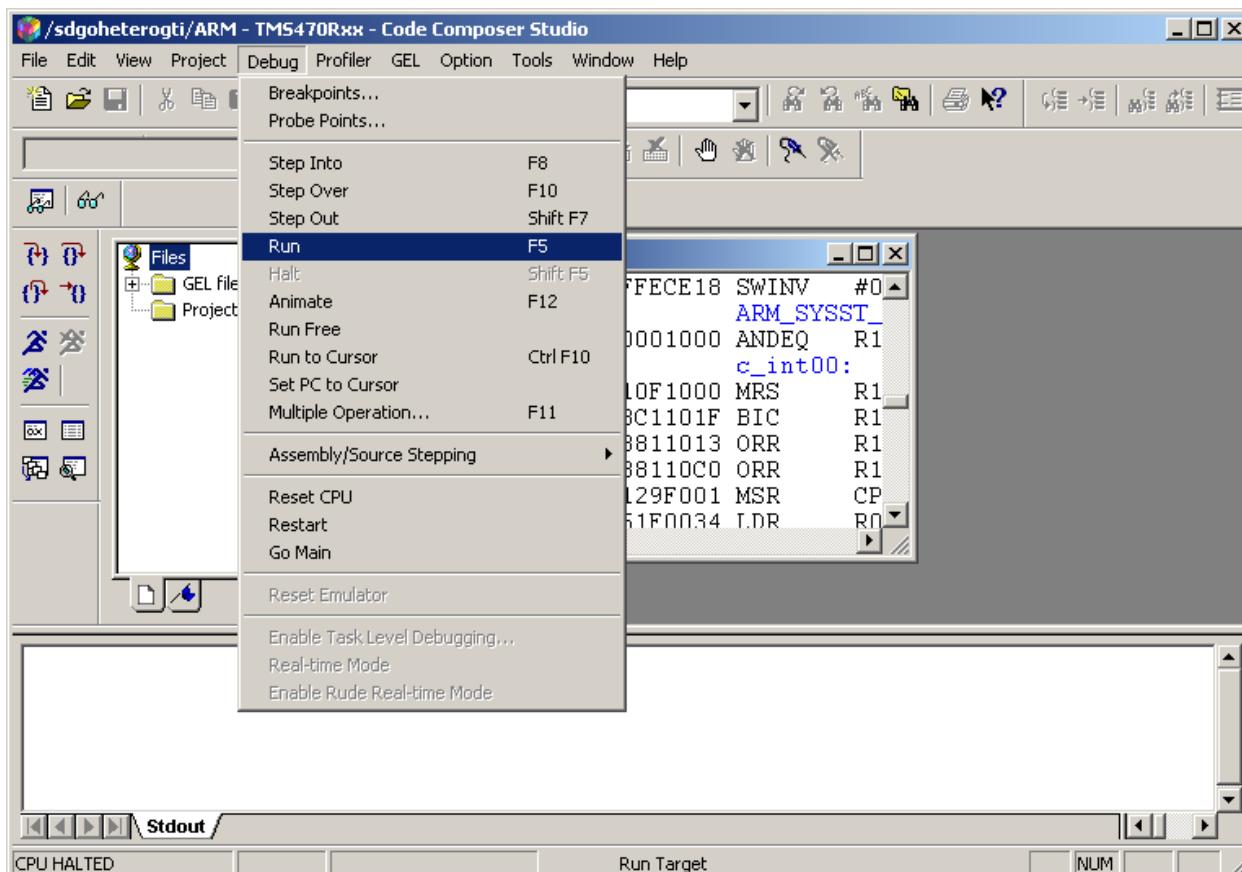


Figure 68. Downloading IBoot into the Innovator

Step 11: When LoadCore begins, a splash screen will appear on the Innovator. The Status LED on the Innovator module will blink green while the Innovator erasing Boot Flash. The LED changes to orange when the software is being burned into Boot Flash and then to red when the process has completed.

Chapter 4 – Using IBoot Host

4.0 Using IBoot Host

IBoot Host provides a Graphical User Interface running on a host machine that allows the user to load OS Images, IBoot Core files and IBoot Applets via the USB to an Innovator™ Development Kit device. For the remainder of this chapter, the term Innovator will be used to refer to the Innovator Development Kit. The USB connection is the only connection type supported by this version of the IBoot Host, therefore the term connection will refer to a USB connection. IBoot Host must already be installed on the host PC. If IBoot Host is not yet installed, refer to Chapter 2 for installation instructions.

4.1 IBoot Host GUI

The IBoot Host GUI is comprised of a Menu Bar, Toolbar, Load Category Tab Dialog and a Status Window. The figure below illustrates the location of the GUI features.

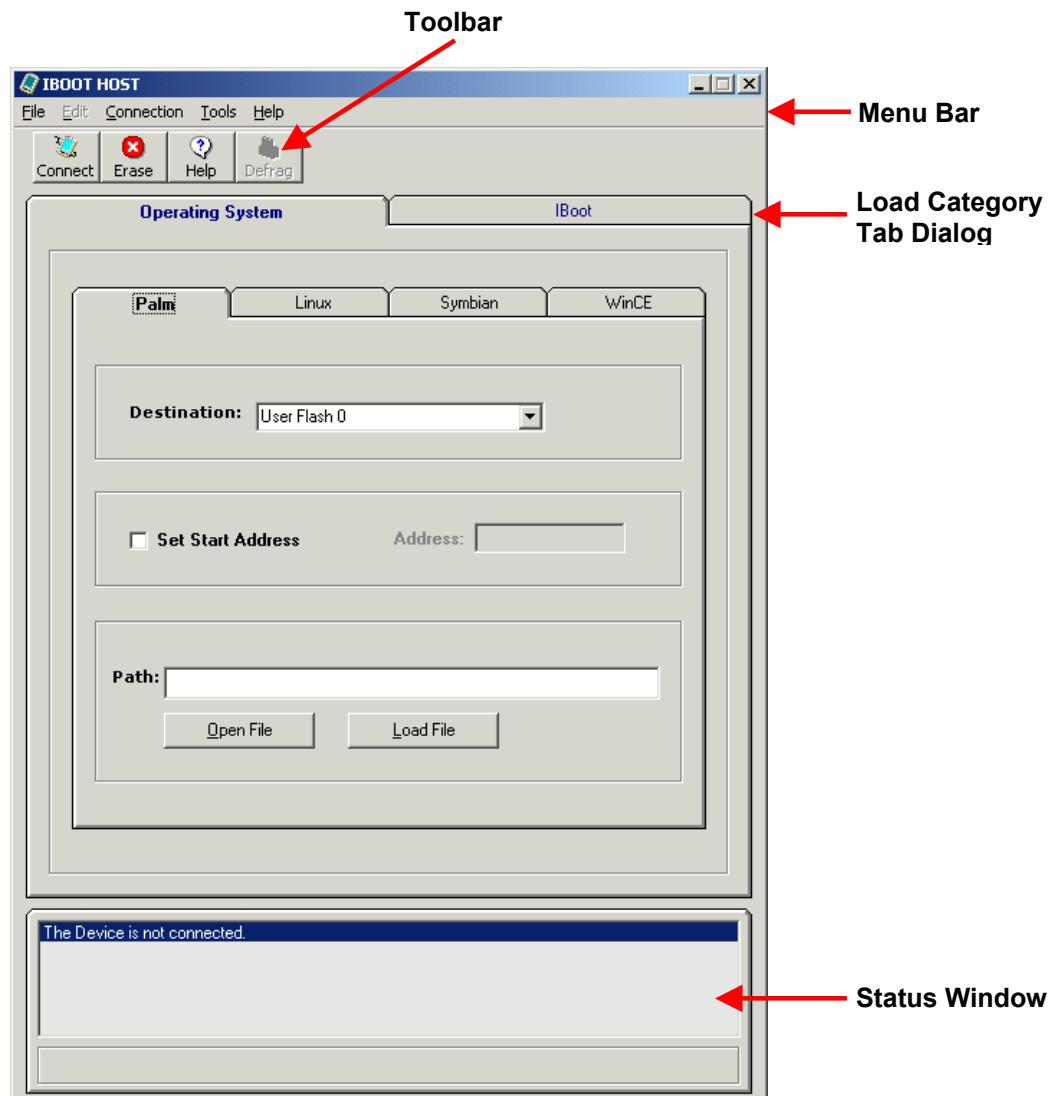


Figure 69. IBoot Host GUI

4.1.1 Menu Bar

A menu displays a list of commands that allow you to give instructions about what you want to do. The IBoot Host GUI menu bar is made up of File, Edit, Connection, Tools and Help menus. These menus are described in the following paragraphs.

4.1.1.1 File Menu

The File Menu has two options, Print Status and Close. The Print Status option will cause whatever is displayed in the Status Window to be printed. The Close option will close IBoot Host.

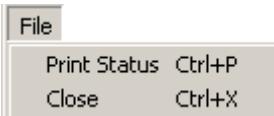


Figure 70. File Menu

4.1.1.2 Edit Menu

The Edit Menu has only a Delete option. This option will delete whatever is highlighted in the Files or Flash windows in the IBoot tab.



Figure 71. Edit Menu

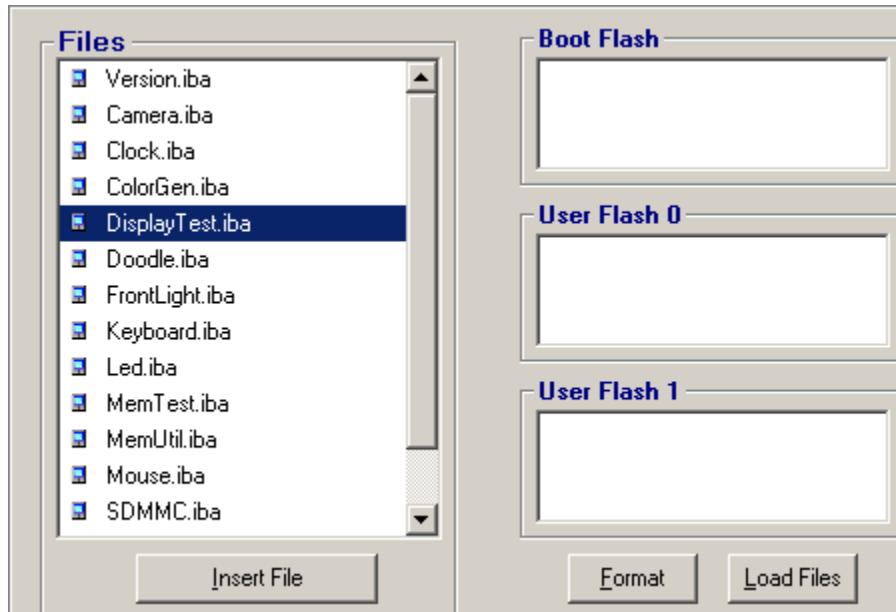


Figure 72. Files and Flash Windows

4.1.1.3 Connection Menu

The Connection Menu allows you to select the type of connection used to connect to the Innovator Module. The Settings option will display a Connection Settings window with a drop down window showing the available connection types.



Figure 73. Connection Menu

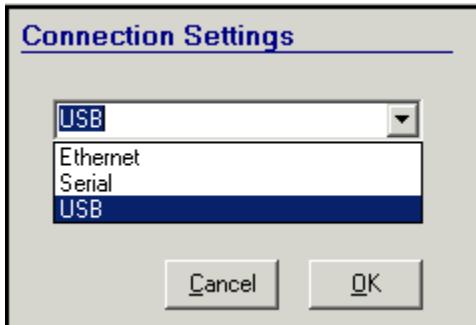


Figure 74. Connection Settings Window

4.1.1.4 Tools Menu

The Tools Menu provides access to the Erase function. The Erase option allows you to completely erase any Flash memory using the Erase selection window.



Figure 75. Tools Menu

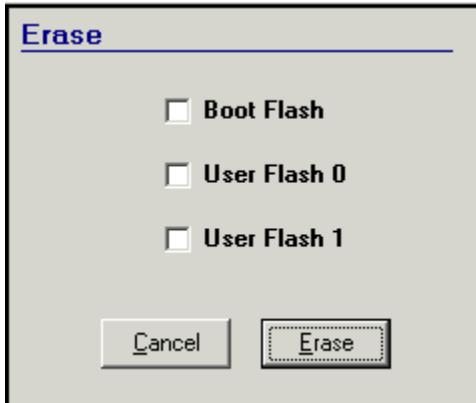


Figure 76. Erase Selection Window

4.1.1.5 Help Menu

The Help Menu has two options, Contents and About. The Contents option provides access to any Help files that may be available for IBoot Host. The About option displays the IBoot Host version information.



Figure 77. Help Menu



Figure 78. About Screen

4.1.2 Toolbar

The Tool Bar is comprised of Connect, Erase, Help and Defrag (not implemented) buttons. The Connect button allows the user to establish an Ethernet, Serial or USB connection to the Innovator. The Erase button displays the Erase utility window that allows the user to select and erase the IBoot Flash, User Flash 0 or User Flash 1. The Help button launches the Help window. The Defrag Button is not implemented in this version of the IBoot Host.

4.1.3 Load Category Tab Dialog

The Load Category Tab Dialog contains an Operating System Tab and an IBoot Tab. Each tab provides the user with a series of operations that can be performed on the Innovator.

4.1.3.1 Operating System Tab

The Operating System Tab (Figure 79) allows the user to select and load OS specific files (Images) to the Innovator Module. IBoot Host is currently supporting the Palm, Linux, Symbian and WinCE operating systems.

4.1.3.1.1 Operating System Tabs

These tabs are used to select the type of Operating System that will be loaded.

4.1.3.1.2 User Flash Destination

Allows the user to select which User Flash to load the Operating System.

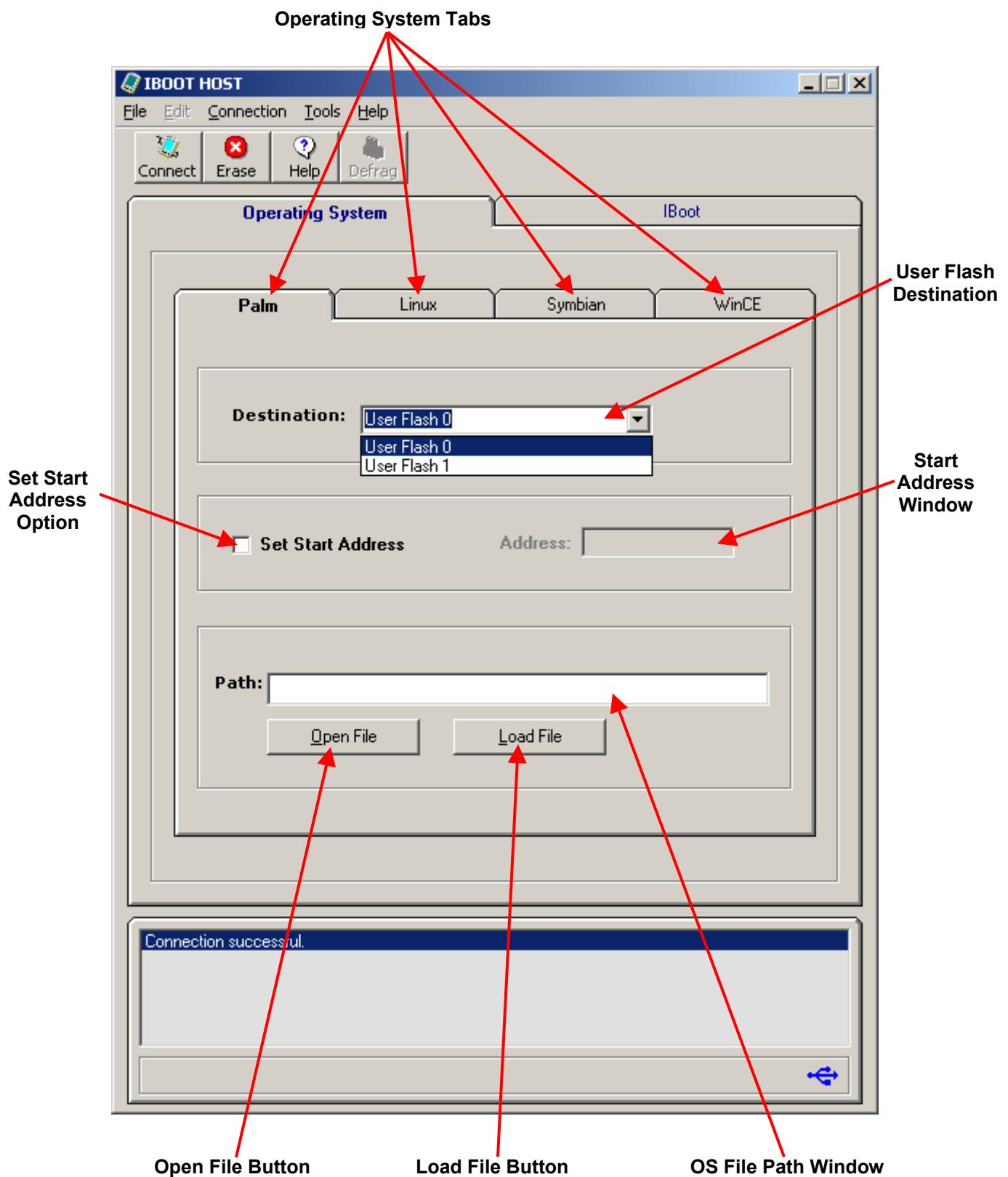


Figure 79. IBoot Host GUI Operating System Tab

4.1.3.1.3 Start Address Option

This option will allow the user to select a start address in User Flash at which the Operating System will begin loading.

4.1.3.1.4 Start Address Window

The start address is entered in this window. The address must be entered in hexadecimal format.

4.1.3.1.5 Open File Button

The Open File button opens a browse window to locate the Operating System image file.

4.1.3.1.6 OS File Path Window

The Path window displays the path for the Operating System image file.

4.1.3.1.7 Load File Button

The Load File button begins the Operating System downloading process.

4.1.3.2 IBoot Tab

The IBoot Tab (Figure 80) allows the user to update IBoot Core software, select and load the IBoot Applets files to the IBoot Core running on the Innovator.

4.1.3.2.1 Load IBoot Core Option

This option allows the user to update the version of IBoot already loaded on the Innovator Module.

4.1.3.2.2 Browse Button

The Browse button opens a browse window to locate the IBoot Core update.

4.1.3.2.3 IBoot Core Path Window

This window displays the path for the IBoot Core file.

4.1.3.2.4 Load Core Button

The Load Core button begins the updating process.

4.1.3.2.5 Applet Files Window

Applet files are loaded into this window prior to loading them into Flash.

4.1.3.2.6 Insert File Button

The Insert File button opens a browse window to locate the Applet files.

4.1.3.2.7 Flash Destination Windows

Applets files are moved to the desired destination windows before they are downloaded.

4.1.3.2.8 Format Button

This button opens the format selection window to select the Flash destination to be formatted to accept the Applet files.

4.1.3.2.9 Load Files Button

The Load Files button begins formatting the Flash destinations selected.

4.1.4 Status Window

The Status Window displays IBoot Host execution statuses, progression of operations and the status of connections.

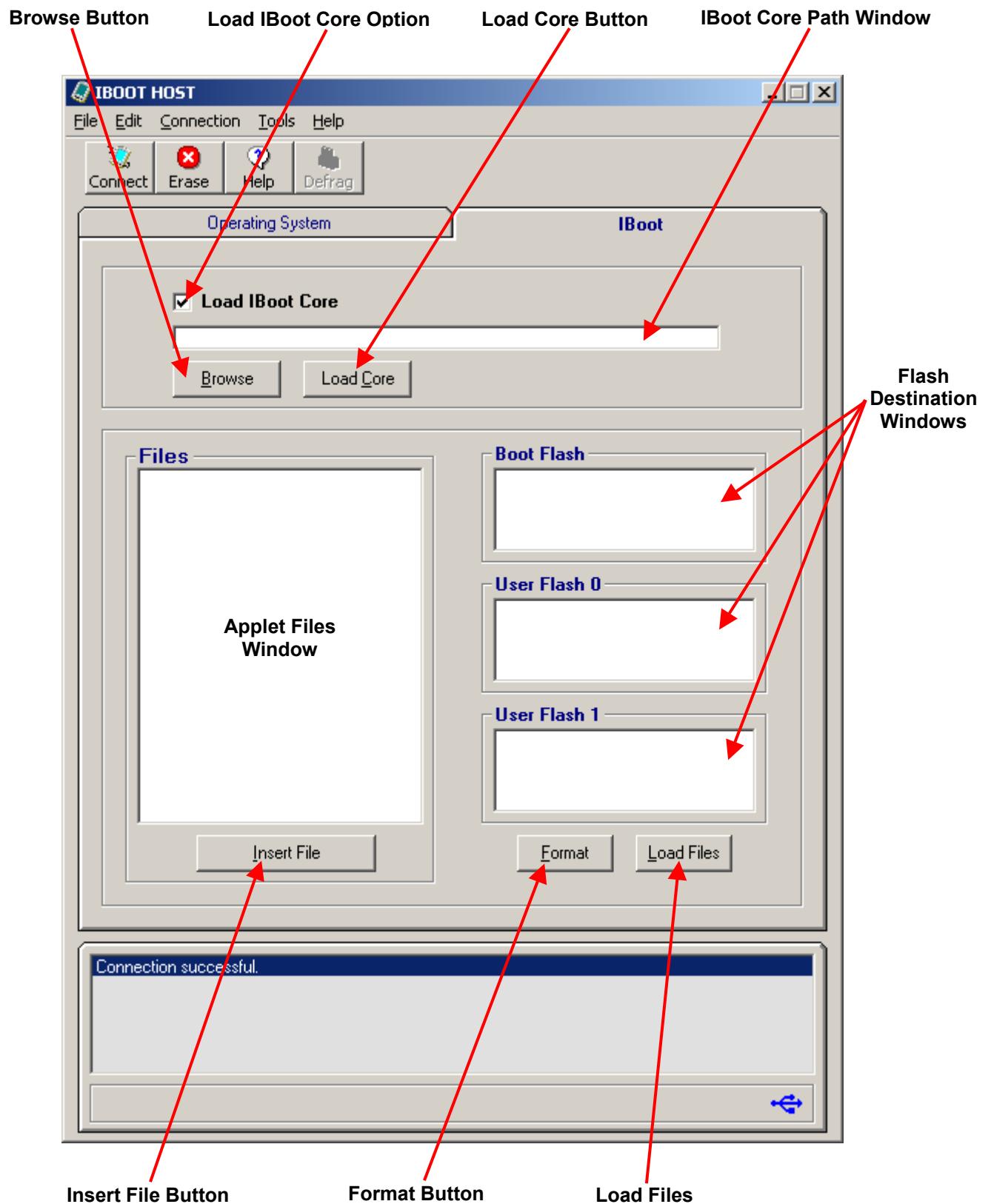


Figure 80. IBoot Host GUI IBoot Tab

4.2 Establishing a Connection

Before performing any type of execution on the IBoot Host, a connection must be established between IBoot Host and the Innovator Module. To establish a connection, proceed as follows:

- Step 1:** Connect a USB cable from the USB Port on the host PC to the USB Client Port on the Innovator. If USB driver has not been installed, refer to Chapter 5 for instructions.
- Step 2:** Make sure Innovator Memory Configuration Switch SW1 is set to ON.
- Step 3:** Turn Innovator Module power switch to ON.



Figure 81. USB Cable Connection

- Step 4:** Check the IBoot Host Connection Settings and make sure USB is selected.

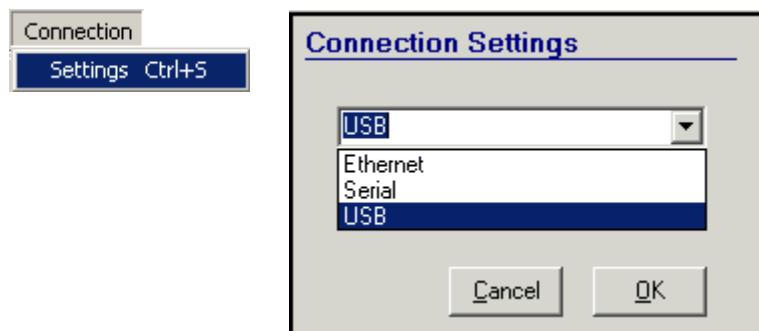


Figure 82. Connection Settings

- Step 5:** Press the **Connect** button on the tool bar.

Step 6: Verify connection status is displayed in the Status Window and USB icon is displayed at lower right hand corner of the Status Window, as shown below, while the device is connected.

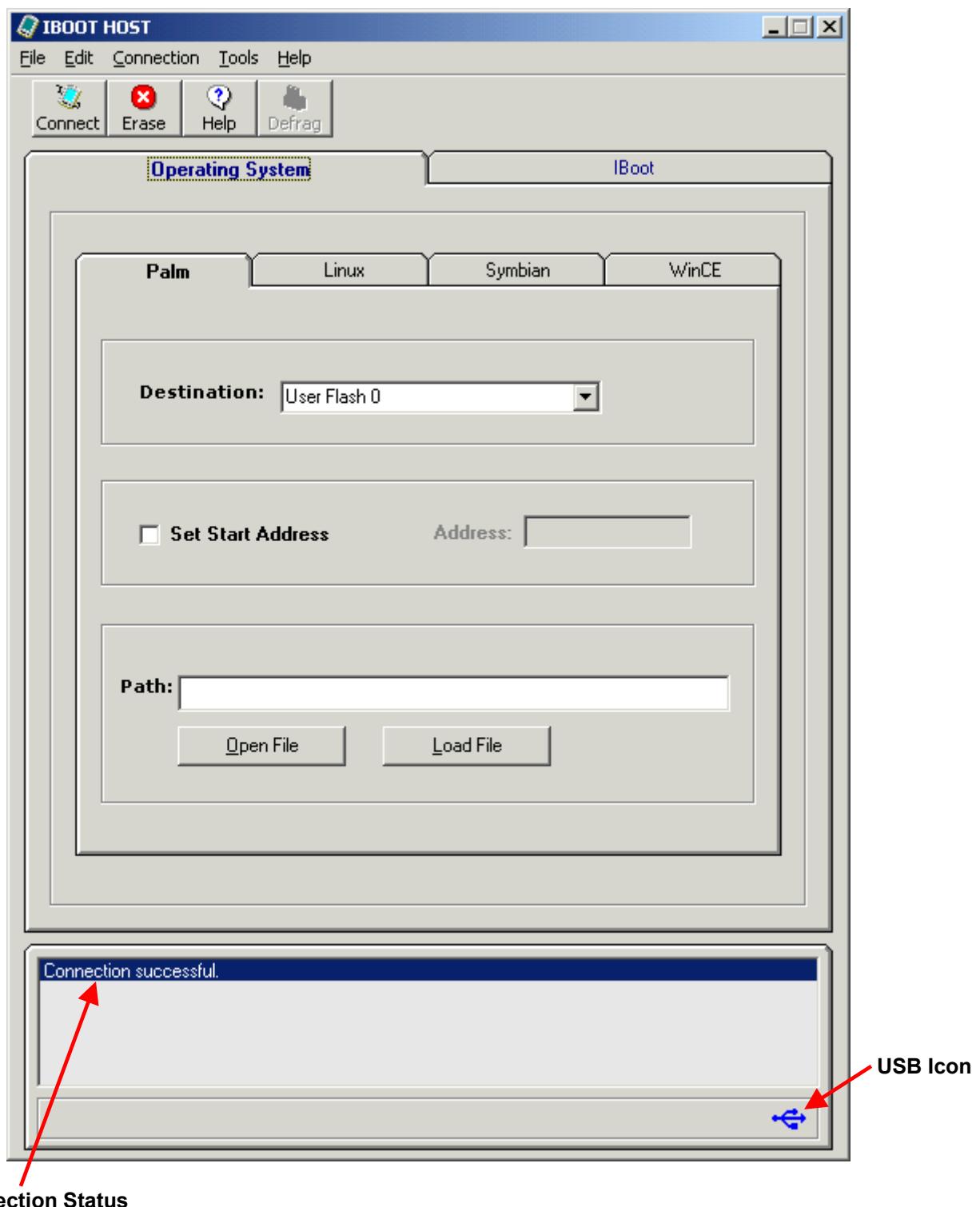


Figure 83. Successful Connection

If the IBoot Host fails to establish a connection with the Innovator, a message box will appear with the following error: "Failed to Open Communications with the device." The Status Window will display the message "The Device is not connected" any time the device disconnects, fails to connect or if a connection has not been attempted. If the connection fails, check the Connection Settings to see that USB has been selected.



Figure 84. Failed Connection Message

NOTE: The amount of time you must wait before connecting to the device may vary depending on the processor speed of the system you are using.

If IBoot Host fails to establish a connection to the device after several tries, do the following:

- Close the IBoot Host application.
- Unplug the USB cable from the device and turn off the device.
- Turn the device on and plug the USB cable into the device.
- Launch the IBoot Host application wait for 10 seconds and connect to the device.

4.3 Erasing

IBoot Flash, User Flash 0 or User Flash 1 may be erased before loading anything into Flash. However, erasing is not required before an OS image is loaded. To execute an Erase command, press the **Erase** button on the tool bar or select the Erase option from the Tools Menu. When the Erase utility window appears, check the Flash location(s) you would like to erase and press the **Erase** button. The Erase command will be sent to the device and the erasing status will be displayed on the Innovator. All three may be erased at the same time by putting a check in each box.

NOTE: The Erase utility will erase everything in the Flash locations selected, this includes IBoot Core and Operating Systems.

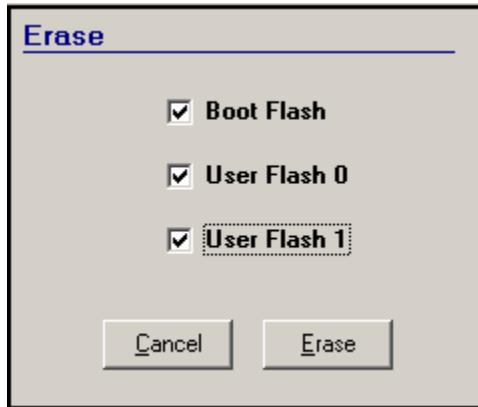


Figure 85. Erase Utility Window

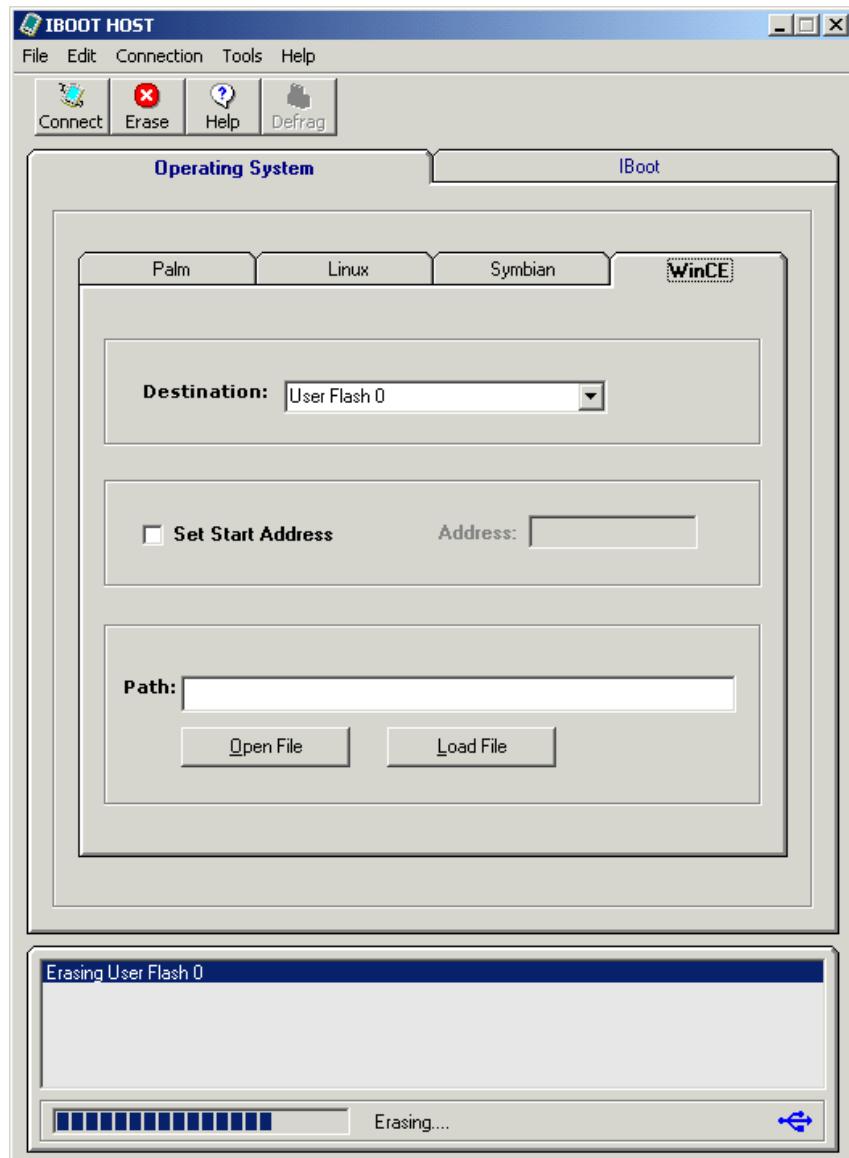


Figure 86. Sending Erasing Command to the Innovator Module

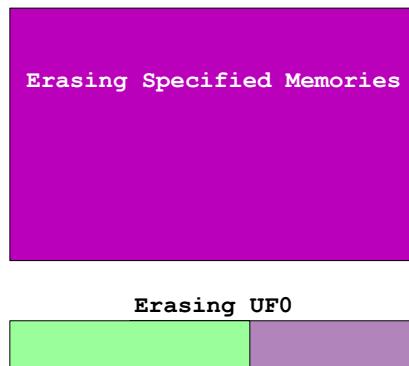


Figure 87. Innovator Erasing Status

4.4 Updating IBoot Core from the Innovator™ Development Kit CD

IBoot Core tab is used to update the IBoot Core software currently loaded on the Innovator. If IBoot Core software has not yet been installed on the Innovator or has been erased, refer to Chapter 3 to load the software. To update IBoot Core, proceed as follows:

Step 1: Select the IBoot tab to display the dialog box and check Load IBoot Core.

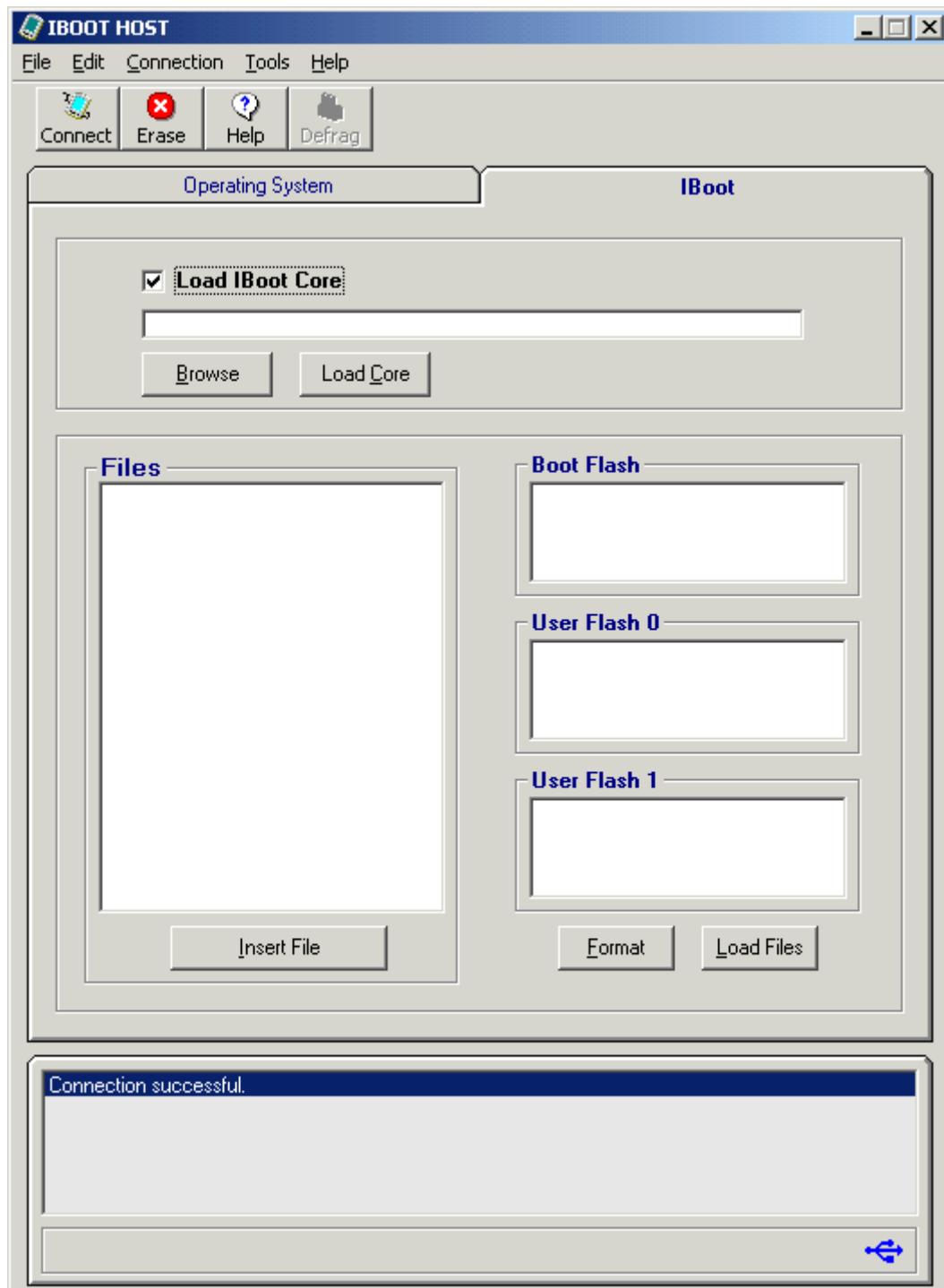


Figure 88. IBoot Core Screen

Step 2: Click on the **Browse** button and locate IBootCore.plf file on the Innovator CD. The file is located in D:\Software\CORE.

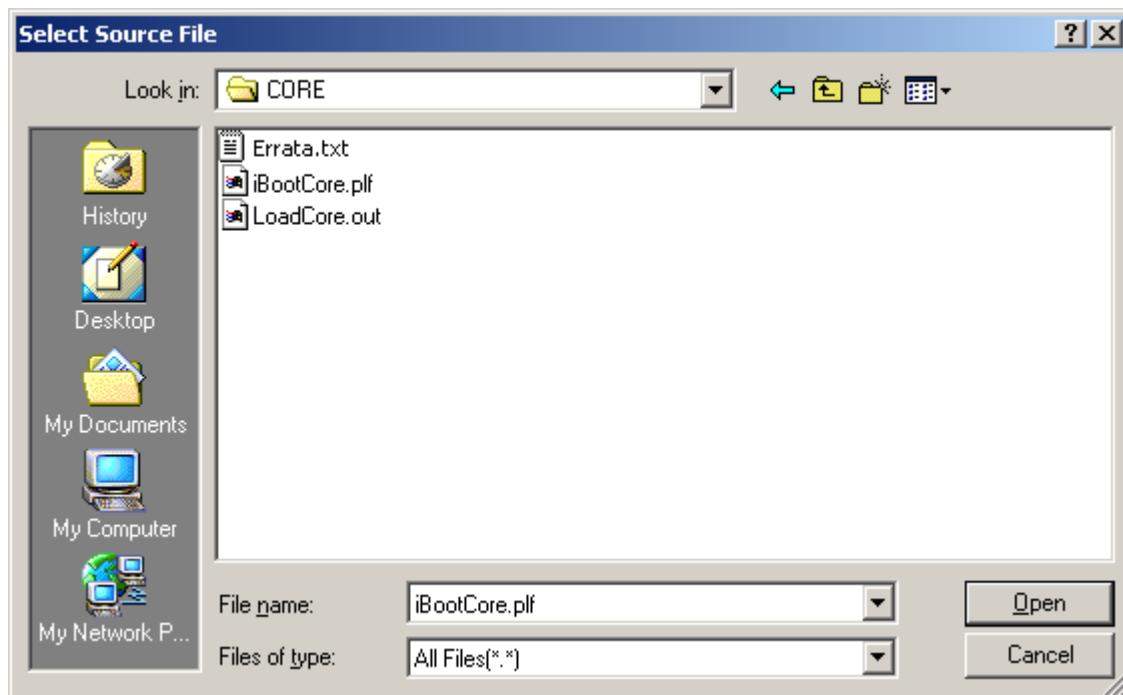


Figure 89. Select Source File Window

Step 3: Click **Open** to display the path and filename in the Load IBoot Core window.

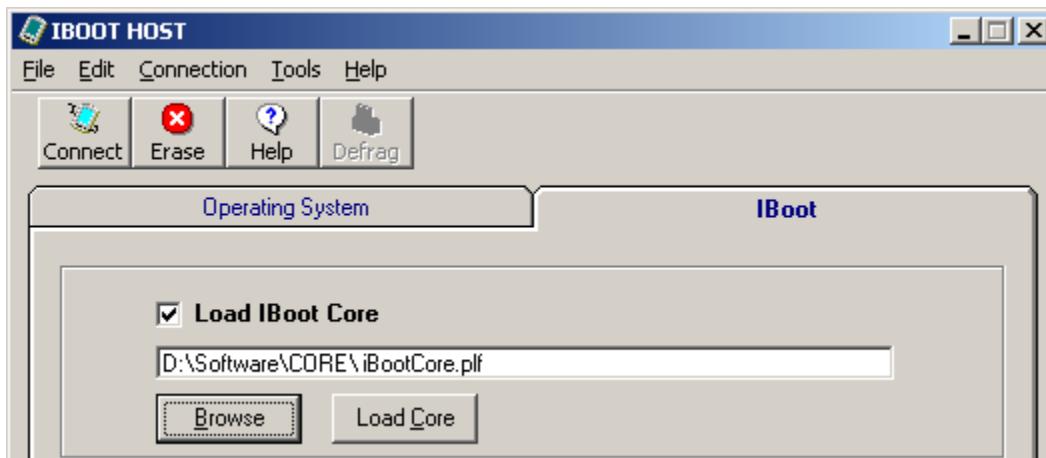


Figure 90. IBoot Core File Location

Step 4: Click on the **Load Core** button to begin loading. While the file is being sent to the Innovator, the status of the file transfer will be displayed below the Status Window.

After file transfer is complete, the Status Window will display a confirmation message, as shown below.

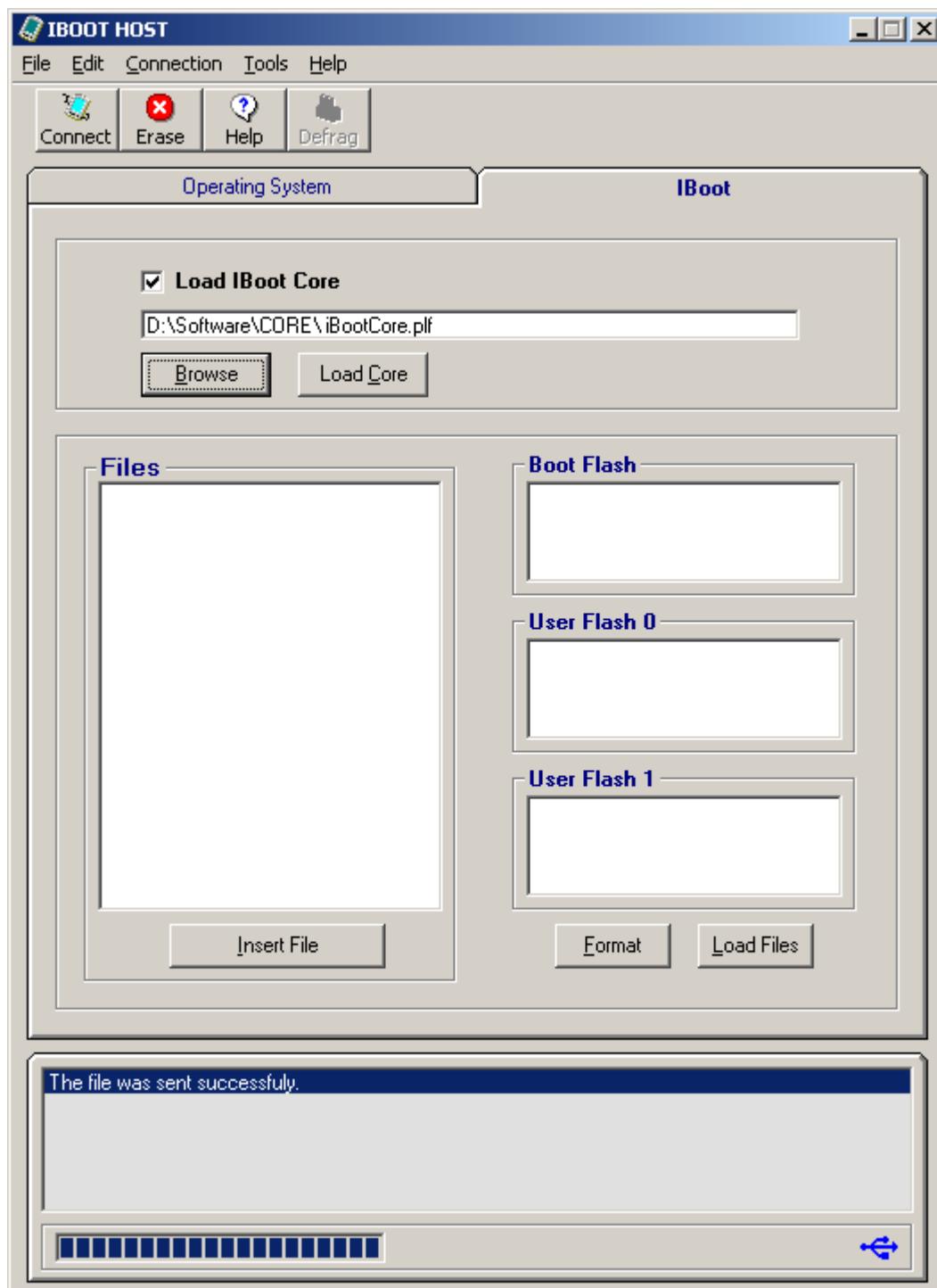


Figure 91. Successful File Transfer

The Innovator LED will display the status of the IBootCore.plf file replacement. A blinking green Status LED will indicate the flash is being erased, orange indicates flash is being burned. When the Status LED is solid green, the update is complete.

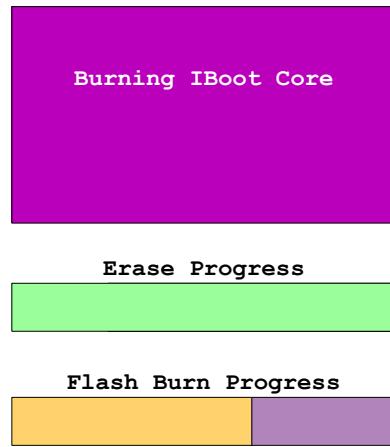


Figure 92. IBoot Core Updating Status

4.5 Updating IBoot Core from the PSI Website

IBoot Core tab is used to update the IBoot Core software currently loaded on the Innovator. If IBoot Core software has not yet been installed on the Innovator or has been erased, refer to Chapter 3 to load the software. To update IBoot Core from the website, proceed as follows:

Step 1: Navigate to the IBoot Host page under Software.

Step 2: Click on the **IBoot Core used with Code Composer: IBootCore.plf** link.

Step 3: When the **File Download** screen appears, click **Open** to launch the Save As window.

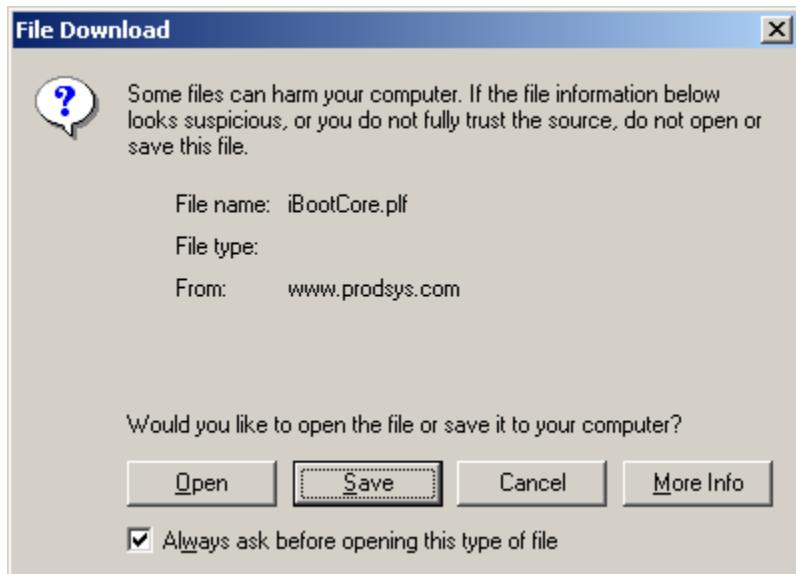


Figure 93. IBootCore.plf File Download Screen

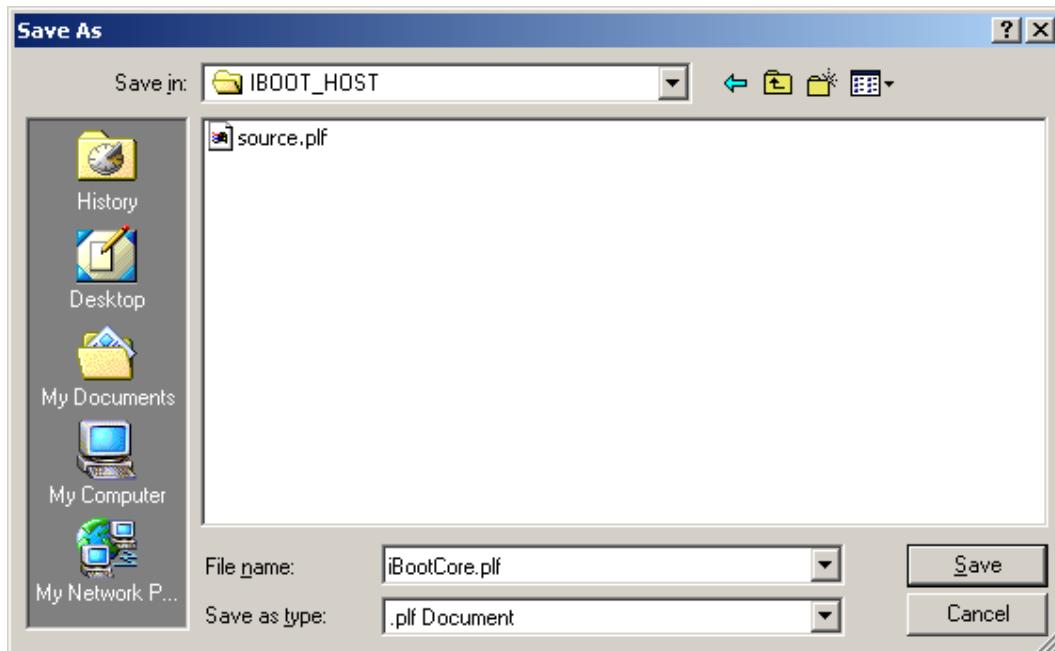


Figure 94. File Save As Window

Step 4: When the File Save As screen appears, place the file in the same folder created when IBoot Host was loaded: **C:\PSN\IBOOT_HOST** (or **C:\Productivity_Systems_Incl\IBOOT_HOST** for NT users).

Step 5: Select the IBoot tab to display the dialog box and check Load IBoot Core.

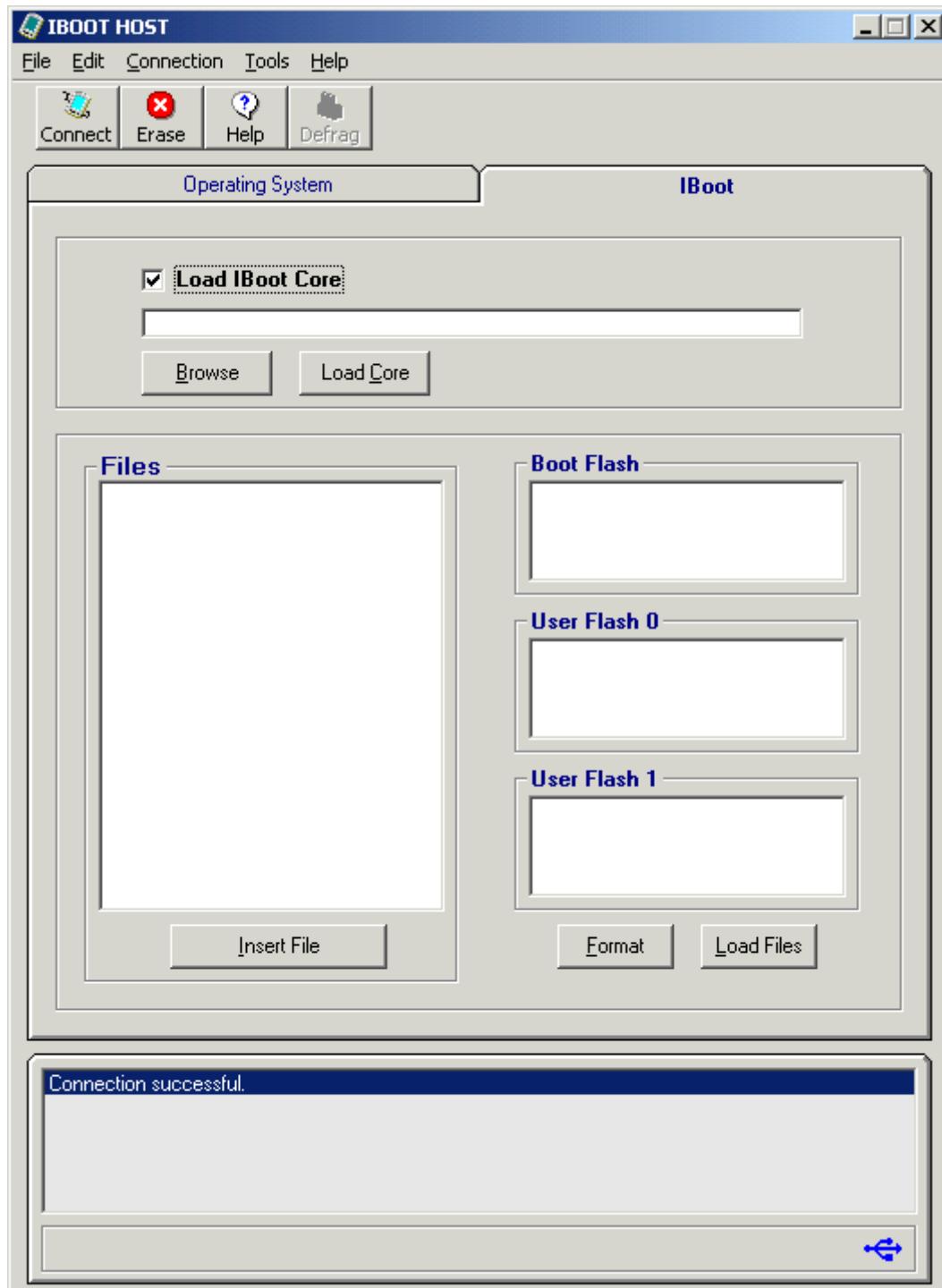


Figure 95. IBoot Core Screen

Step 6: Click on the **Browse** button and locate IBootCore.plf file in **C:\PSNBOOT_HOST** folder (or **C:\Productivity_Systems_Inc\IBOOT_HOST** folder for NT users).

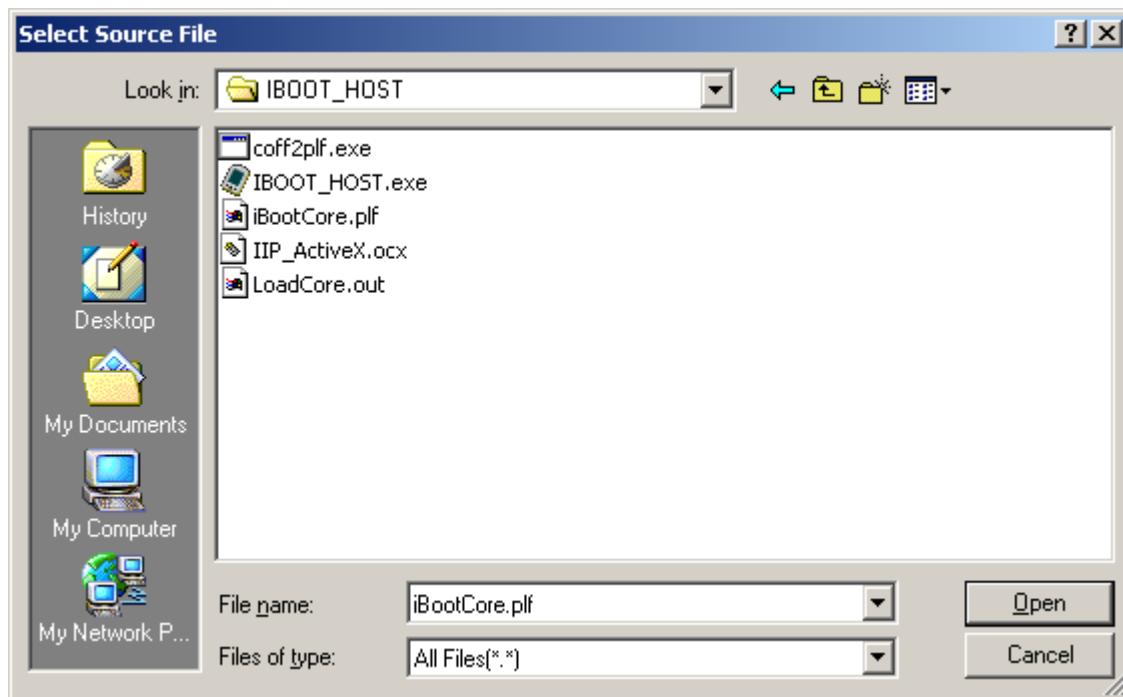


Figure 96. Select Source File Window

Step 7: Click **Open** to display the path and filename in the Load IBoot Core window.

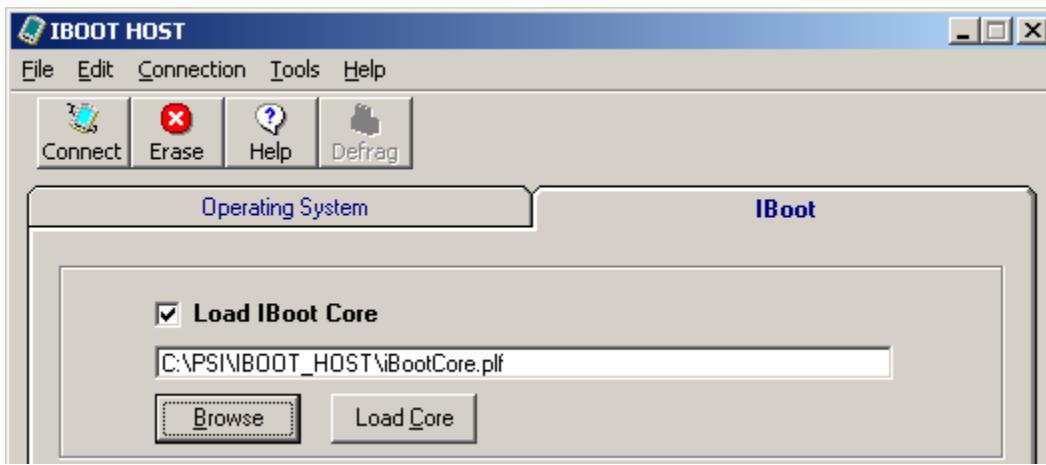


Figure 97. IBoot Core File Location

Step 8: Click on the **Load Core** button to begin loading. While the file is being sent to the Innovator, the status of the file transfer will be displayed below the Status Window.

After file transfer is complete, the Status Window will display a confirmation message, as shown below.

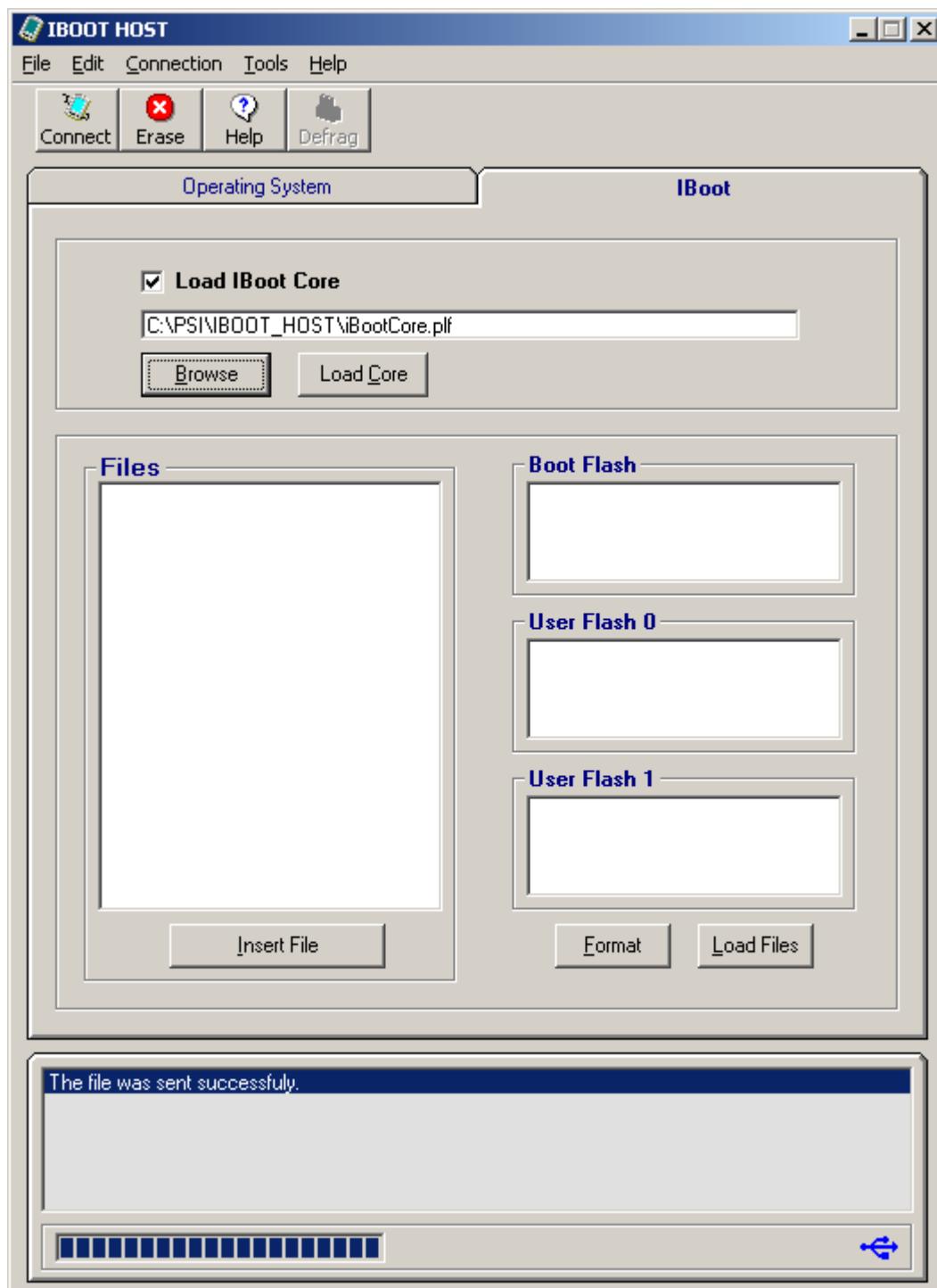


Figure 98. Successful File Transfer

The Innovator LED will display the status of the IBootCore.plf file replacement. A blinking green Status LED will indicate the flash is being erased, orange indicates flash is being burned. When the Status LED is solid green, the update is complete.

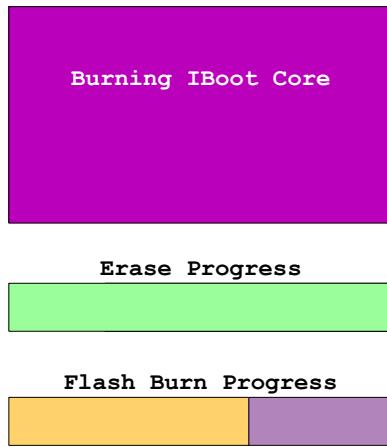


Figure 99. IBoot Core Updating Status

4.6 Loading an Operating System

It is possible to load up to two operating systems on the Innovator, provided neither operating system is greater than 32M. The operating system is then selected by configuring the Memory Configuration switch. This chapter describes how to load operating systems into User Flash locations using IBoot Host, and how to select the operating system to use. This procedure assumes that IBoot (Chapter 3), USB Drivers (Chapter 2) and IBoot Host (Chapter 2) have already been loaded.

4.6.1 Loading an Operating System into User Flash 0

To load operating system images files into User Flash 0, proceed as follows:

Step 1: Turn the Innovator Module Off and set Memory Configuration switch SW1 to On.

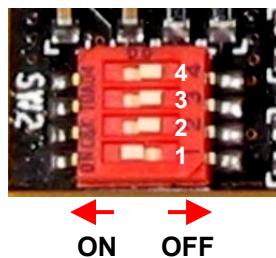


Figure 100. Memory Configuration Switch Setting for IBoot

Step 2: Connect a USB cable from the USB Port on the host PC to the USB Client Port on the Innovator.



Figure 101. USB Cable Connection

Step 3: Turn the Innovator Module On.

Step 4: Press the Connection button on the tool bar to establish a USB connection.

Step 5: Verify connection status is displayed in the Status Window and USB icon is displayed at lower right hand corner of the Status Window, as shown below, while the device is connected.

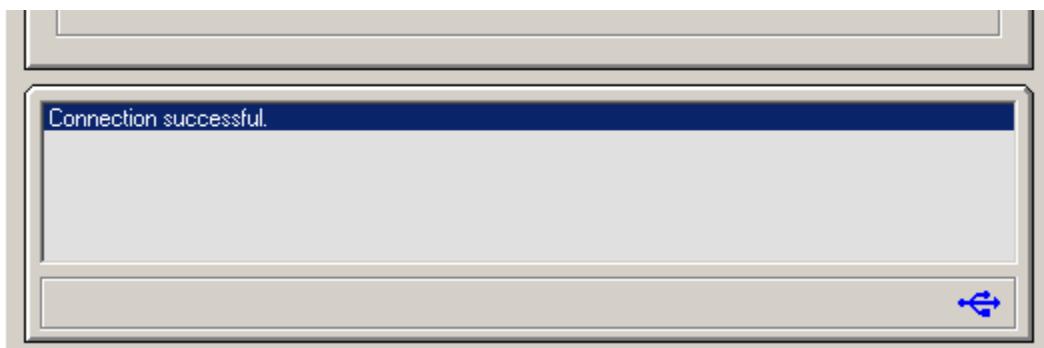


Figure 102. USB Connection Established

Step 6: Click on the appropriate operating system tab to bring up the dialog screen. In this example, WinCE will be used.

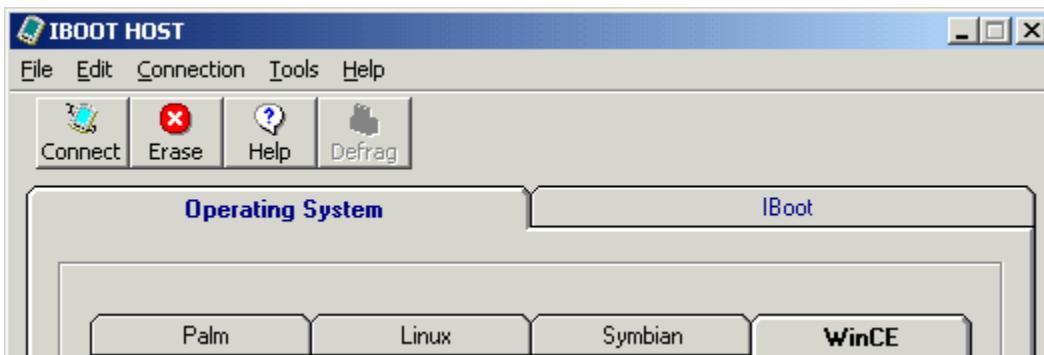


Figure 103. Operating System Tabs

Step 7: Make sure User Flash 0 appears in the Destination window. If not, use down arrow to make the selection.

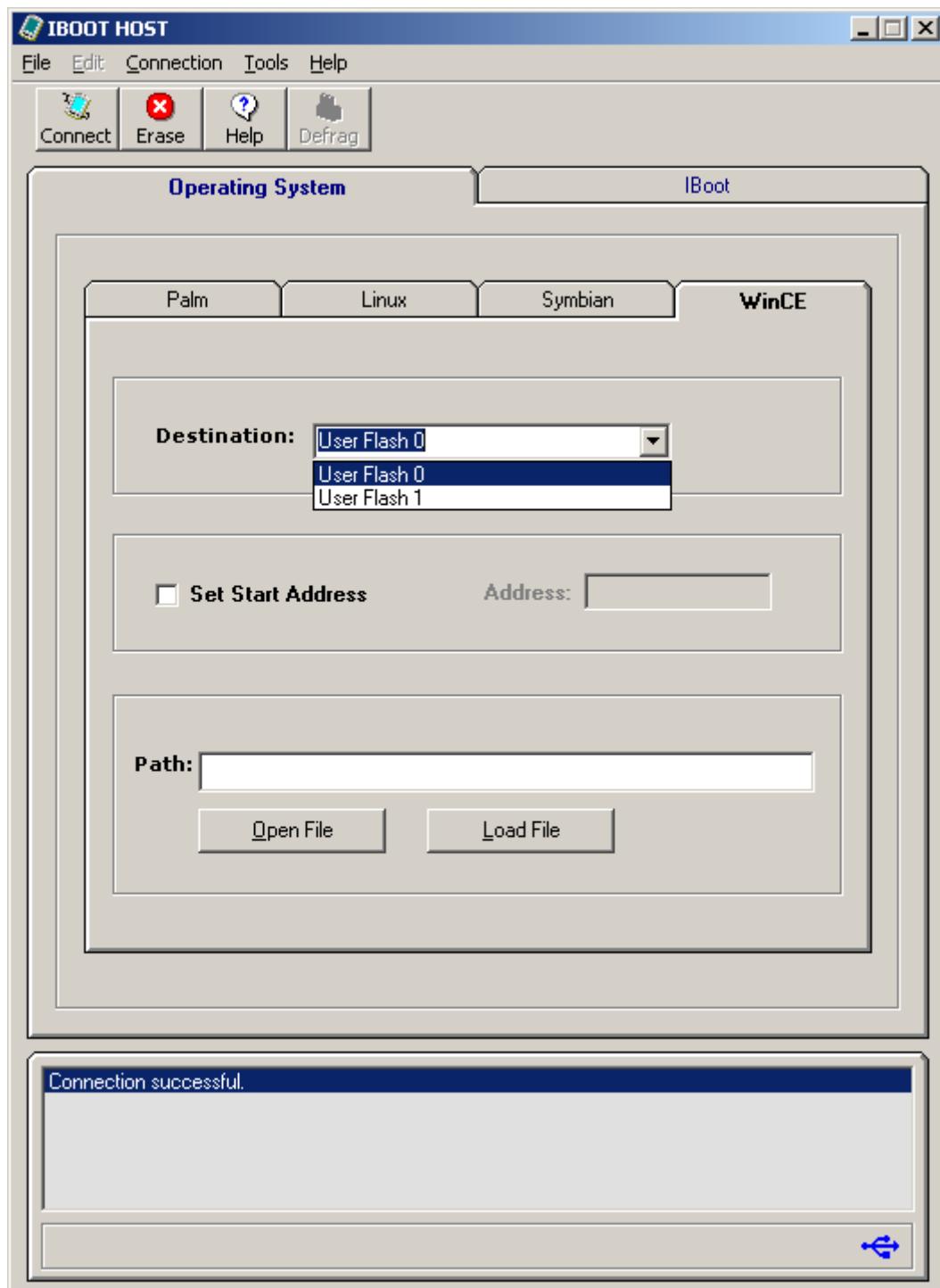


Figure 104. WinCE Dialog Screen

Step 8: Click on **Open File** to enter path and filename for the operating system.

NOTE: An Operating System may not be included with the Innovator Development Kit and must be purchased separately. The following example shows the steps that should be followed if the Operating System were copied to a BIN folder on the PC's hard drive.

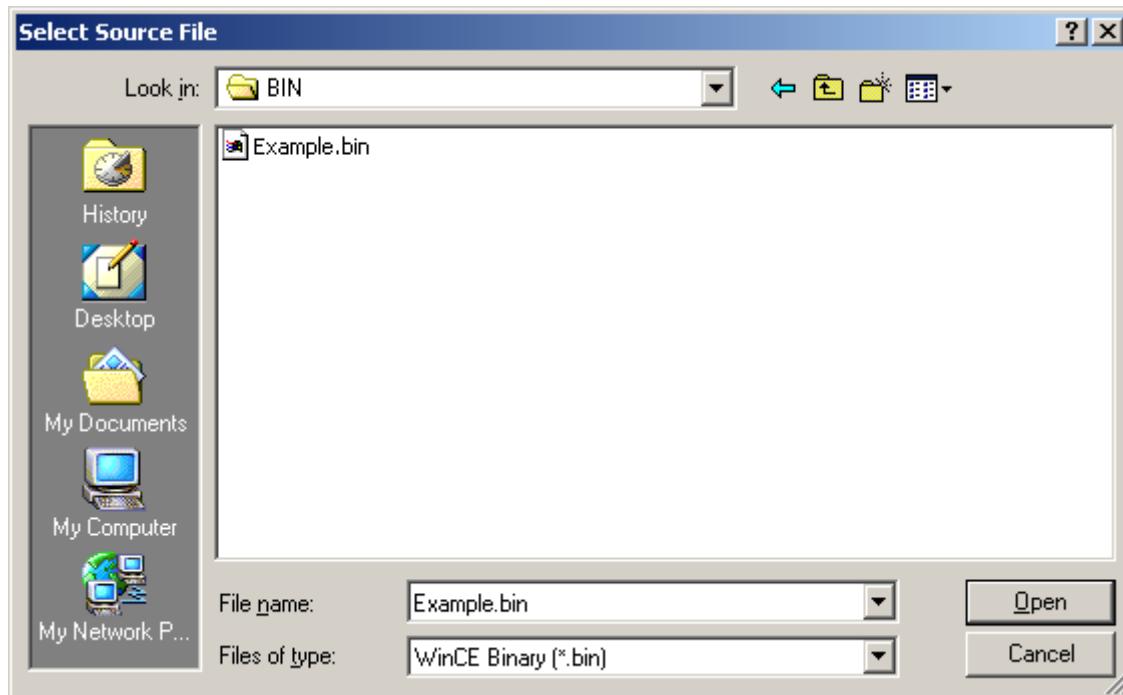


Figure 105. Open File Window

Step 9: When file is located, click on **Open** to display path and filename in the WinCE dialog Path window.

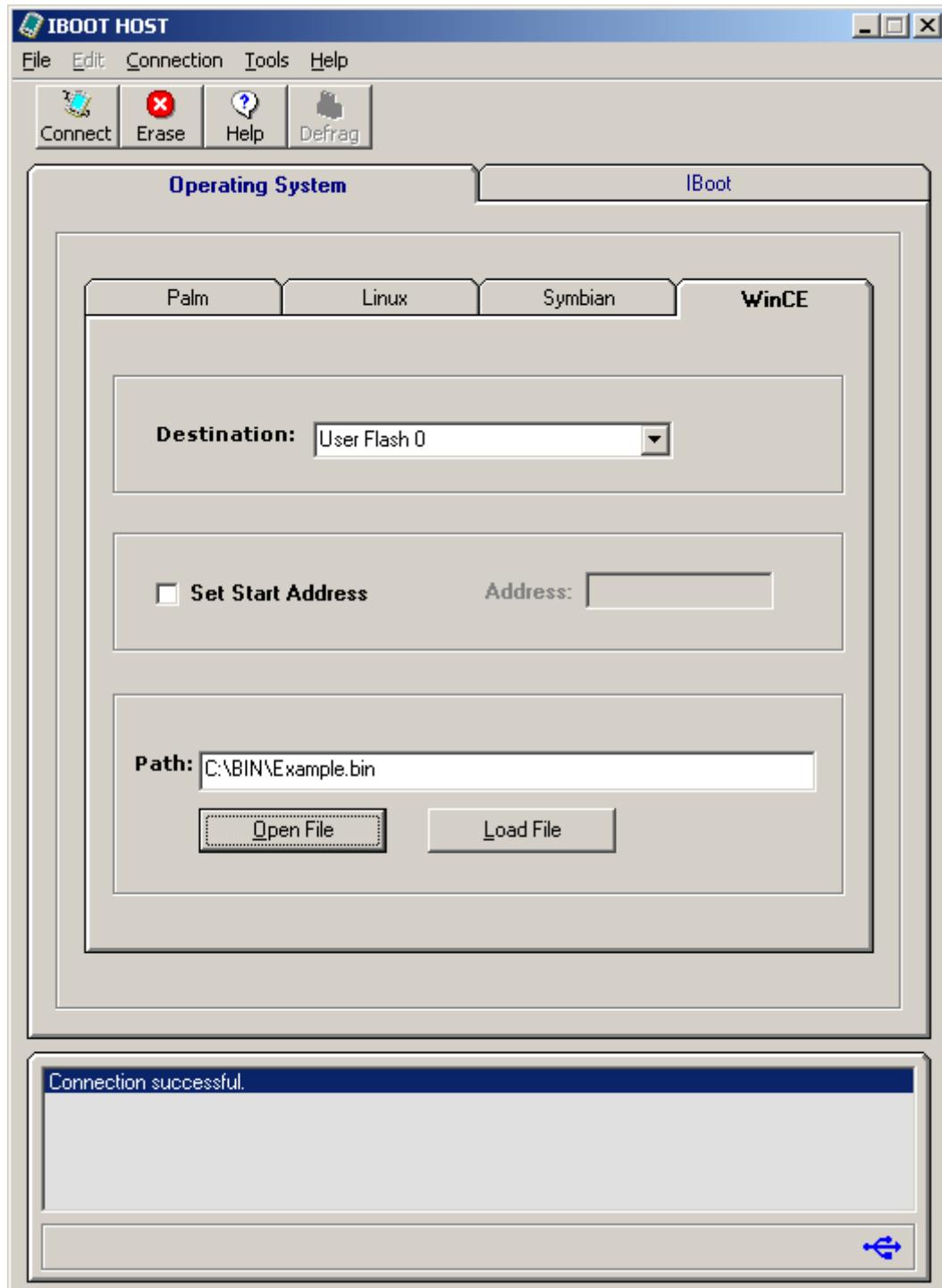


Figure 106. Operating System File Path and Filename

Step 10: Click on **Load File**. The file will be transferred from IBoot Host to the Innovator. A “Sending File” indication will be displayed at the bottom of the IBoot Host screen.

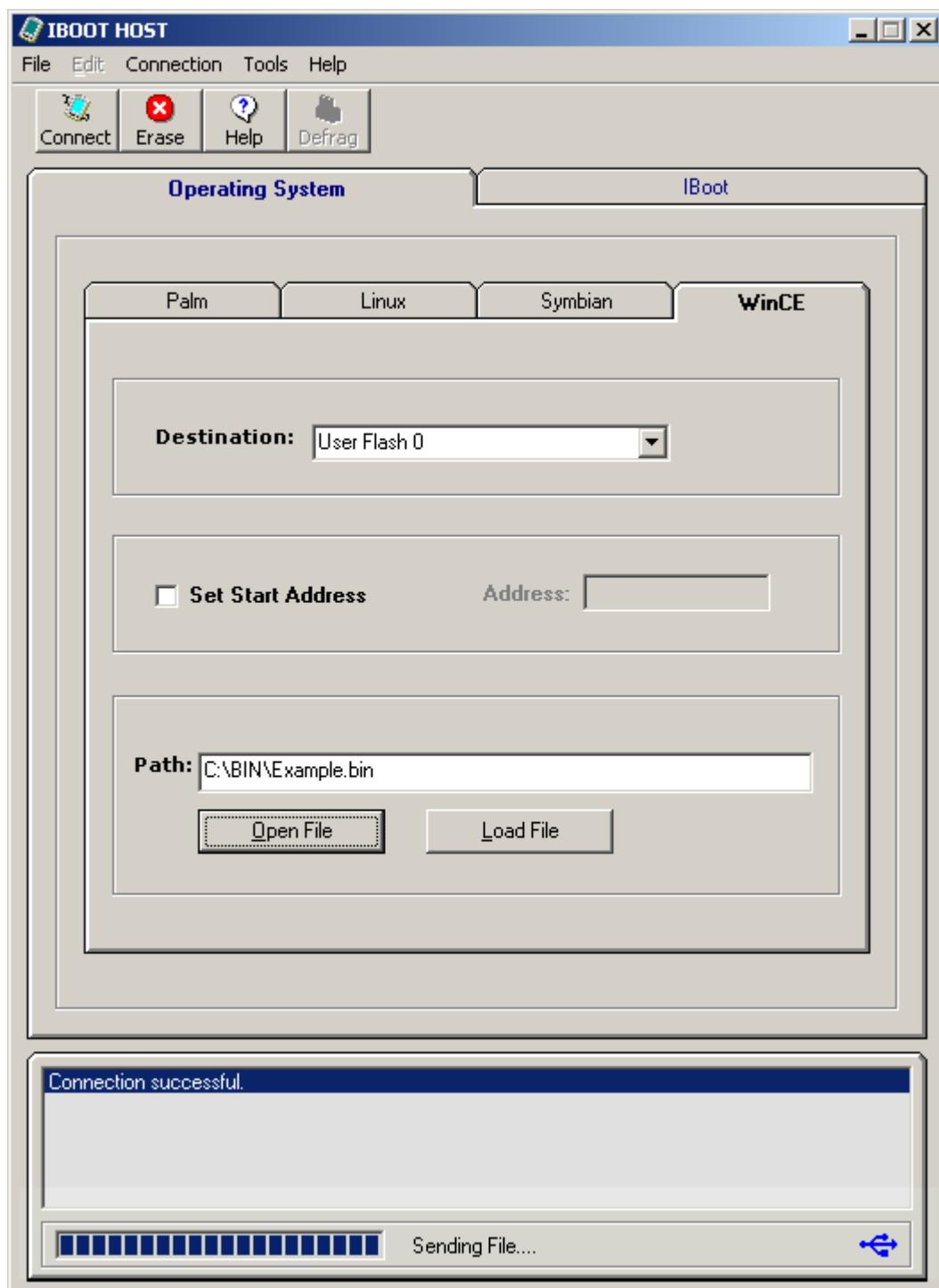


Figure 107. Sending File Screen

Step 11: When transfer is finished, the Status Window will display “The file was sent successfully” message as shown in the figure below.

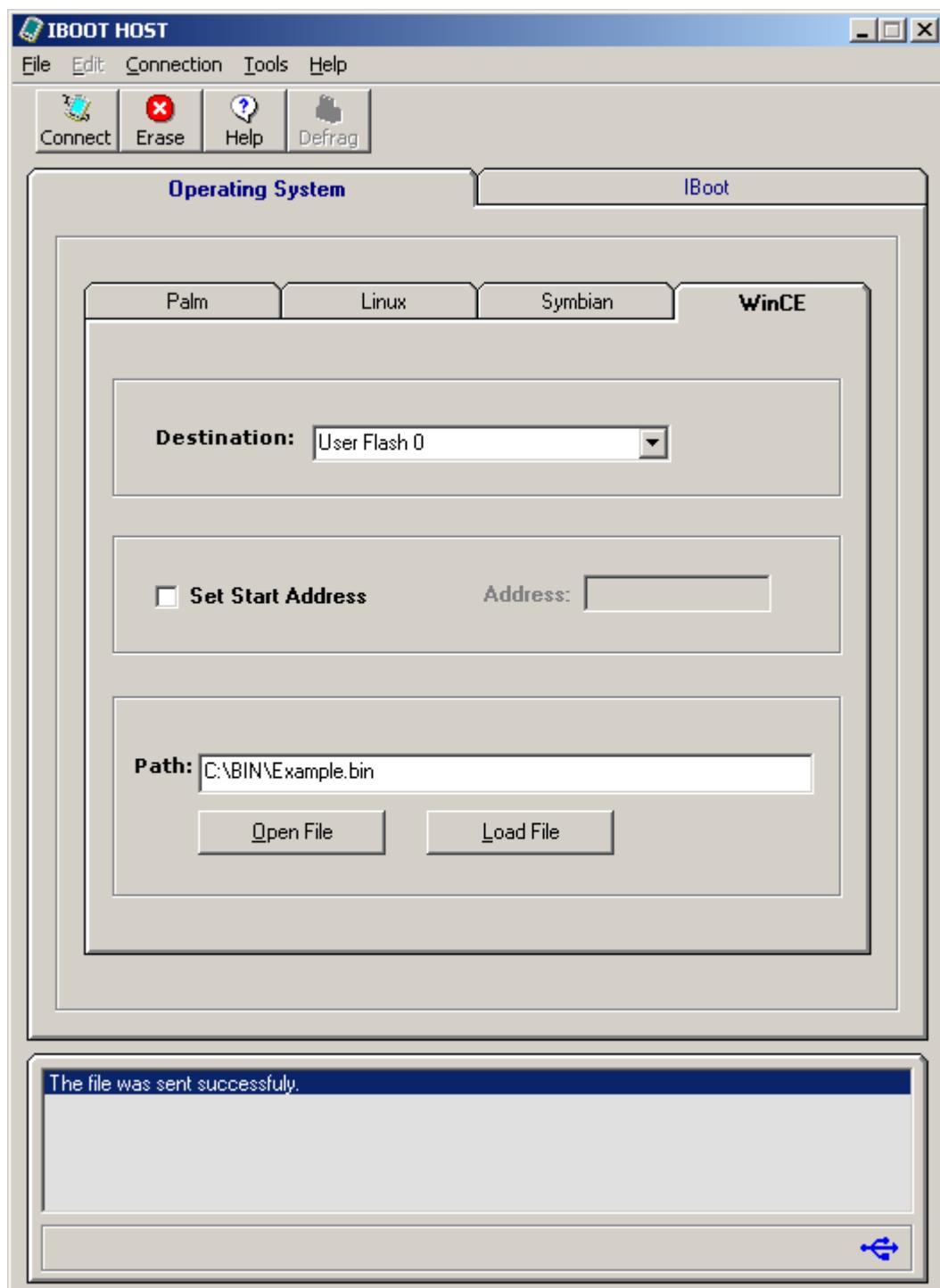


Figure 108. User Flash 0 File Transfer Successful

Step 12: Observe the following screen is displayed on the Innovator (after about 10 to 15 seconds). IBoot Host will erase the User Flash destination first. The Status LED will blink green while erasing.

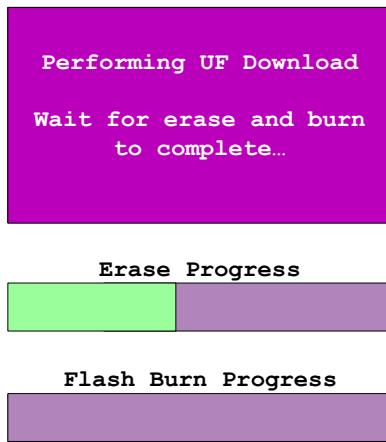


Figure 109. Erasing User Flash Screen

Step 13: Observe Status LED blinks orange when IBoot Host begins loading the User Flash.

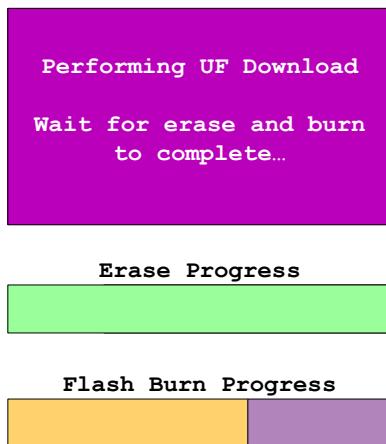


Figure 110. Burning Flash Screen

Step 14: The Status LED will go to solid red when loading is done. Unplug the USB cable and press SW4 to exit.

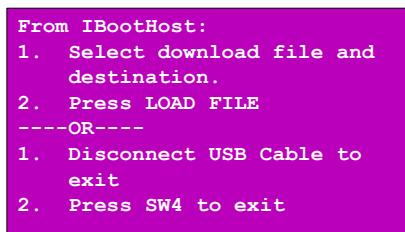


Figure 111. Loading Finished Screen

Step 15: Turn the Innovator Module Off.

Step 16: To run the operating system, configure Memory Configuration switches as follows:

SW1 – Off
SW2 – Off
SW3 – On
SW4 – Off

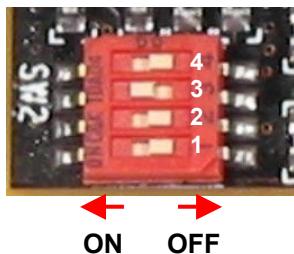


Figure 112. Memory Configuration Switch Location

Step 17: Power on the Innovator Module and you should see the operating system screen.

4.6.2 Loading an Operating System into User Flash 1

To load operating system files into User Flash 1, proceed as follows:

Step 1: Turn the Innovator Module Off and set Memory Configuration switch SW1 to On.

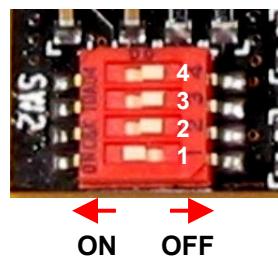


Figure 113. Memory Configuration Switch Setting for IBoot

Step 2: Connect a USB cable from the USB Port on the host PC to the USB Client Port on the Innovator.



Figure 114. USB Cable Connection

Step 3: Turn the Innovator Module On.

Step 4: Click on the appropriate operating system tab to bring up the dialog screen. In this example, WinCE will be used. Select User Flash 1 as the Destination.

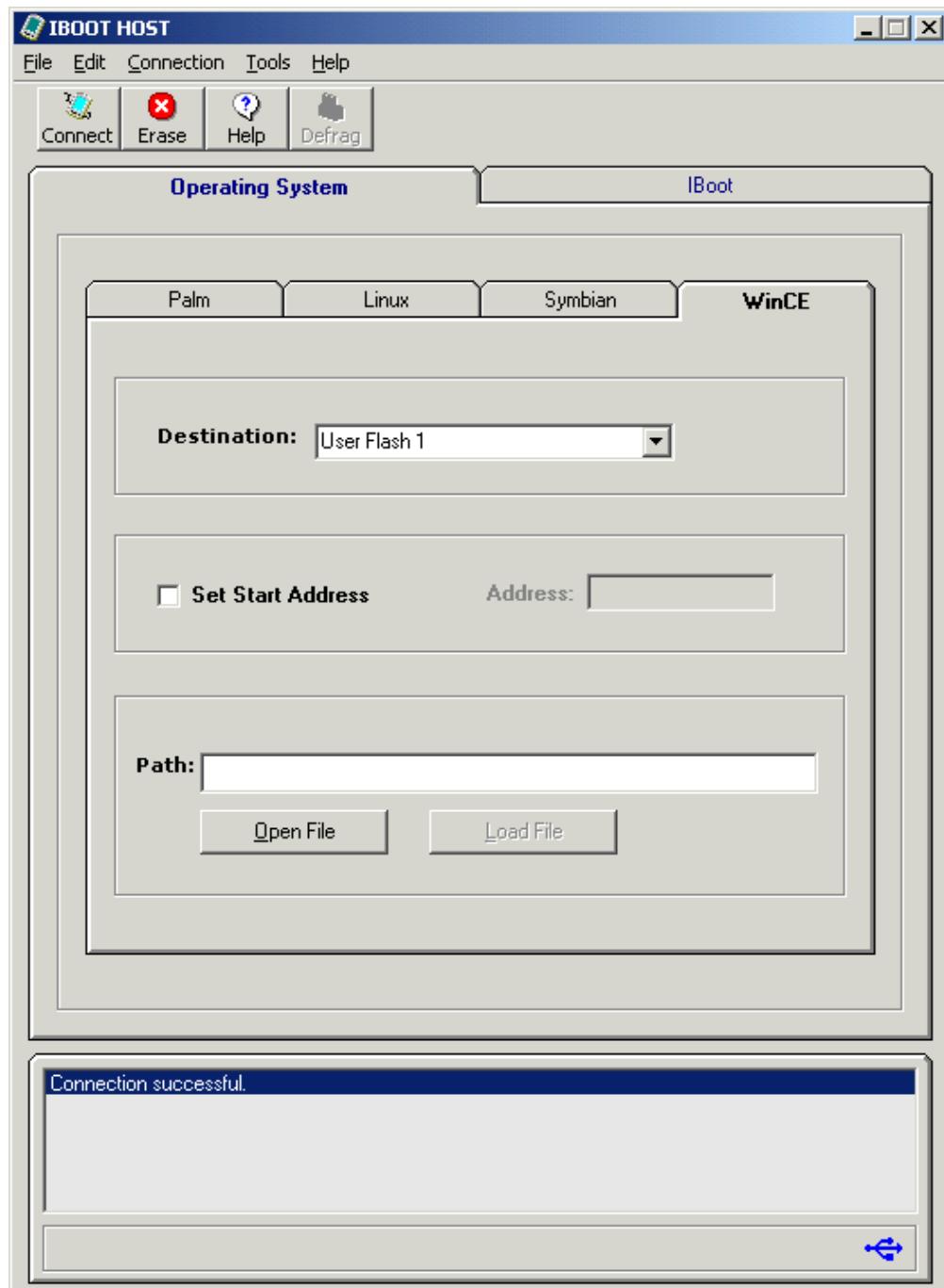


Figure 115. User Flash 1 Destination

Step 5: Click on **Open File** and enter path and filename for the operating system.

NOTE: An Operating System may not be included with the Innovator Development Kit and must be purchased separately. The following example shows the steps that should be followed if the Operating System were copied to a BIN folder on the PC's hard drive.

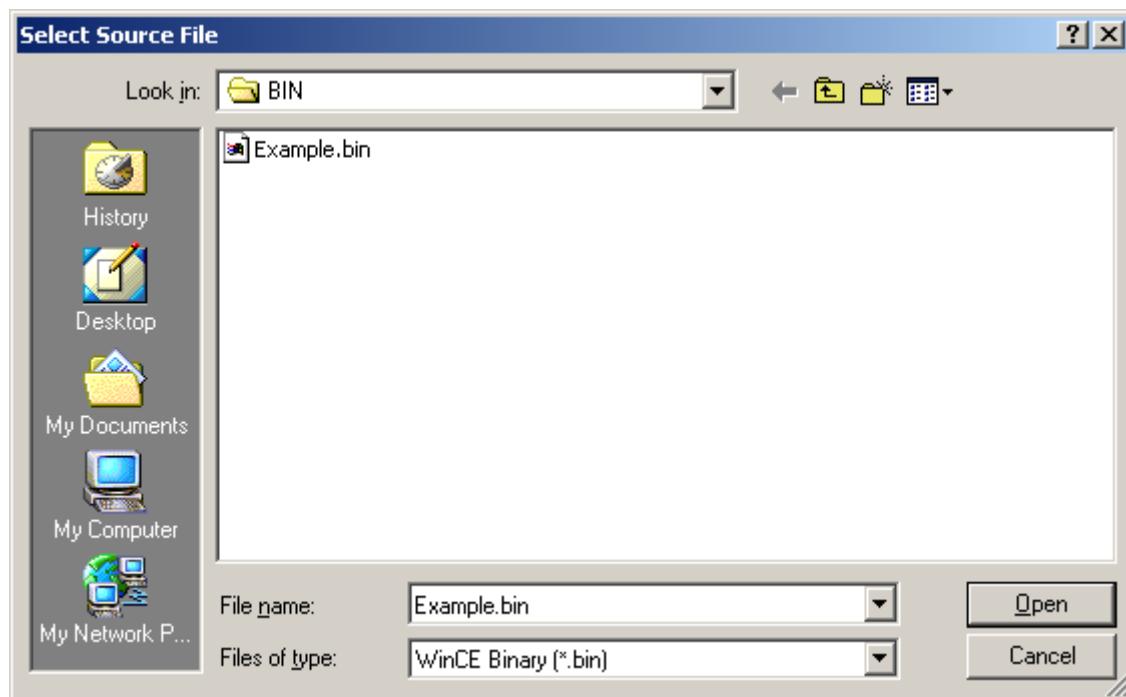


Figure 116. Open File Window

Step 6: When the file is located, click on **Open** to display the path and filename in the WinCE dialog Path window.

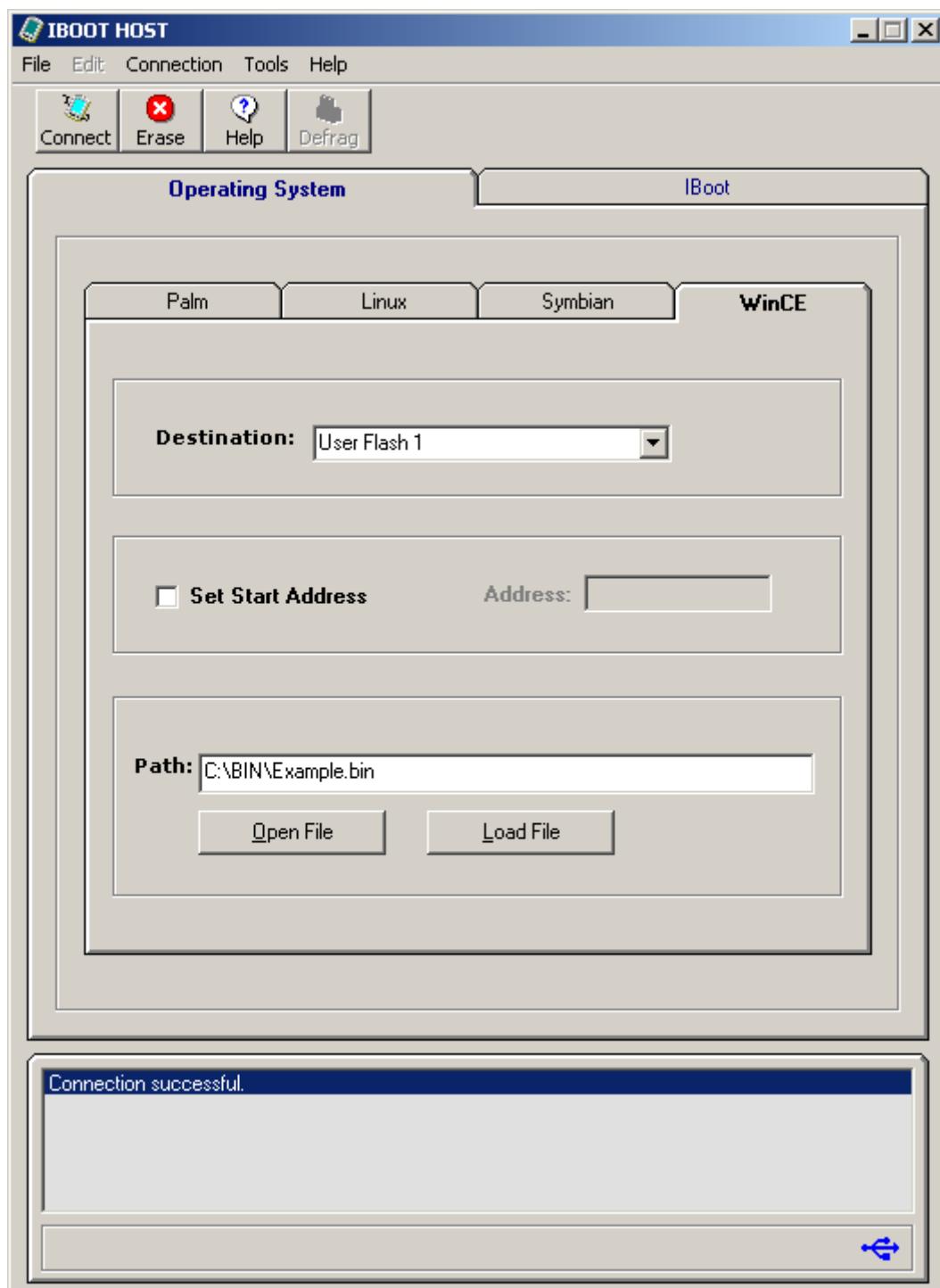


Figure 117. Operating System File Path and Filename

Step 7: Click on **Load File**. The file will be transferred from IBoot Host to the Innovator. A “Sending File” indication will be displayed at the bottom of the IBoot Host screen.

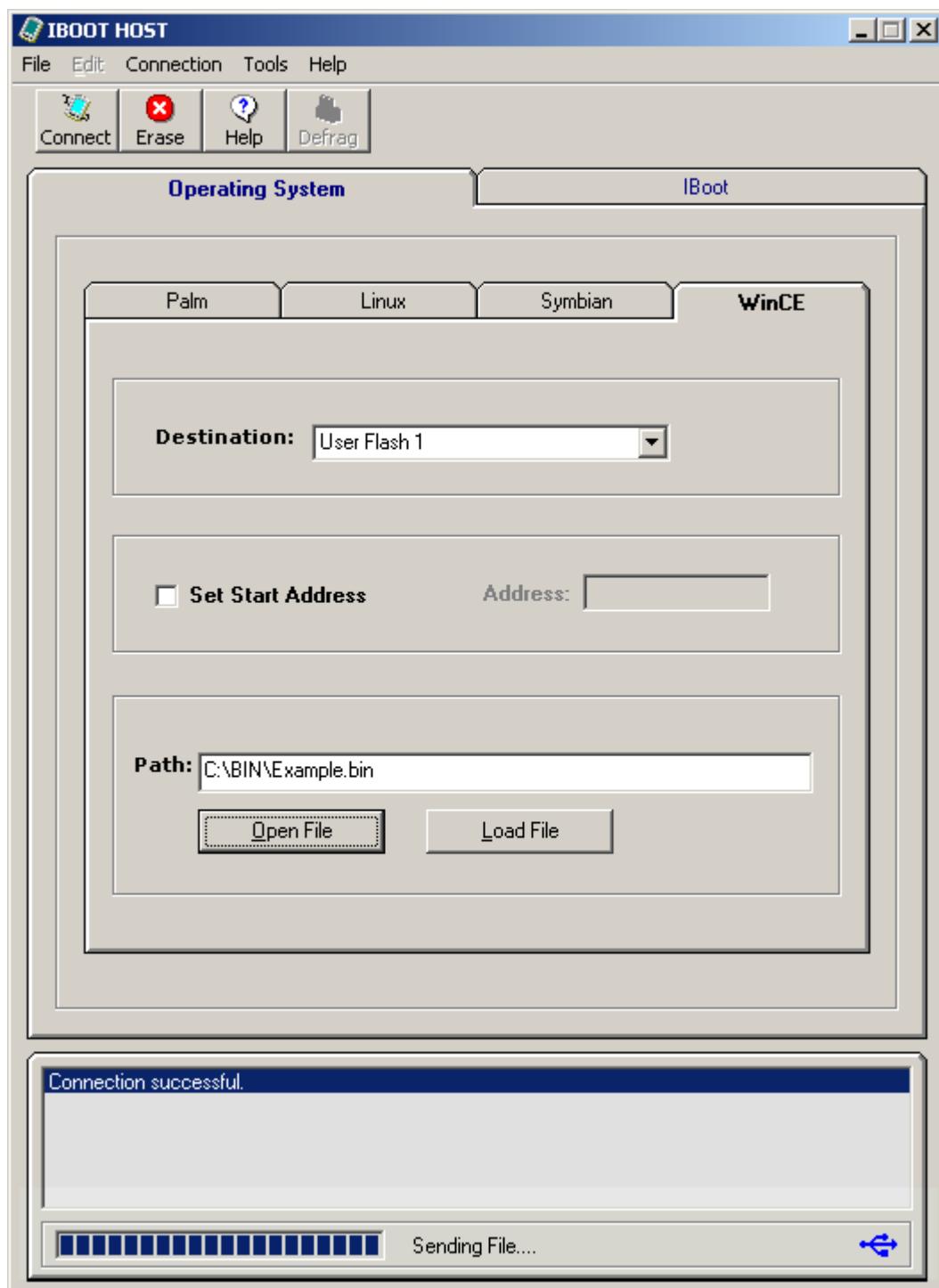


Figure 118. Sending File Screen

Step 8: When transfer is finished, the Status Window will display “The file was sent successfully” message as shown in the figure below.

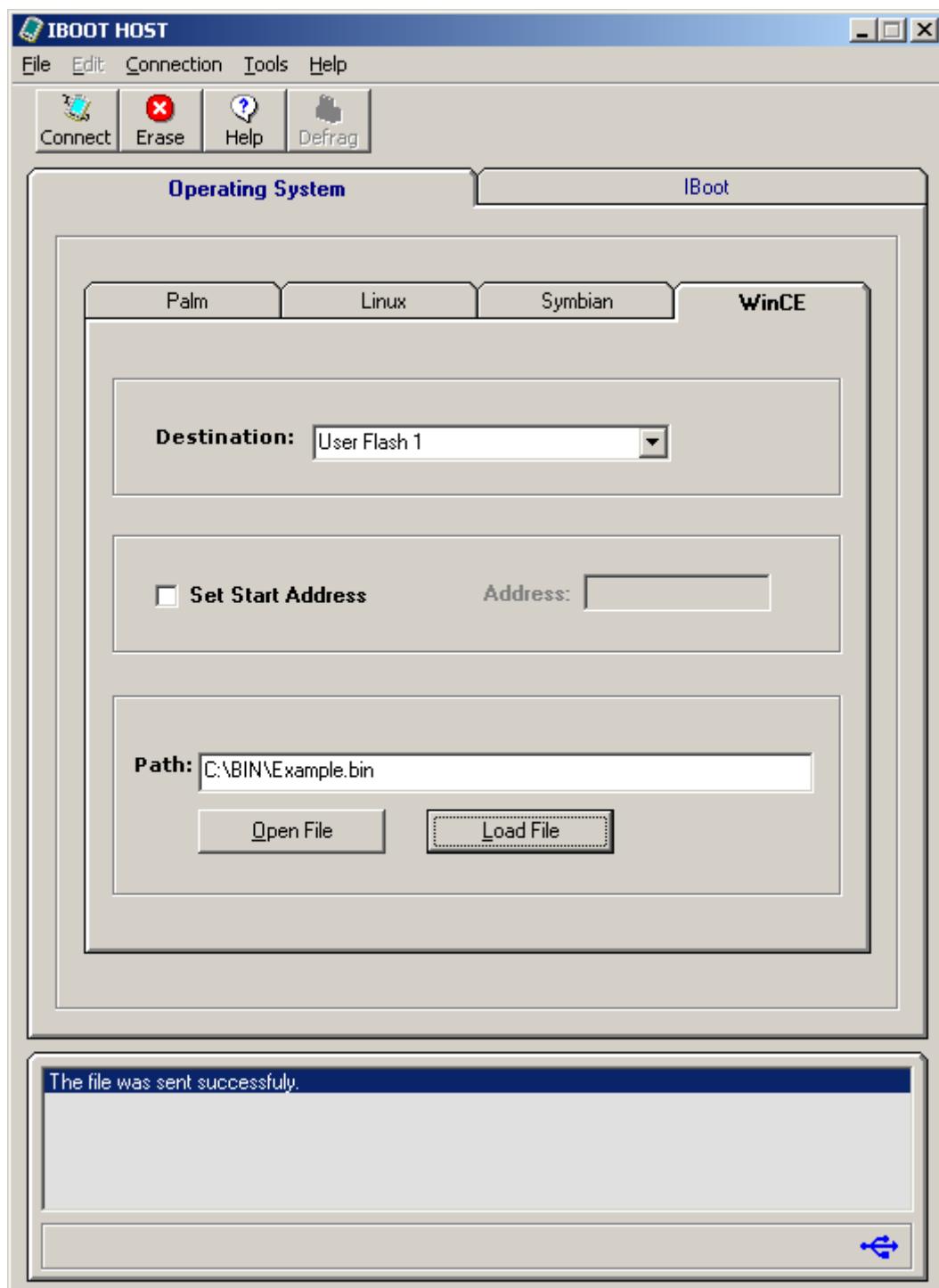


Figure 119. User Flash 0 File Transfer Successful

Step 9: Observe the following screen is displayed on the Innovator (after about 10 to 15 seconds). IBoot Host will erase the User Flash destination first. The LED will blink green while erasing.

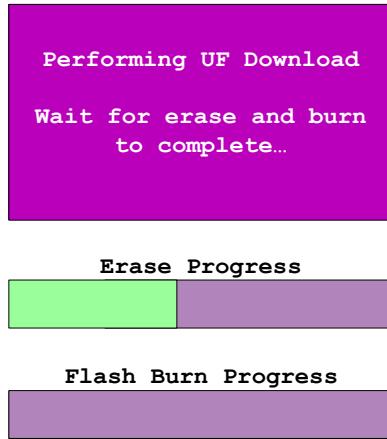


Figure 120. Erasing User Flash Screen

Step 10: Observe Status LED blinks orange when IBoot Host begins loading the User Flash.

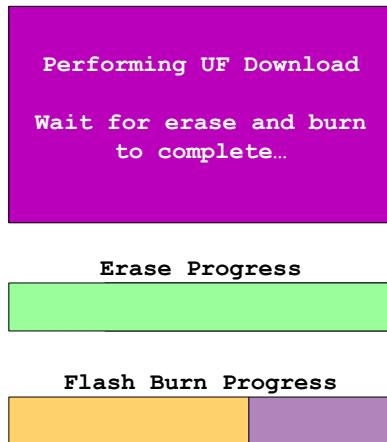


Figure 121. Burning Flash Screen

Step 11: The Status LED will go to solid red when loading is done. Unplug the USB cable and press SW4 to exit.

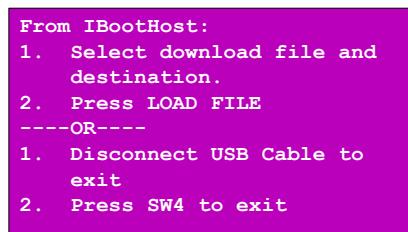


Figure 122. Loading Finished Screen

Step 12: Turn the Innovator Module Off.

Step 13: To run the operating system, configure Memory Configuration switches as follows:

SW1 – Off
SW2 – Off
SW3 – On
SW4 – On

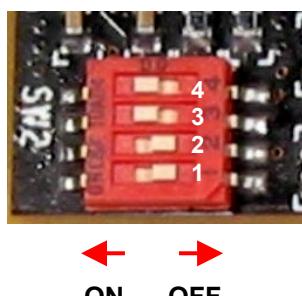


Figure 123. Memory Configuration Switch Location

Step 14: Power on the Innovator Module and you should see the operating system screen.

4.7 Loading IBoot Applets from the Innovator™ Development Kit CD

The following paragraphs describe the formatting and loading of IBoot Applets. The Applets themselves are described in their own user guides. This procedure assumes that IBoot Core software has already been loaded on the Innovator Module, and IBoot Host and the USB driver have been loaded on the PC.

Step 1: If not already running, launch IBoot Host by double-clicking on the IBoot Host icon on the PC desktop.



Step 2: Plug the USB cable into the USB Client connector on the Innovator Module.



Figure 124. USB Client Cable Connection

Step 3: Turn the Innovator Module on.



Figure 125. Setting the ON/OFF Switch to ON

Step 4: On the IBoot Host GUI, click once on the **Connect** button to establish a connection between the Innovator Module and the PC.

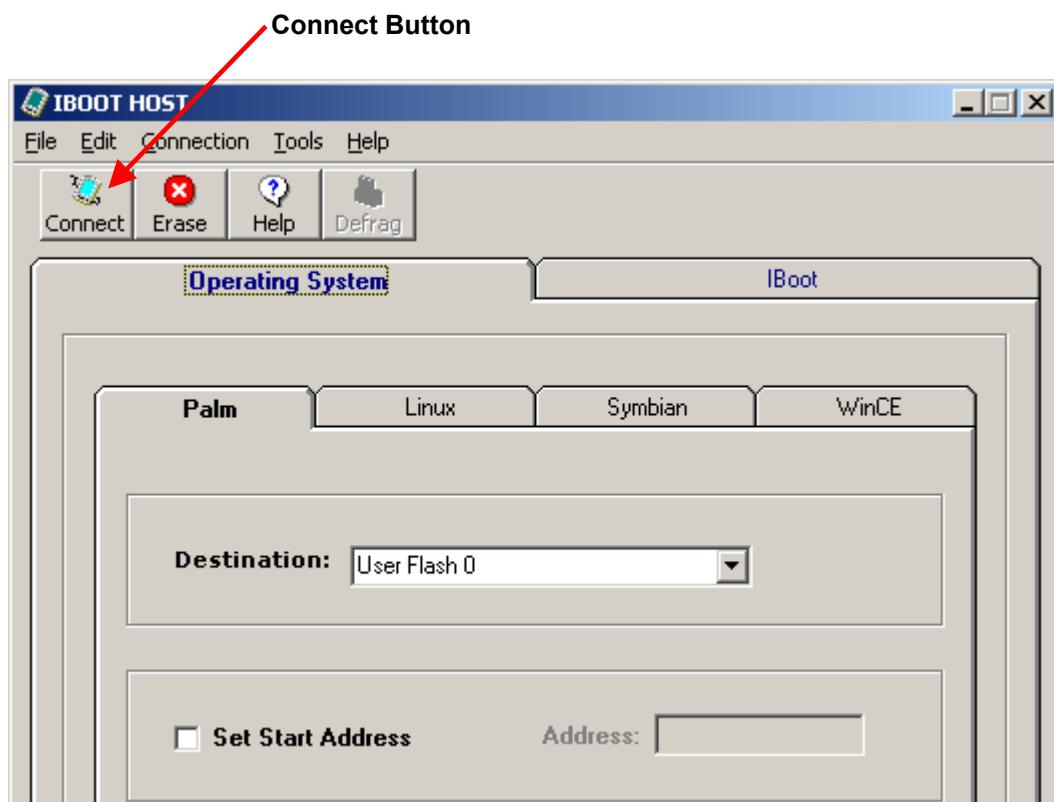


Figure 126. IBoot Host GUI

Step 5: In the IBoot Host status window, the words “**Connection successful**” will appear when the connection is established. If you get a “**Failed to Connect**” message, check that the USB cable is plugged in and the Innovator Module is on. Cycle power to the Innovator Module and click the **Connect** button again.

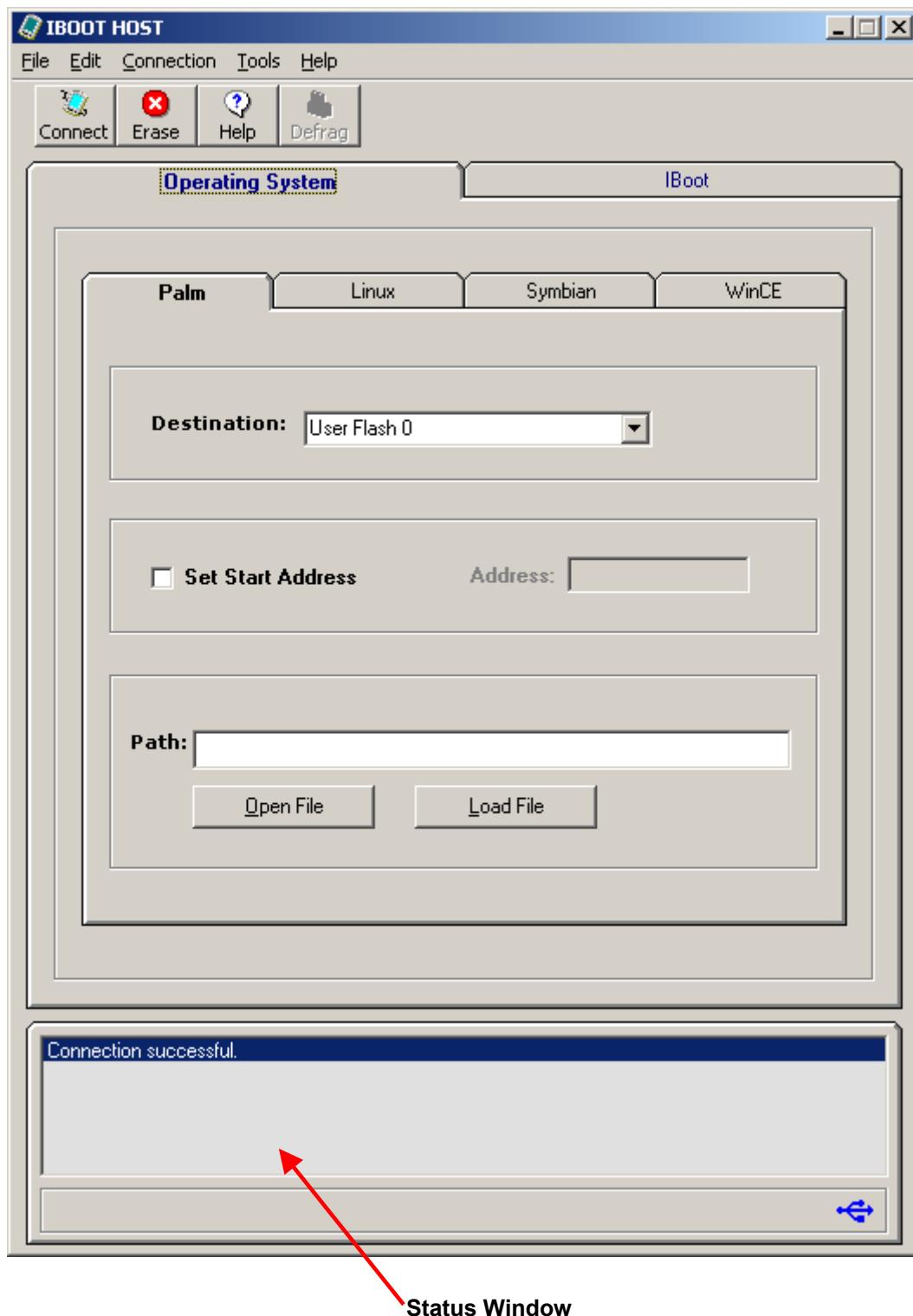


Figure 127. Connection Successful

Step 6: Click on the **IBoot** tab to display the screen shown below.

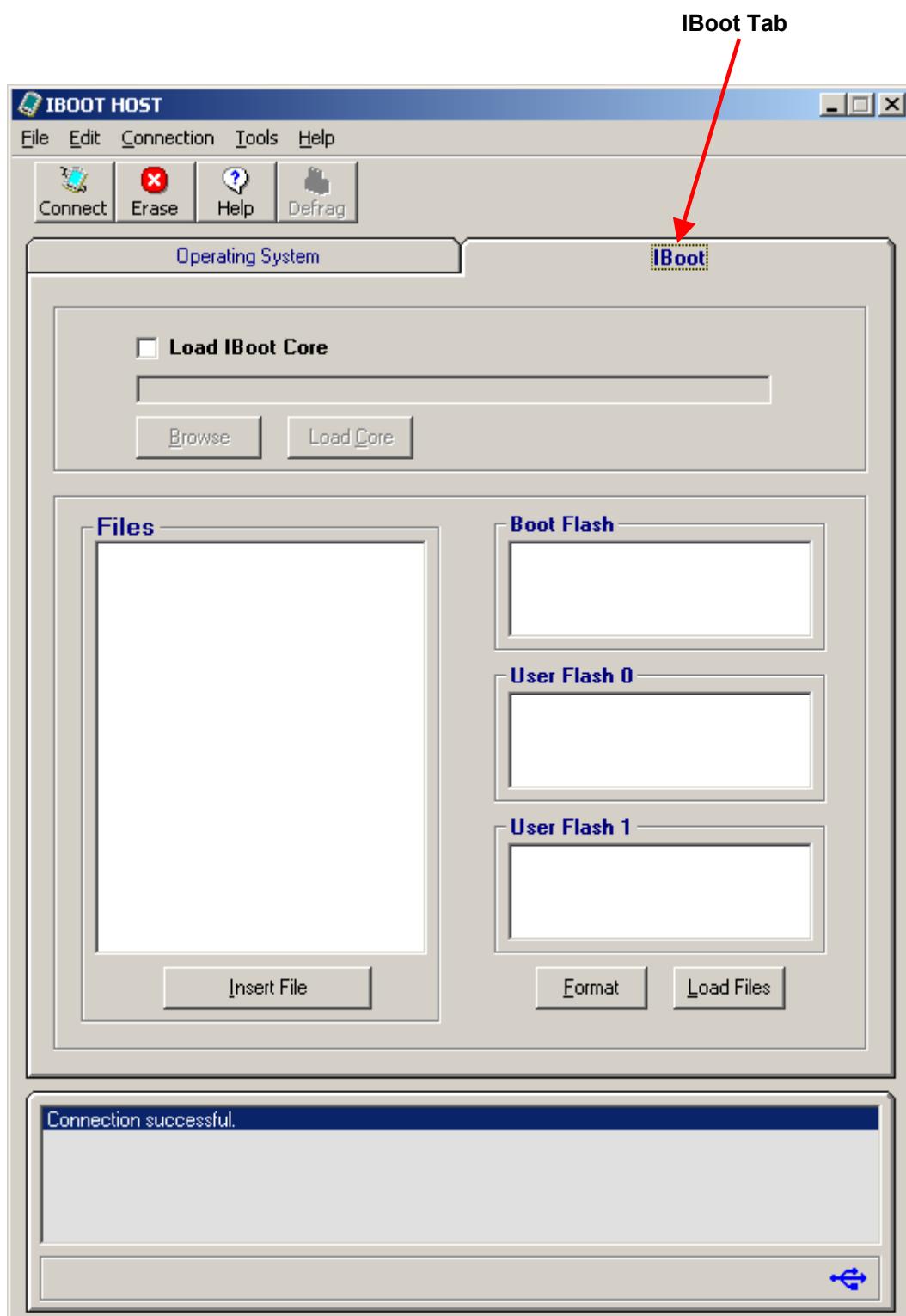


Figure 128. IBoot Tab

Step 7: Click once on the **Insert File** button to begin selecting Applet Files to load.

Step 8: In the Select Source File window, browse to the Software folder on the Innovator CD or the hard drive location where Applet files are stored, highlight the Applets you want to load and click **Open**, or double-click on the filename. You can highlight all the Applets and bring them all over at the same time as long as they are not designated as Read-only.

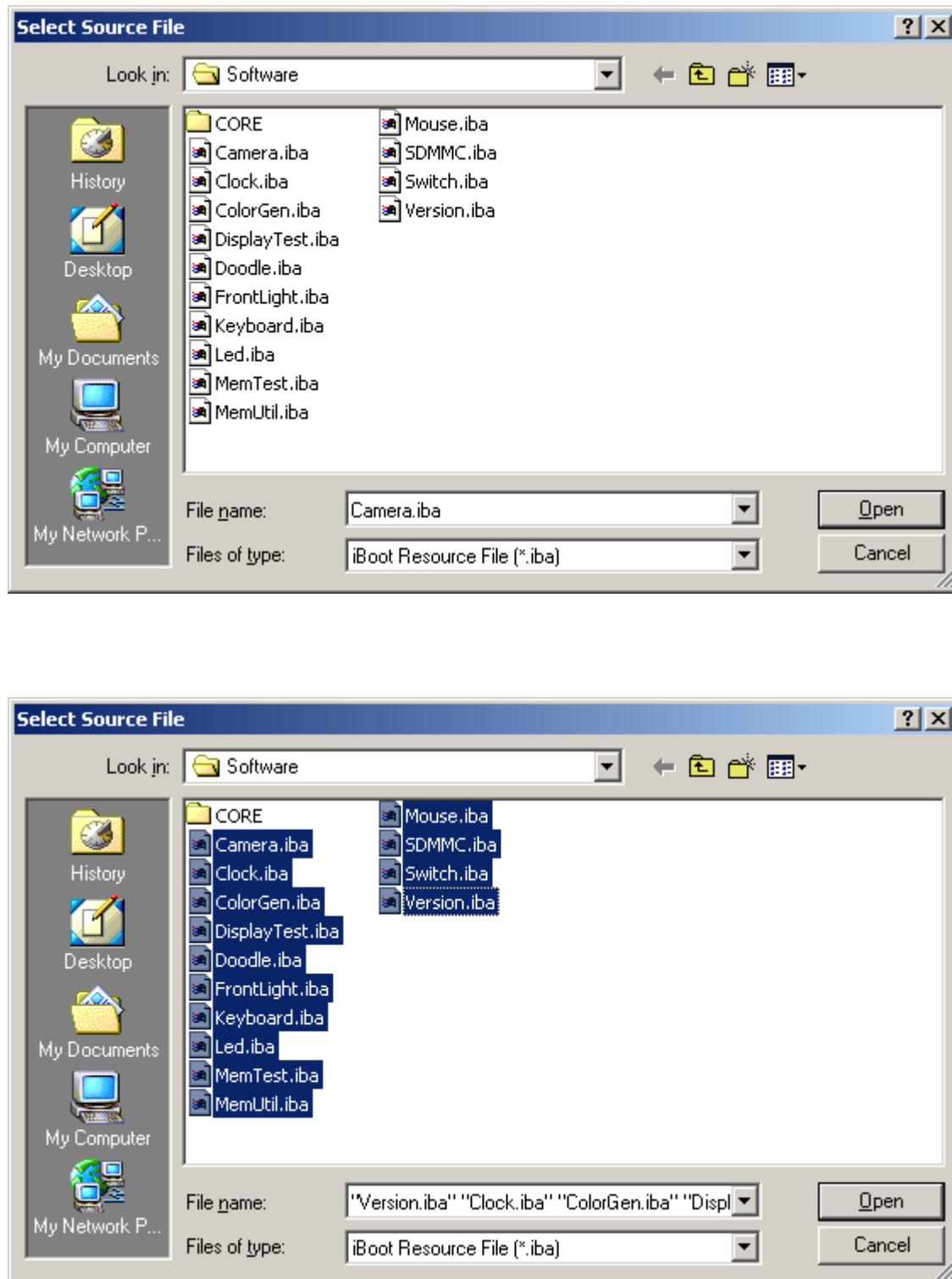


Figure 129. Select Source File Window

Step 9: Selected files will appear in the **Files** window on the IBoot Host GUI.

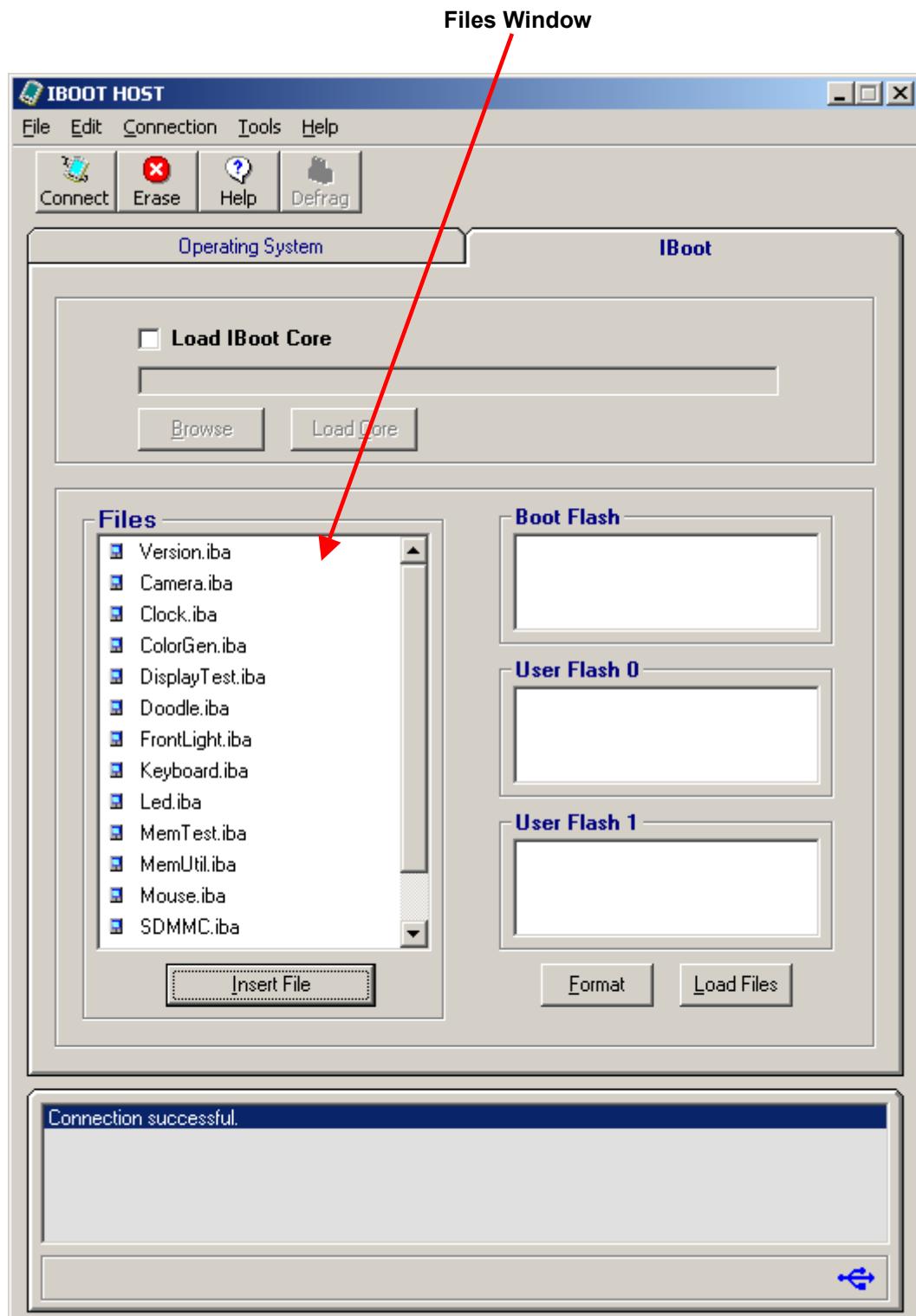


Figure 130. Applet Files in Files Window

NOTE: An Applet File can be removed from the Files windows by highlighting it and hitting the Delete key on the keyboard or by using the Delete option in the Edit menu.

Step 10: Before the Applets can be loaded, the destination Flash **must** be formatted. Put a check in the box next to the Flash destination that is to be formatted.

NOTE: It is recommended that all Applets reside in Boot Flash and Operating Systems reside in User Flash.

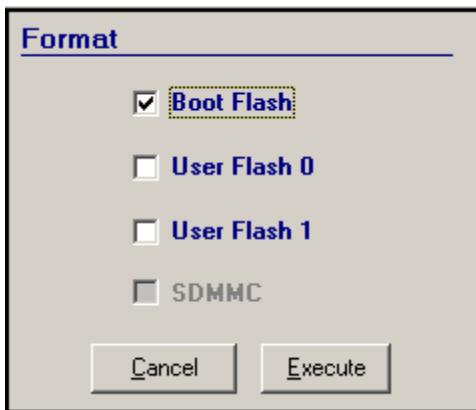


Figure 131. Format Selection Window

NOTE: With the exception of IBoot Core in Boot Flash, the contents of the selected Flash destination(s) will be erased. Boot Flash is always formatted by default whenever one of the User Flash is selected, but IBoot Core will remain. If an Applet is loaded into a User Flash, and an Operating System is loaded into that same User Flash, the Applet will be erased. Likewise, if an Operating System is loaded into a User Flash, any Applets that were there will be erased.

Step 11: Click on the Execute button to begin formatting.

Step 12: An acknowledgment to the command sent to the Innovator is displayed in the IBoot Host Status window (see Figure 133). The Innovator Module will display the status of the formatting process taking place on it (Figure 132).

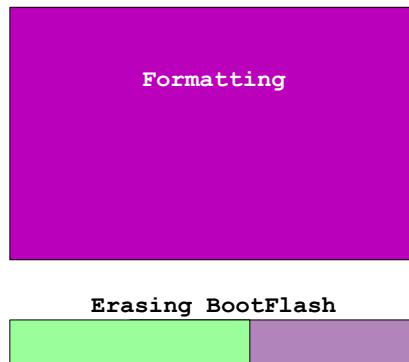


Figure 132. Innovator Module Formatting Status

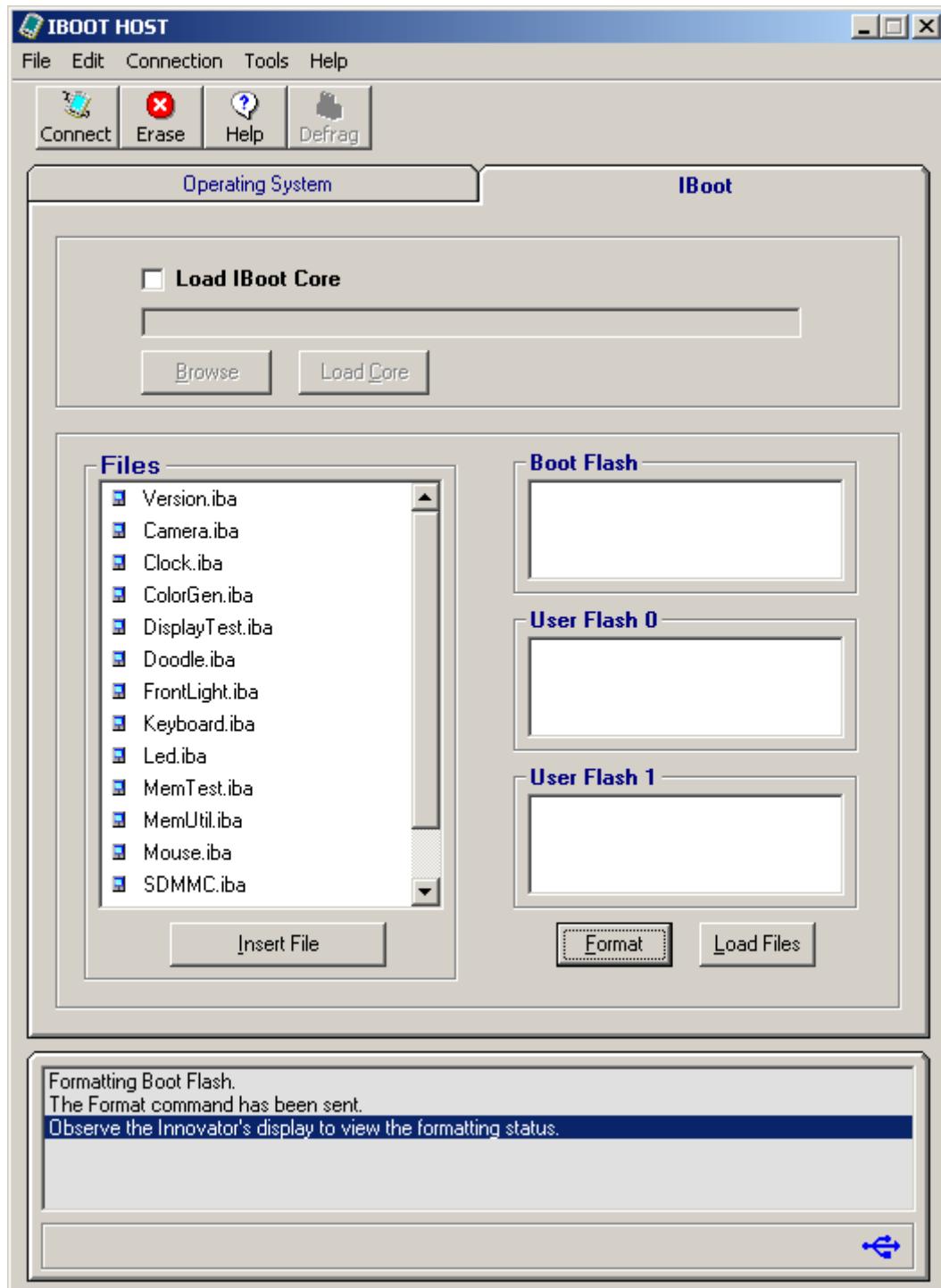


Figure 133. IBoot Host Command Acknowledgment

Step 13: To select the first Applet File, click once to highlight it.

NOTE: Applets will be displayed on the Innovator in the order they are placed in the Flash windows. The Applets will build from left to right and top to bottom. Applets placed in Boot Flash will load first followed by User Flash 0 and then User Flash 1. Applets can be placed in any order you choose, there is no particular order that must be followed.

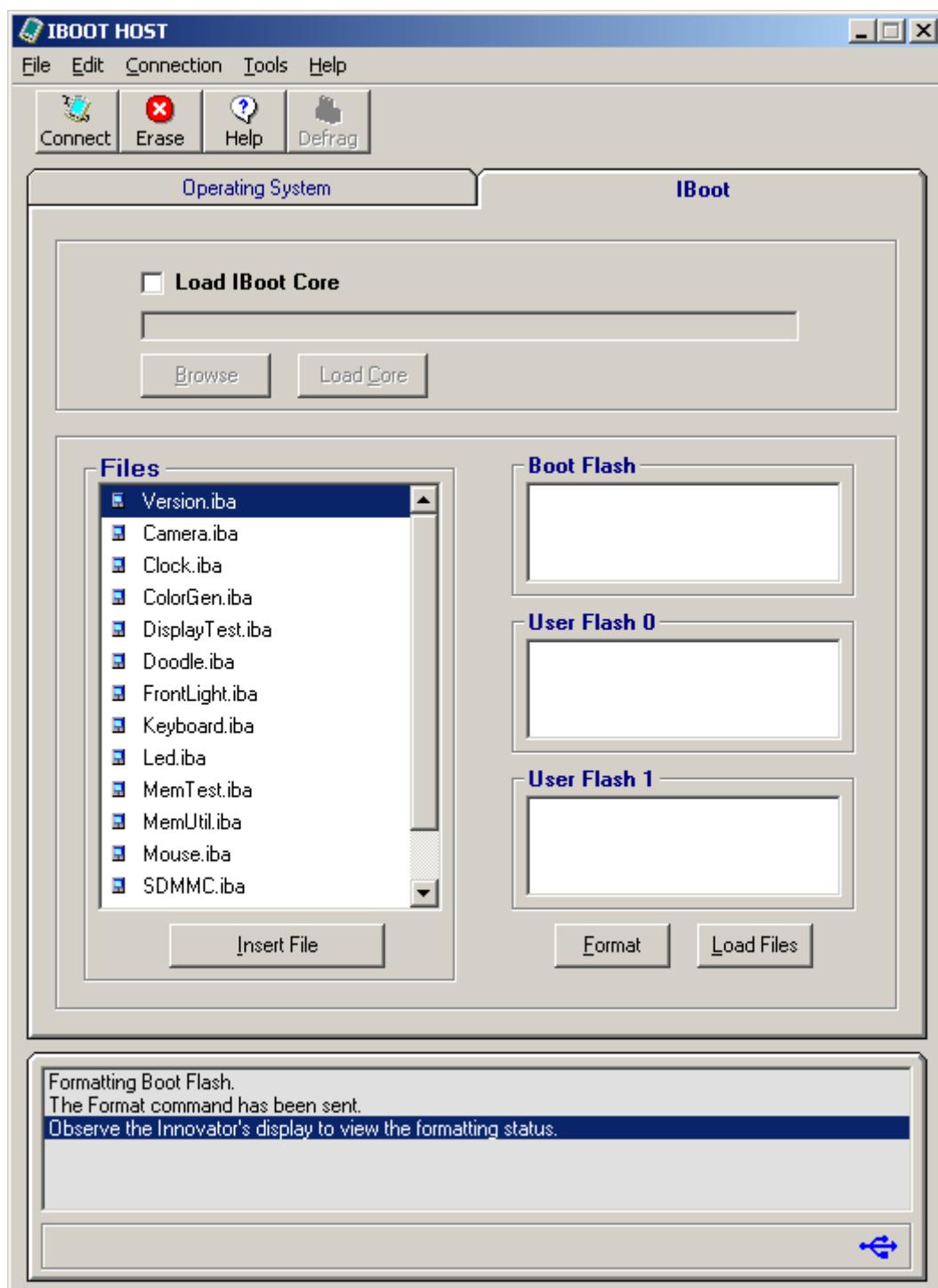


Figure 134. Highlighting an Applet File

Step 14: Click the Applet File again and drag it to the Flash destination window.

NOTE: You must release the mouse button after you highlight the Applet File or you will add another copy of the Applet previously selected. You cannot click and drag in one motion.

Step 15: Continue highlighting and dragging until all desired Applets Files are in a Flash window.

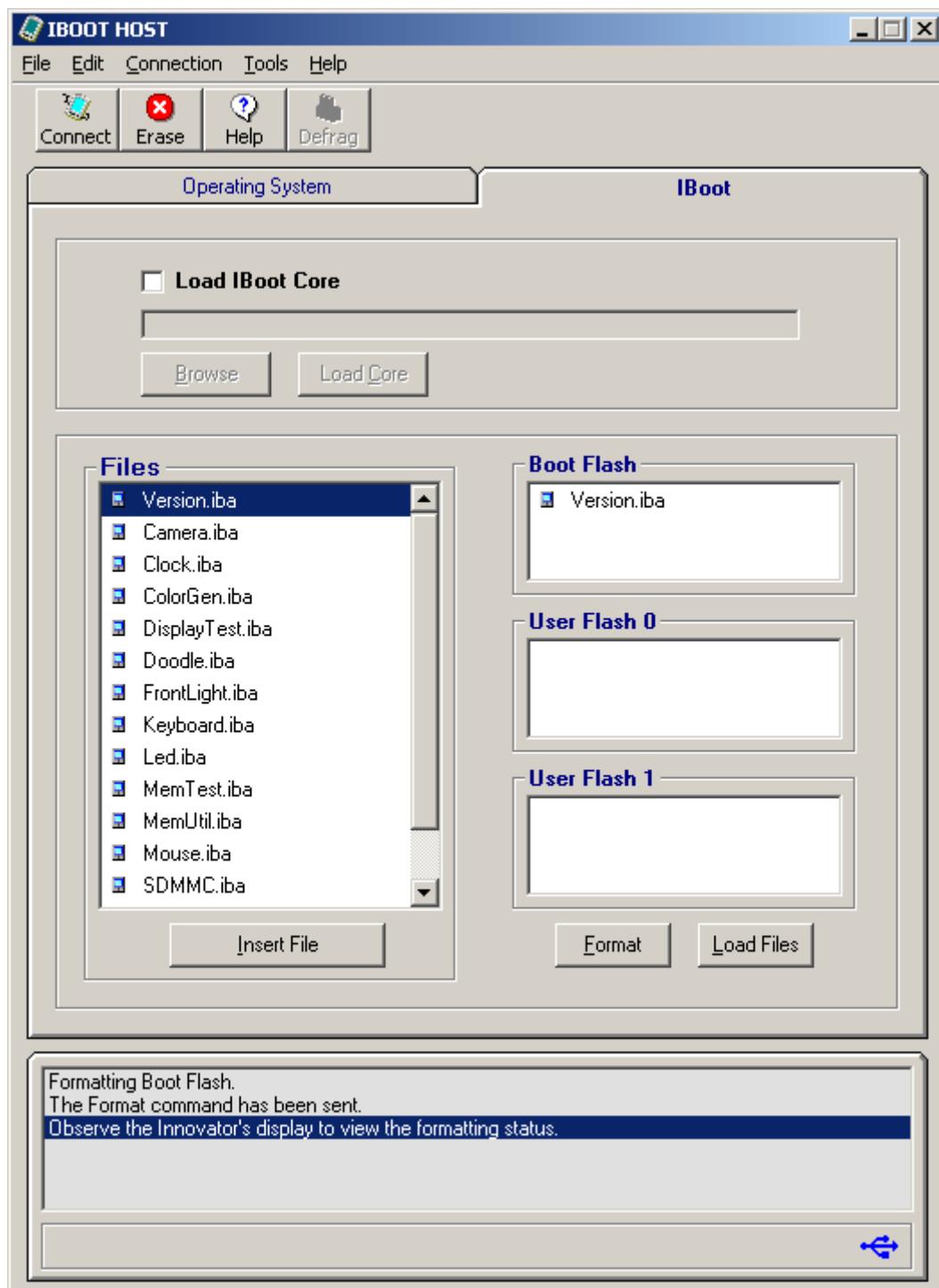


Figure 135. Applet File in Boot Flash Window

NOTE: If an Applet File appears in the destination window more than once, it will be loaded more than once. Before clicking on the Load Files button, scroll through the list of files and make sure the file appears only once. If an Applet File appears more than once, highlighting it and hitting the Delete key on the keyboard or using the Delete option in the Edit menu will remove it.

Step 16: Click on the Load Files button to begin loading Applet Files to the Innovator Module.

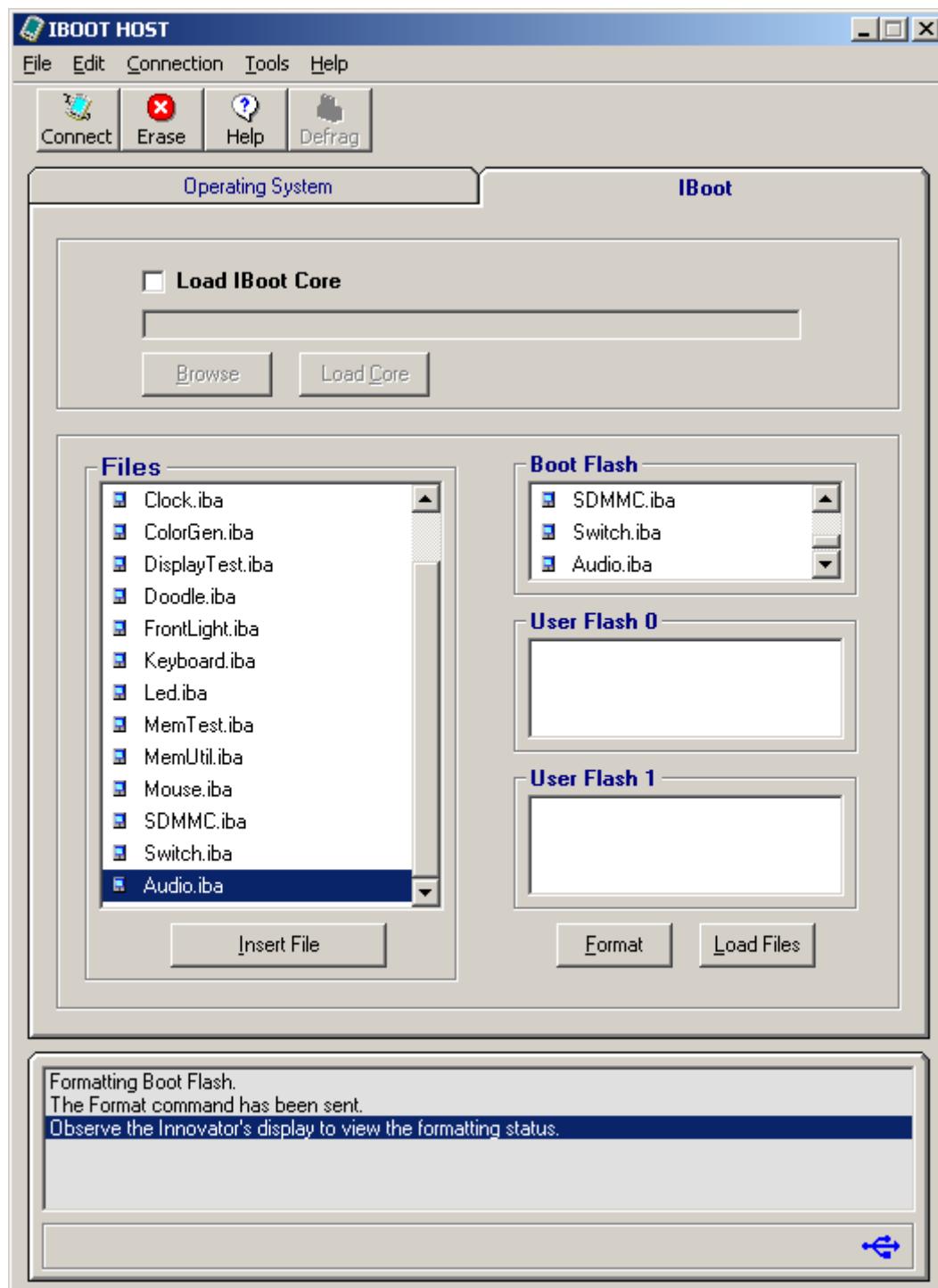


Figure 136. All Applet Files in Boot Flash Window

Step 17: As files are sent, an acknowledgement is displayed at the bottom of the IBoot Host GUI.

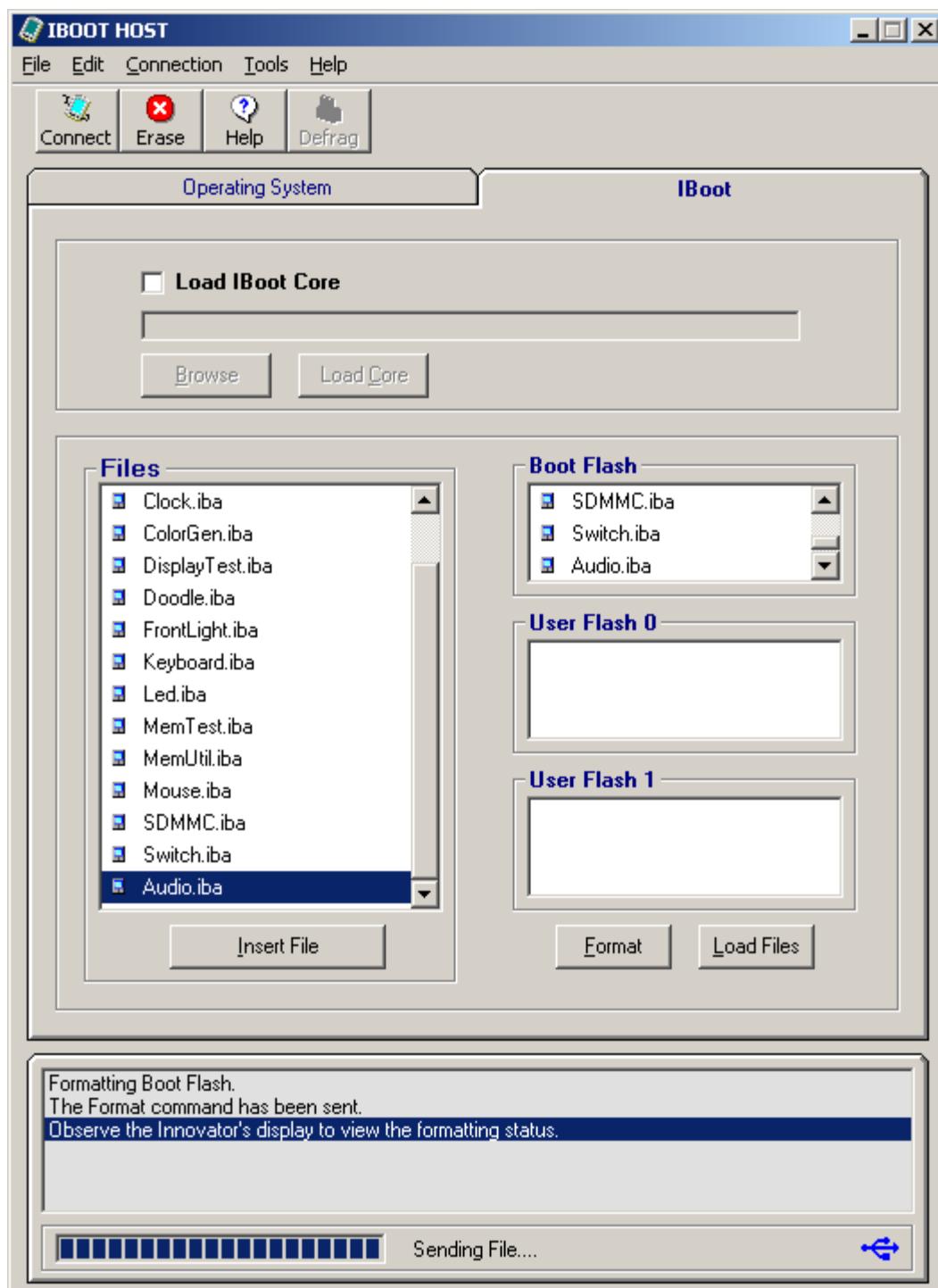


Figure 137. Sending Files to the Innovator Module

Step 18: The Status LED on the Innovator Module will be solid orange while the Applet Files are loading and go off when the download is finished.

Step 19: Remove the USB cable from the Innovator Module.

Step 20: Press SW4 on the Innovator Module to display the Applets.

NOTE: The Keyboard and Mouse Applets will be loaded into the Innovator Module but will not be displayed until the Innovator Module is connected to a Breakout Board.

4.8 Loading IBoot Applets from the PSI Website

The following paragraphs describe the formatting and loading of IBoot Applets. The Applets themselves are described in their own user guides. This procedure assumes that IBoot Core software has already been loaded on the Innovator Module, and IBoot Host and the USB driver have been loaded on the PC.

Before Applets can be loaded on the Innovator Module, they must first be downloaded from the website and stored on your PC. It is recommended that you create a subfolder named APPLETS in the folder (C:\PSI) that was created when IBoot Host was loaded on the PC. To load Applets from the website, proceed as follows:

Step 1: Navigate to the Applets page under Software.

Step 2: Select an Applet File from the list and click on the link.

Step 3: When the File Download screen appears, click on the **Save** button.

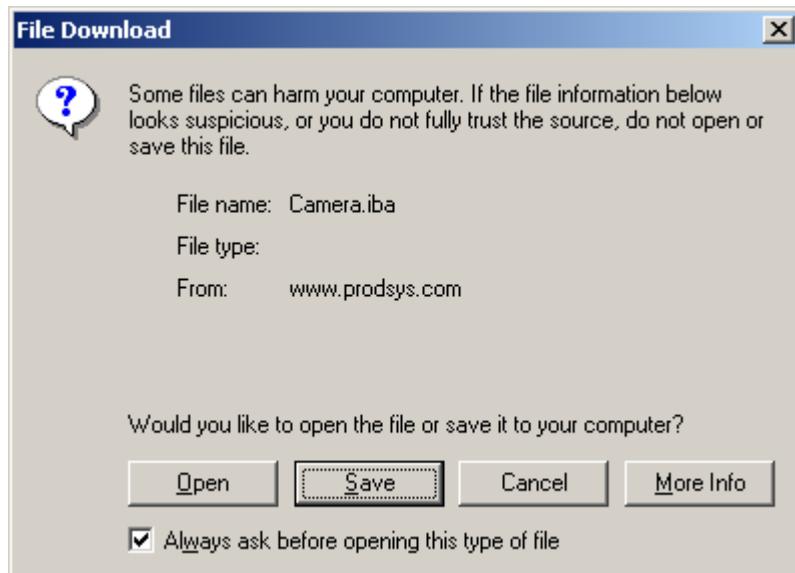


Figure 138. Applet File Download Screen

Step 4: When the Save As screen (Figure 139) appears, browse to the APPLETS folder created earlier and click on the **Save** button.

Step 5: Repeat these steps for each for each Applet to be loaded on the Innovator Module.

Step 6: When finished, go on to paragraph **4.7, Step 1** to load the Applets on the Innovator.

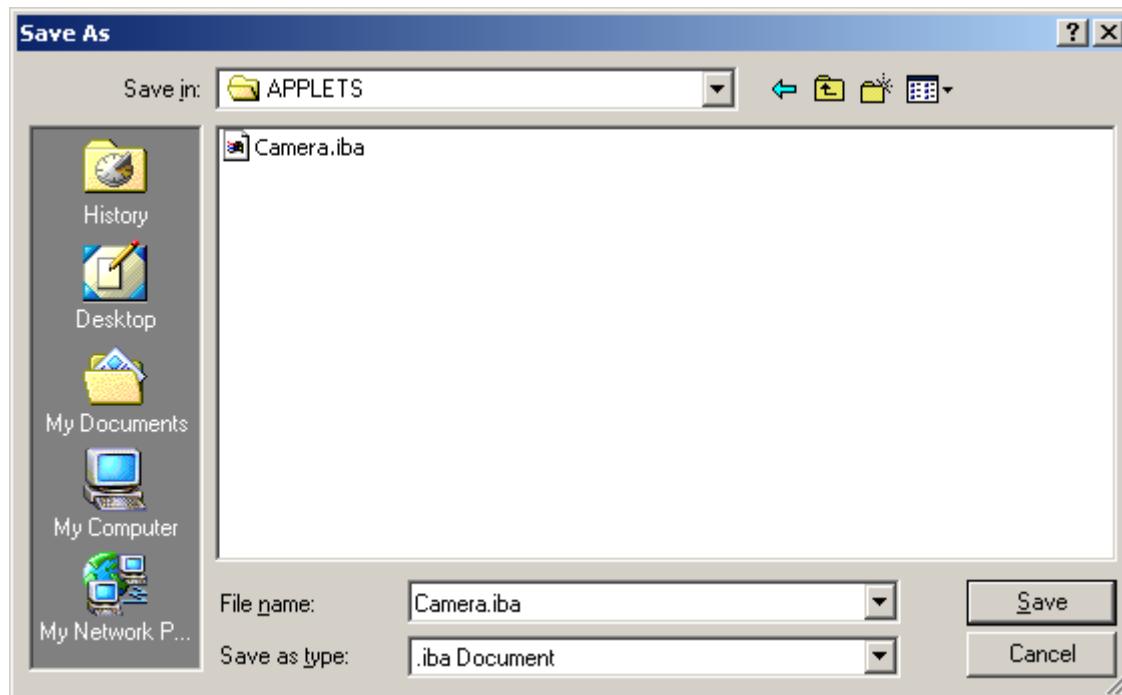


Figure 139. Applet File Save As Screen

4.9 Updating IBoot Host

Before IBoot Host can be updated, the previous version must be removed. In the Windows Control Panel, use the Add/Remove Programs option to remove IBoot Host.



After IBoot Host has been removed, follow the procedures in Chapter 2 of this manual to load the new version.

Chapter 5 – Running IBoot

5.0 Running IBoot

After Applets have been loaded IBoot can be used to test certain functional areas of the Innovator and its peripherals. Refer to the individual Applet User's Guides for instructions on what tests the Applets will perform. This chapter describes how to navigate around the IBoot screens and the indications shown on the IBoot display.

5.1 IBoot Display

The IBoot user interface consists of a title bar, category button, scroll buttons and Applet Command Buttons.



Figure 140. IBoot Display

5.1.1 Main Title Bar

The title bar contains a battery status indicator that graphically portrays the status of the battery.

The following indications show the status of the Innovator Module's battery. When the power cord is used, the Battery Charging indication will be displayed.

- Innovator Module is running off the Battery – 
- Low Battery – 
- Power Cord is powering the Innovator and charging the Battery – 

5.1.2 Category Button

The category button allows the user to select from a list of categories. Each Applet is organized in a particular category. When a category is chosen, only the Applets in that selected category are displayed.

The categories are:

- **Show All** – All Applets are displayed
- **INFO** – Information Applets
- **DEMO** – Demonstration Applets such as Camera, Color Generator, Display, Doodle and Display
- **TEST** – Functional test Applets such as Clock, Frontlight, LED, Memory, SDMMC and Codec
- **UTIL** – Utility Applets such as Memory Utility

5.1.3 Scroll Buttons

If you have more than one page of Applets, the up/down scroll buttons are used to navigate to the next and previous pages.

5.1.4 Applet Command Buttons

Applet Command Buttons are used to launch the selected Applet.

5.2 Memory Configuration Switch Settings

Before IBoot will display, the Innovator must be turned off and the Memory Configuration switch must be set as follows:

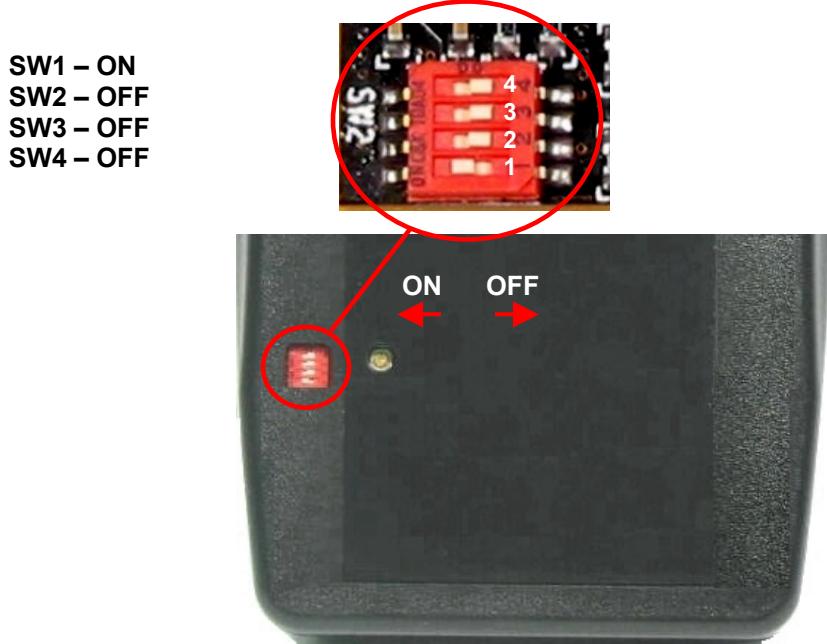


Figure 141. Memory Configuration Switch Location

After setting the switches on the Memory Configuration switch, turn the power back on. The IBoot screen will be displayed as shown in Figure 140.

5.3 Accessing IBoot Applets

There are several ways to access the IBoot Applets:

- Touch the Applet Command Button with a stylus or finger to initiate it.
- Use the Five Pole Switch to navigate up/down/left/right to each applet, and then use the select function of the switch to initiate the applet.

Only one Applet can be running at any one time. The active Applet's command button will be green. Follow the directions within each applet or applet user's guide to perform that function.

Most applets are designed to exit by either pressing the back button (on the title bar when an Applet is active) or by pressing the exit button, which is SW4 on the standard innovator.

NOTE: Switches 4, 5, 6 and 7 are user-defined switches. Only Switch 4 has been programmed to be used with IBoot.

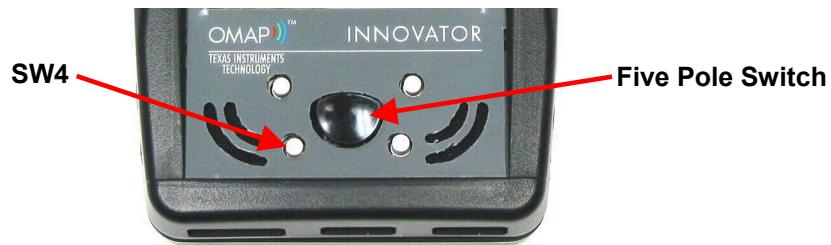


Figure 142. Innovator Module Switch Locations