UM1612
User manual

How to upgrade the firmware to support USB communication for PCs using Windows 7 and the STEVAL-PCC009V2

Introduction

The purpose of this user manual is to explain the steps to upgrade the firmware to support USB communication with PCs operating under Microsoft Windows 7 and the STEVAL-PCC009V2 demonstration board. After the firmware upgrade the board will work with PCs running both Windows XP and Windows 7 operating systems.

For instructions on using the STEVAL-PCC009V2 demonstration board itself, please refer to UM0935.

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1 Installation and requirements

1.1 System requirements

The modified firmware and software work with both Windows XP and Windows 7 OS. They don’t support any other version of Microsoft Windows OS.

The user must have the latest service pack and critical updates for the version of Windows. These can be downloaded from the Microsoft website (update.microsoft.com).

Follow these steps to determine the operating system of the PC:

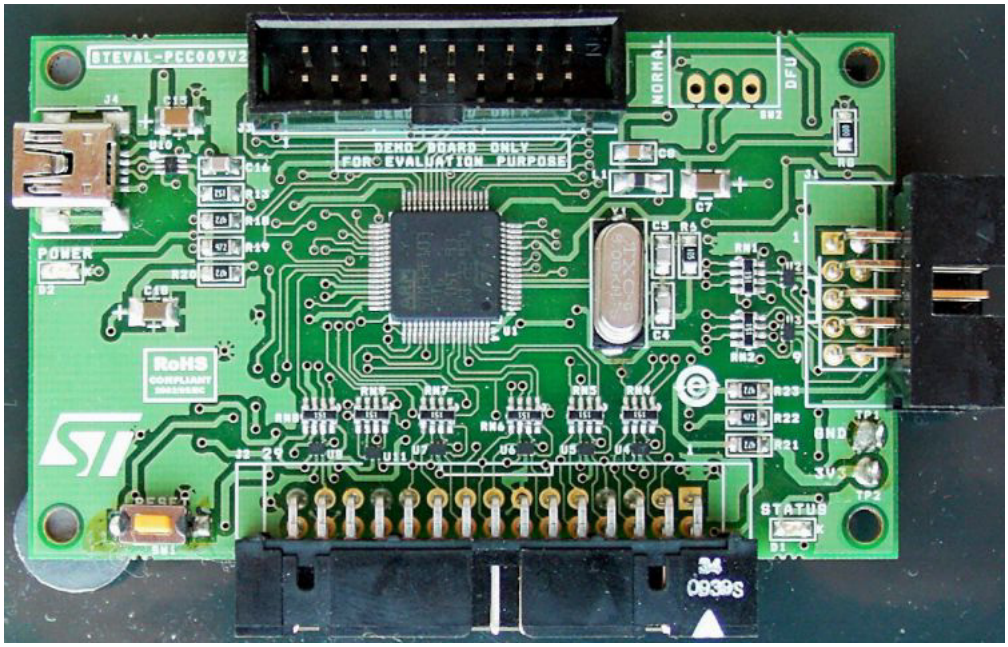
1. Right click on the icon “My Computer”
2. Select “Properties”
3. Select the “General” tab which provides information concerning the operating system

1.2 Programming requirements using Windows 7 or Windows XP

1.2.1 Hardware requirements

- STEVAL-PCC009V2 demonstration board

Figure 1. STEVAL-PCC009V2 board



- The ST-Link 2 interface and one of the discovery kits as given in the table below

Table 1. List of hardware

H/W toolset	Reference
– ST-Link 2	see *Figure 2*
– STM32F value line discovery kit	see *Figure 3*
– STM32F4 discovery kit	see *Figure 4*
– STM32L discovery kit	see *Figure 5*

Figure 2. ST LINK-2 IDE

Figure 3. ST STM32F value line discovery kit

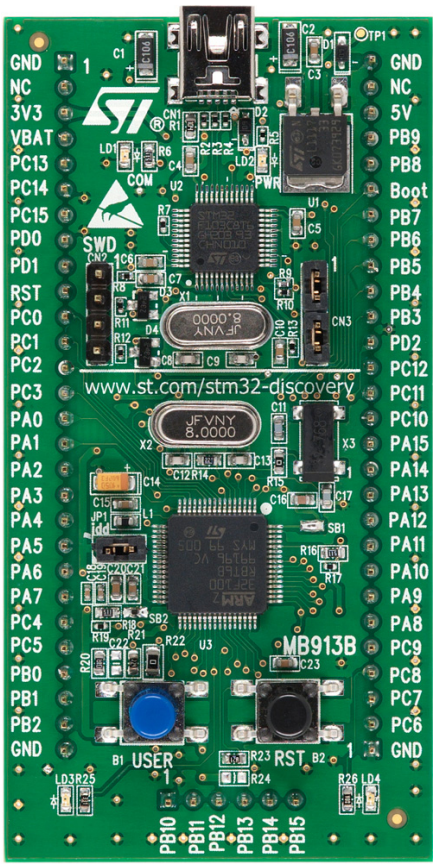


Figure 4. STM32F4 discovery kit

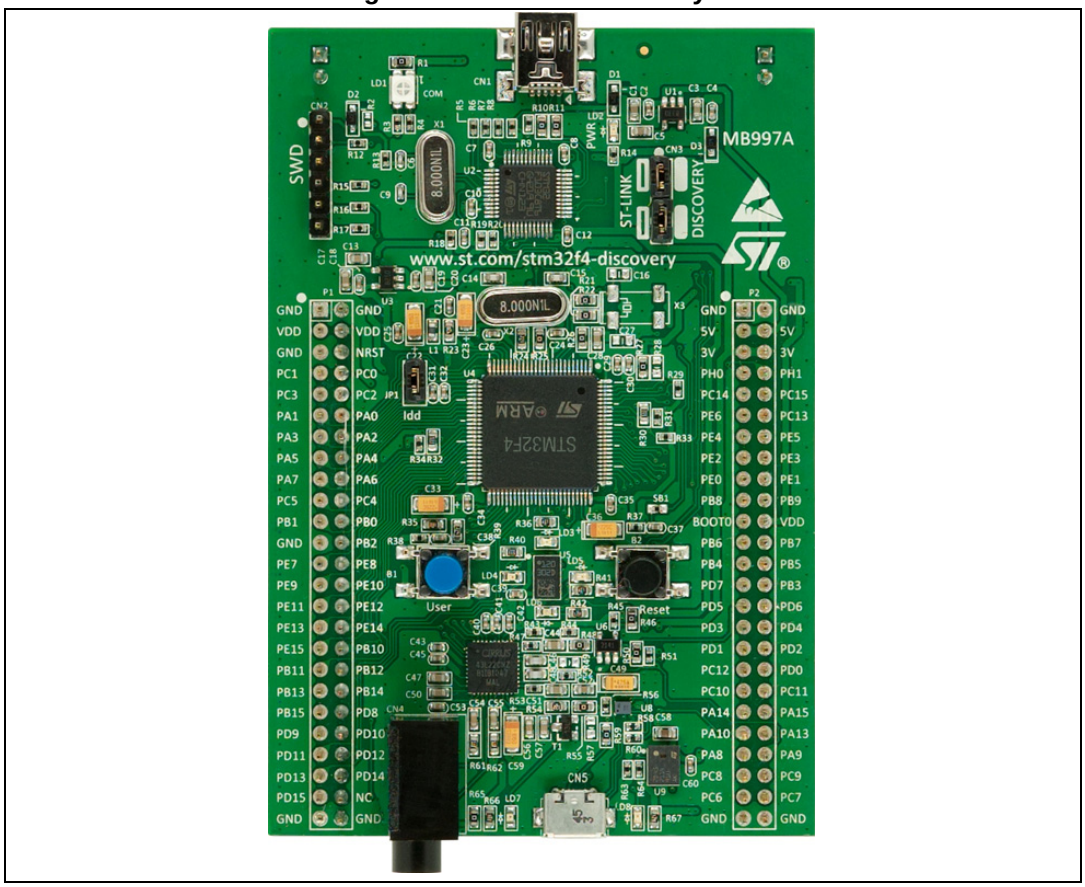
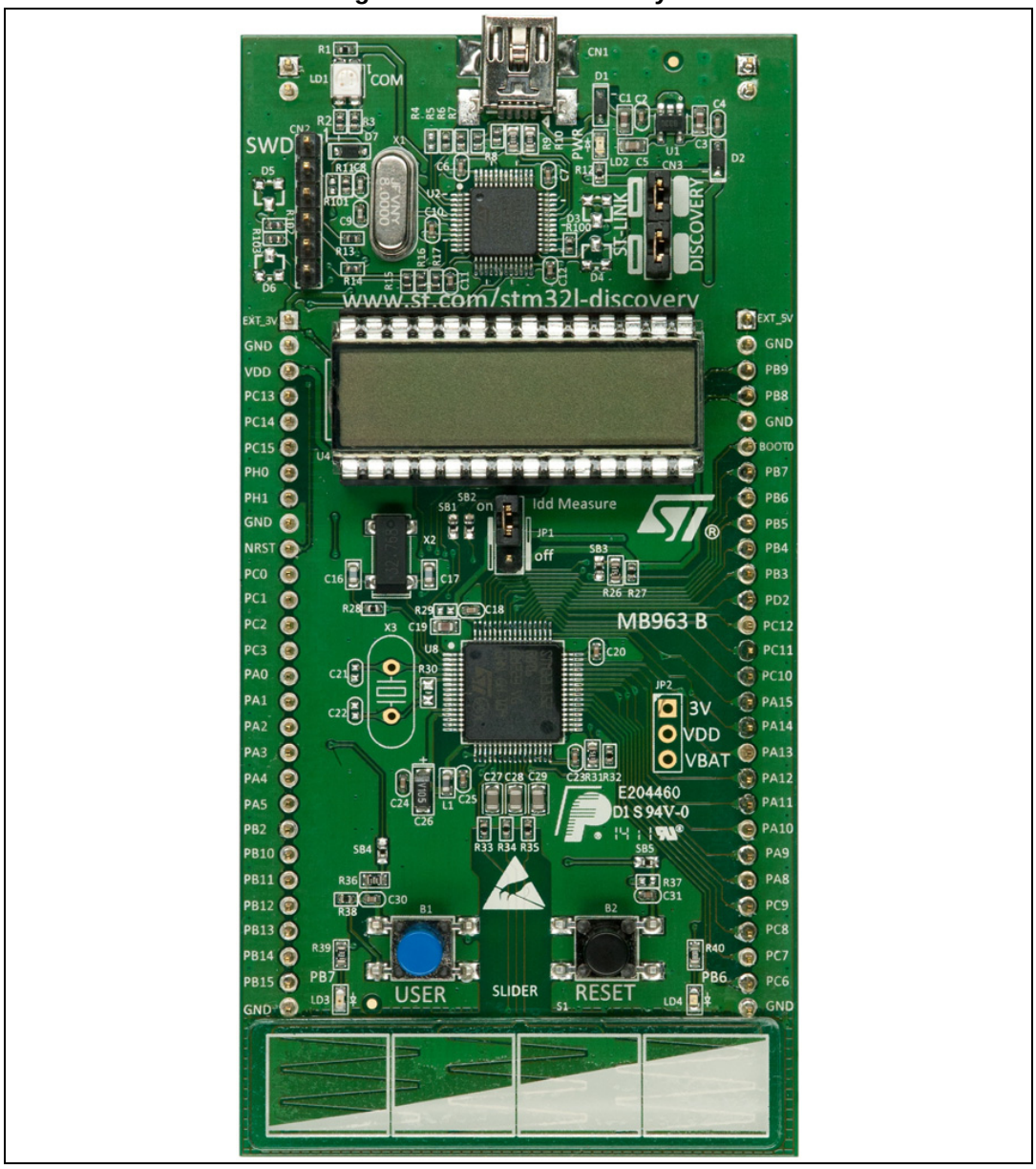


Figure 5. STM32L discovery kit



1.2.2 Software requirements

The hex files can be updated using “STSW-PCC009V2: IBU Universal Interface firmware updater” available after registration at:

http://www.st.com/web/en/catalog/tools/PF246414#

The “STSW-PCC009V2FW: STEVAL-PCC009V2 firmware” is also available at this address. Please refer to “Related Tools and Software”.

Table 2. STM32 ST-Link

S/W toolset	Supported H/W	Download link
– STM32 ST-Link Utility	ST-Link STM32F value line discovery kit STM32F4 discovery kit STM32L discovery kit	http://www.st.com/internet/evalboard/product/251168.jsp Please choose “STSW-LINK004” under “Related Tools and Software”

Note: Refer to the relevant AN/ UM to use the toolset

2 How to program the new firmware

By default, the STEVAL-PCC009V2 is programmed to work only with PCs using Windows XP.

2.1 Connection between STEVAL-PCC009V2 and supported hardware

The STEVAL board can be connected with the supported hardware mentioned in *Table 1*.

2.1.1 Connection of STEVAL-PCC009V2 to ST LINK-2

Connect the STEVAL-PCC009V2 to ST LINK-2 using a JTAG cable. The JTAG is connected to connector J3 of the STEVAL-PCC009V2.

2.1.2 Connection of STEVAL-PCC009V2 to discovery kits

Connect the STEVAL-PCC009V2 to any one of the discovery kits using SWD. Connect 4 wires to connector J3 of the STEVAL-PCC009V2 and the SWD connector of each discovery kit.

Table 3. SWD connector of discovery kit

Discovery kit	SWD connector
– STM32F value line discovery kit	CN2
– STM32F4 discovery kit	CN2
– STM32L discovery kit	CN2

Table 4. Connections between STEVAL-PCC009V2 and supported hardware

STEVAL-PCC009V2 (connector J3)	Any one discovery kit (SWD connector)
– Pin 9 (TCK)	Pin 2 (JTCK)
– Pin 6 (GND)	Pin 3 (GND)
– Pin 7 (TMS)	Pin 4 (JTMS)

In some of the discovery kits, there is an optional pin 5 and pin 6 in the SWD connector. For reprogramming the STEVAL-PCC009V2, this connection is not mandatory.

Remove the jumpers marked in red in the following schematics for the respective discovery kits.

Figure 6. STM32F value line discovery kit - jumpers to be removed

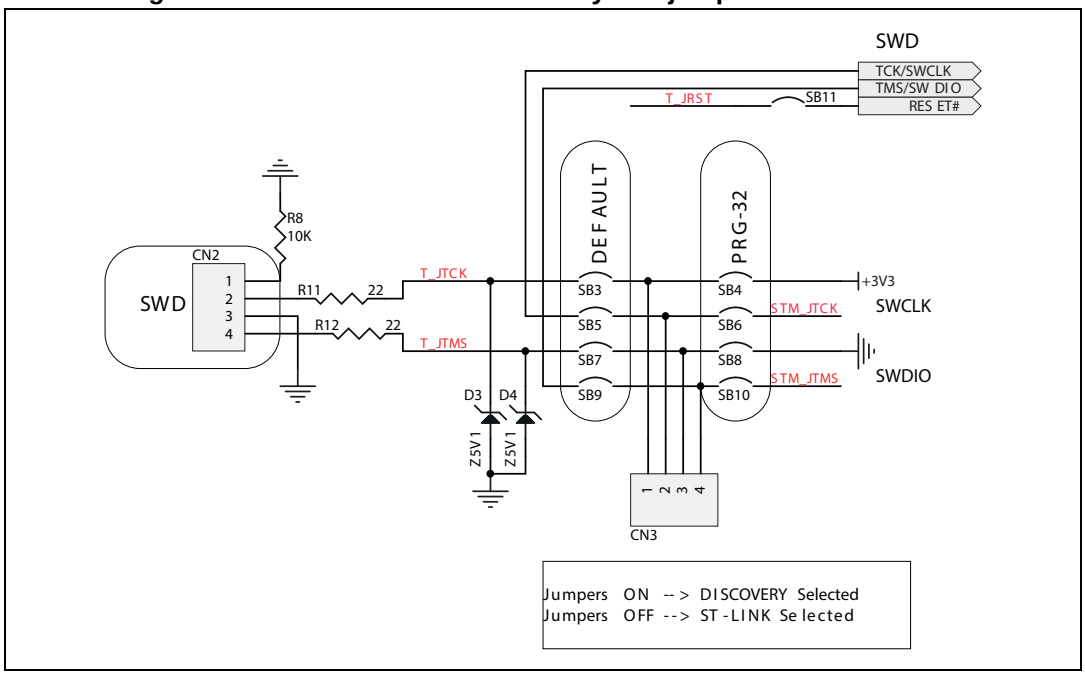


Figure 7. STM32F4 discovery kit - jumpers to be removed

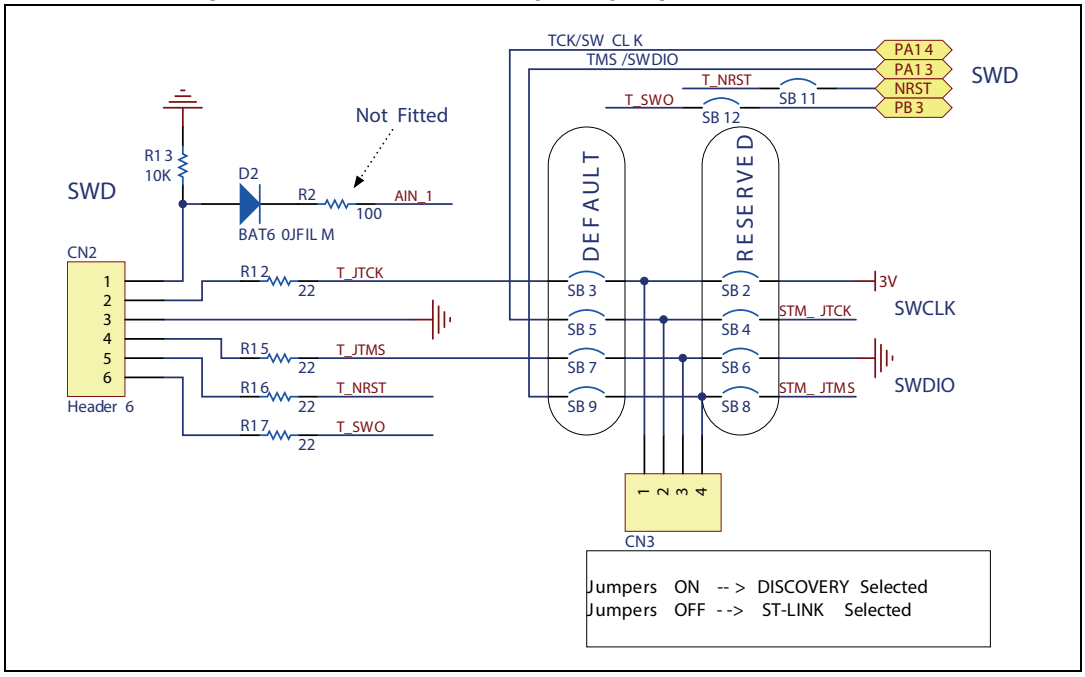
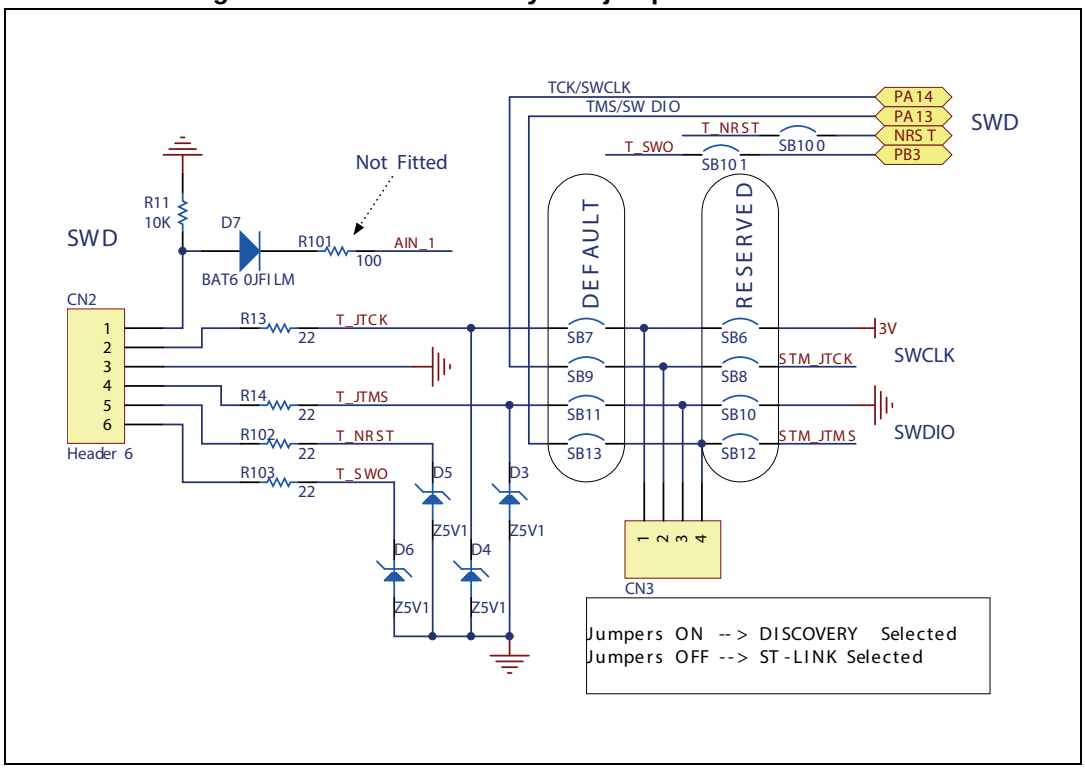


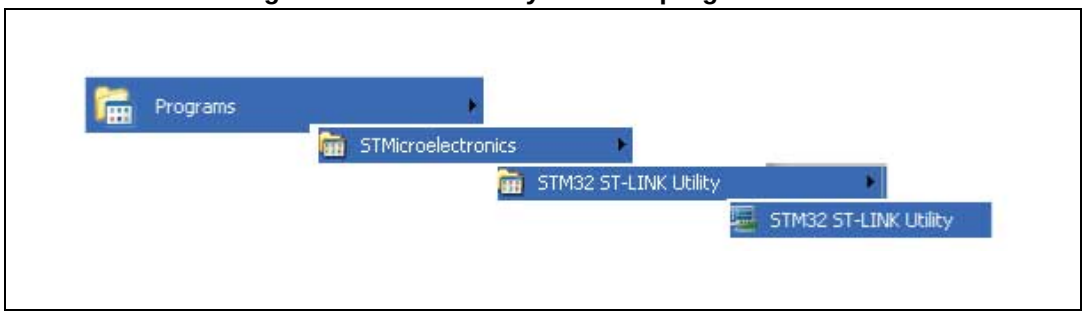
Figure 8. STM32L discovery kit - jumpers to be removed



2.2 Programming using the STM32 ST-LINK utility

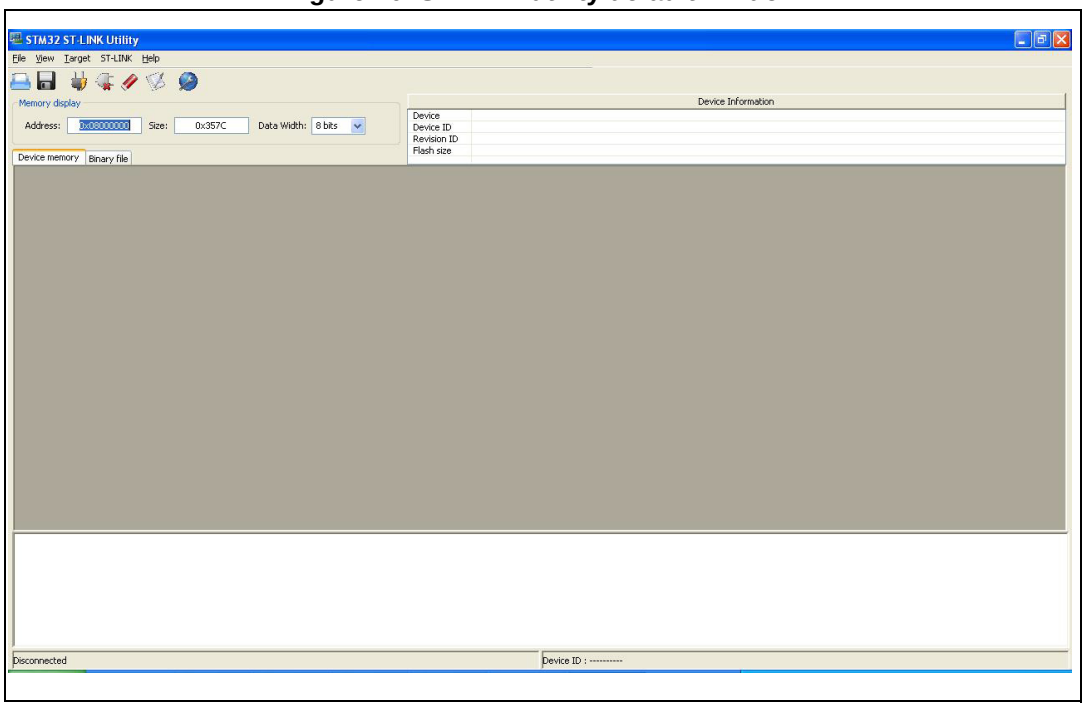
1. Download the hex file in a folder on the PC (in this example, it has been downloaded to the STEVAL-PCC009V2 folder).
2. Once the connections are made and the STEVAL-PCC009V2 and other hardware (ST LINK-2/ discovery kit) are powered using the USB, the user can start the toolset using the sequence given in the following figure.

Figure 9. ST-LINK utility from PC program menu



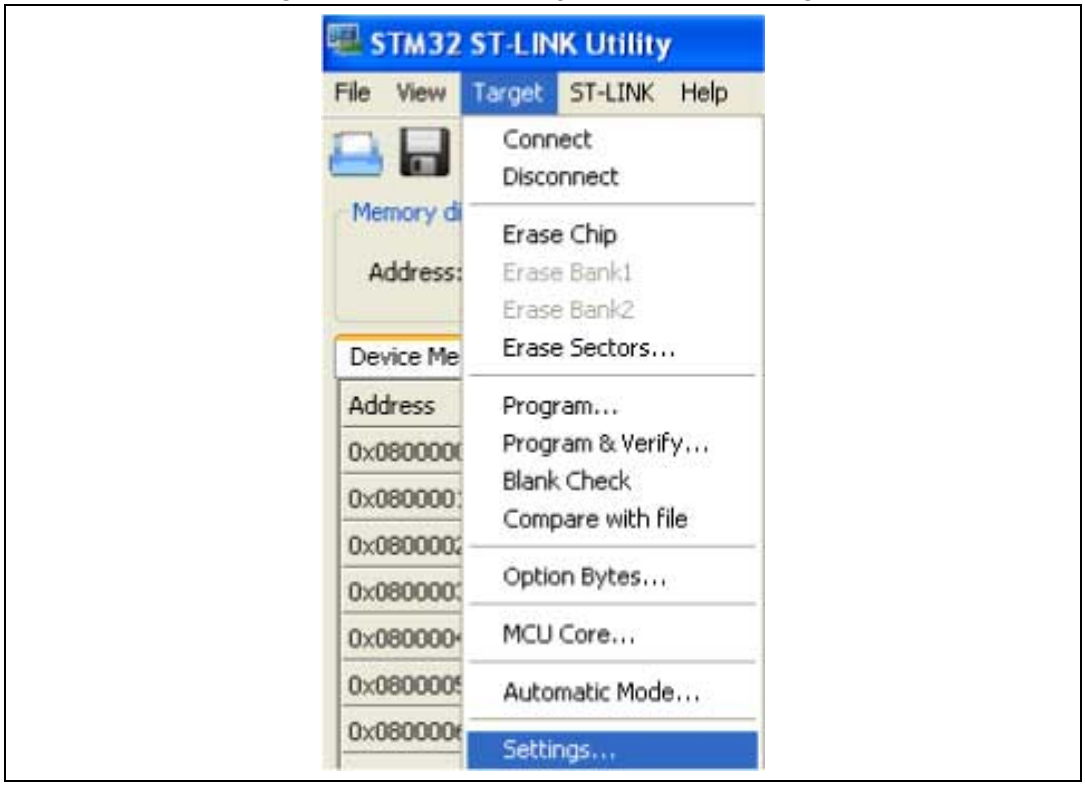
3. If the tool is correctly installed, the following window appears.

Figure 10. ST-LINK utility default window



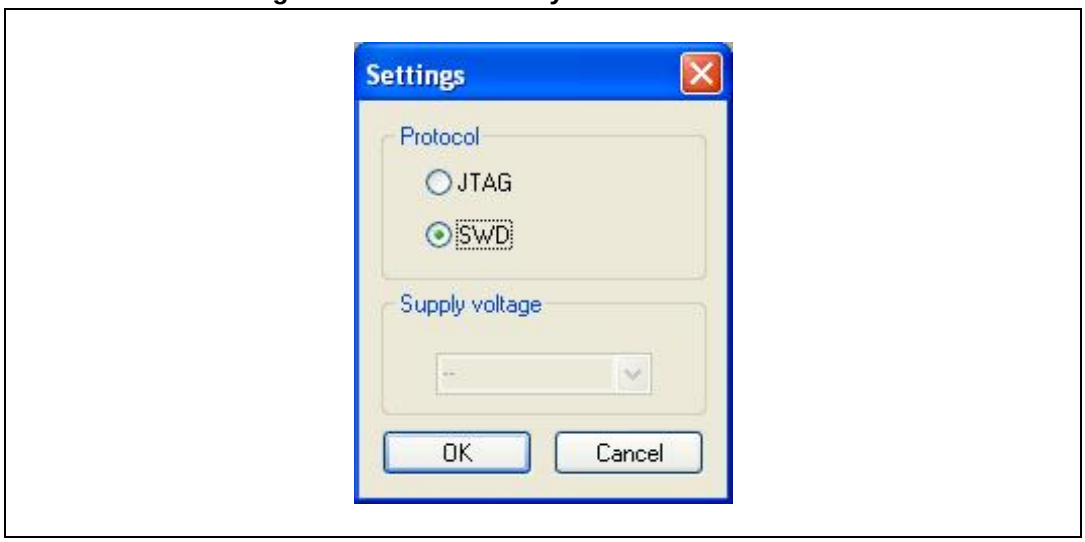
4. Configure the connection as shown in the following figure.

Figure 11. ST-LINK Utility connection settings



5. The following option must be selected in “Settings”. The user should note the change in protocol to the SWD option.

Figure 12. ST-LINK utility connection selection

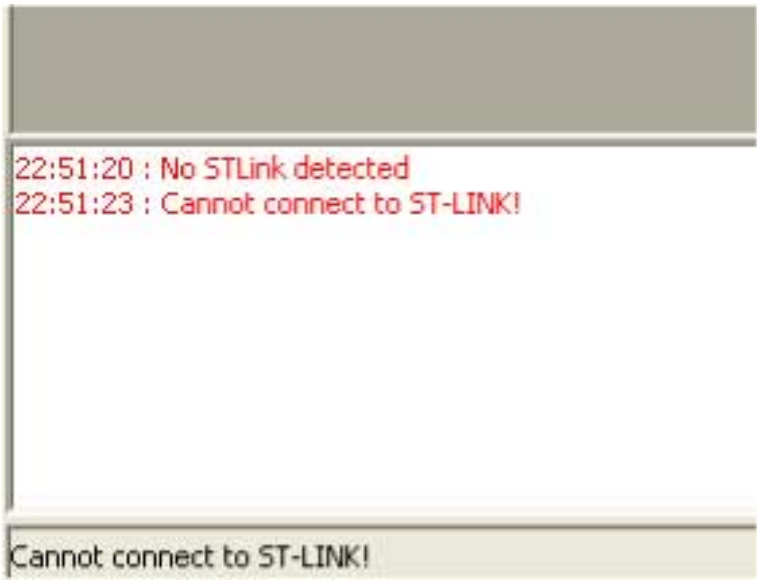


6. Connect to the hardware using following option.

Figure 13. ST-LINK utility connect option

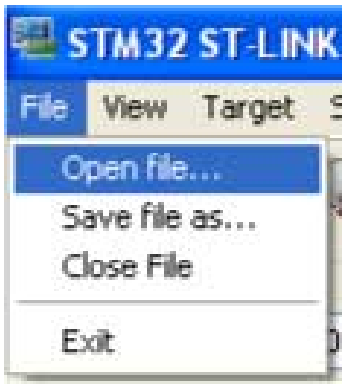
7. If there are any errors in the connection, an error message appears in the window of the ST-LINK Utility as given below. The user can check the hardware connection and perform the previous steps in order to rectify.

Figure 14. ST-LINK status window



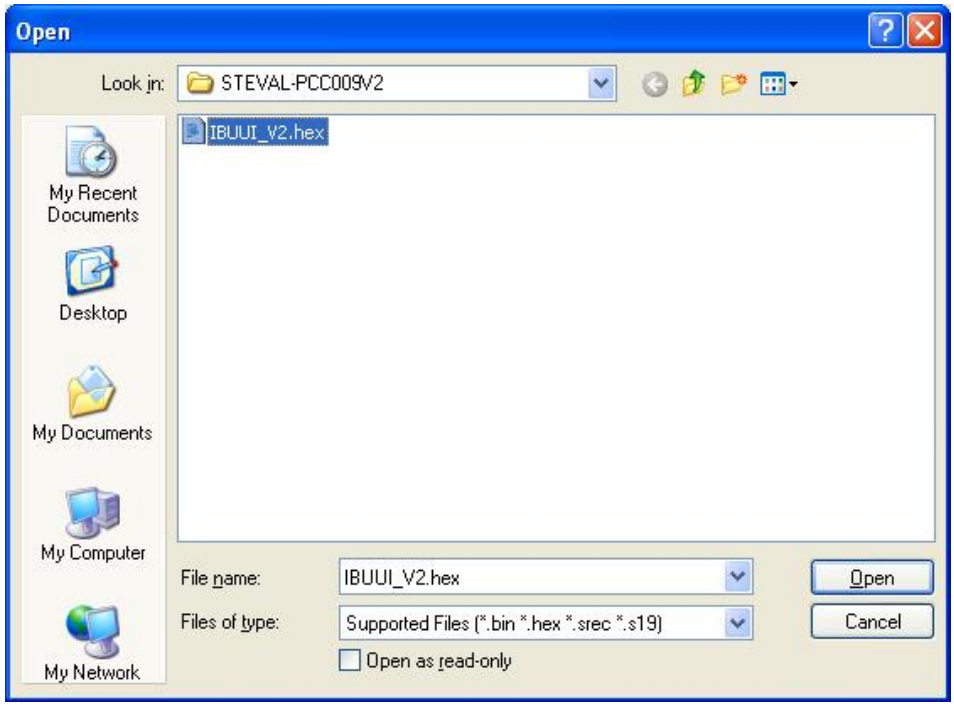
8. Load the hex file using the menu File -> Open.

Figure 15. ST-LINK utility open



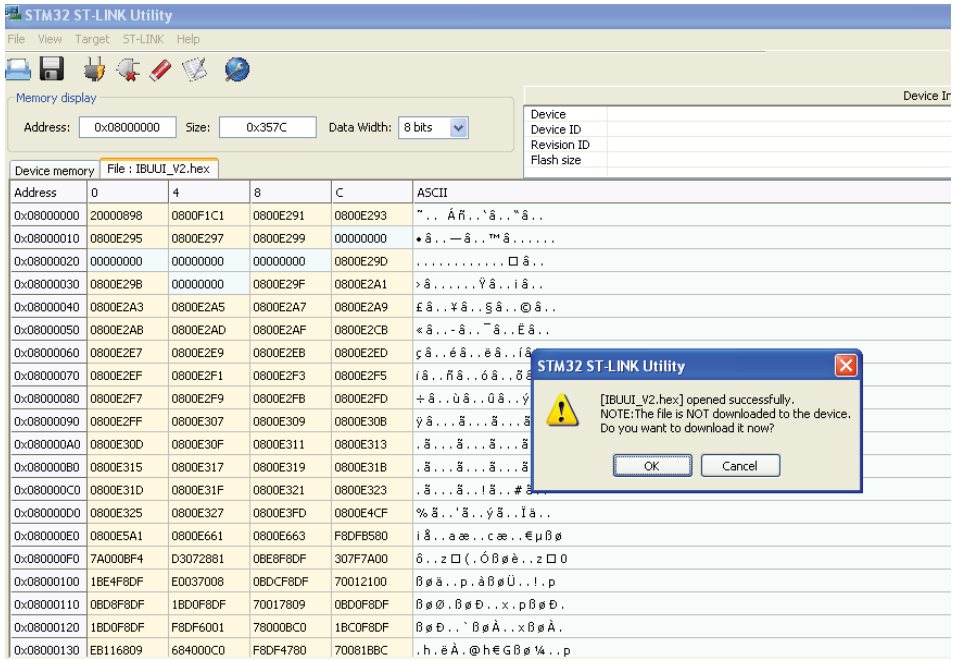
9. Select the IBUUI_V2.hex file first as shown below.

Figure 16. ST-LINK Utility -> File -> Select Hex file



10. If the file is loaded correctly, the following window appears.

Figure 17. ST-LINK utility -> File -> Select Hex file



11. After the program is loaded, start the programming by pressing the OK button in the following window.

Figure 18. Option OK to download

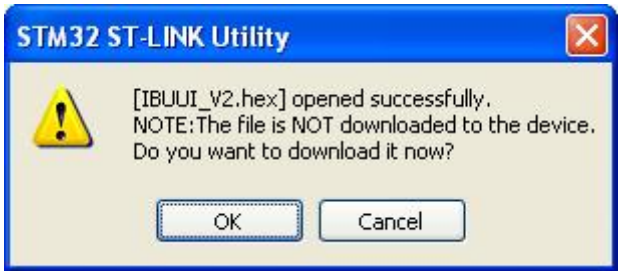
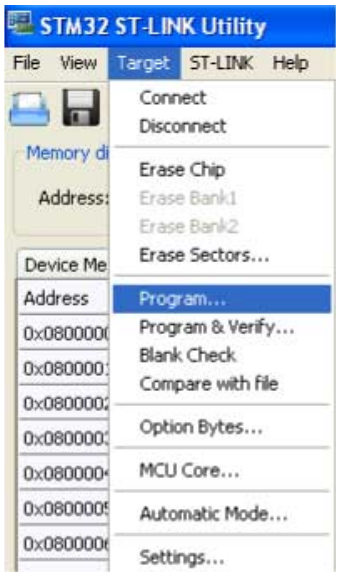


Figure 19. Program selection

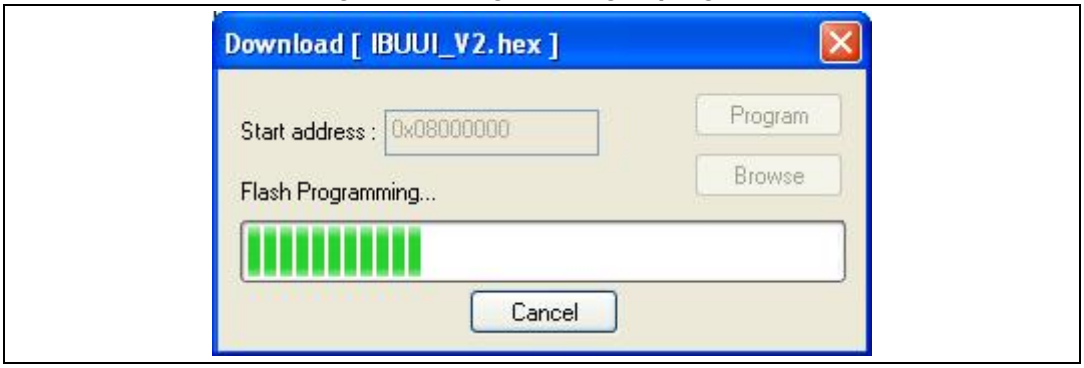
12. The window that prompts programming may not be visible in the latest version, in which case the user can start the programming using the option below.

Figure 20. Option to program



13. Once the program option is clicked, the following window appears.

Figure 21. Programming in progress



14. Once the programming is complete, the status can be seen in the output window.

Figure 22. Program complete status

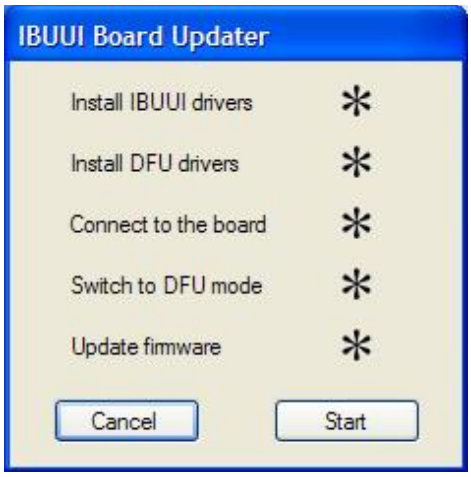
2.3 Programming using the IBUUI updater tool (Windows XP only)

1. The user must register and then download the archive file containing the tool and extract its content. This file can be found at the following address:

   http://www.st.com/web/en/catalog/tools/PF246414#

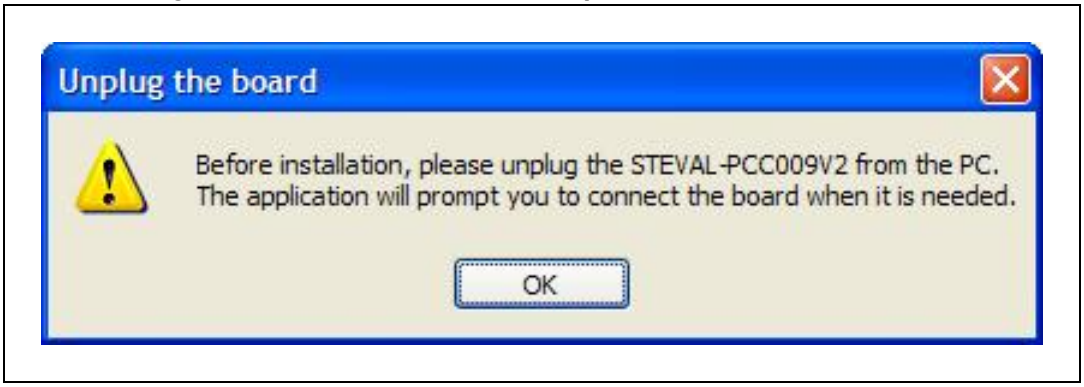
2. Running the tool (IBUUI updater.exe), the following window appears.

Figure 23. IBUUI updater main window



3. Click on the "Start" button in order to begin the step-by-step procedure.
4. The update procedure installs the board drivers also, so the STEVAL-PCC009V2 should be left unplugged until the connection is required by the procedure.

Figure 24. STEVAL-PCC009V2 - request to disconnect from PC



5. Plug in the board when prompted.

Figure 25. STEVAL-PCC009V2 - request to connect to PC

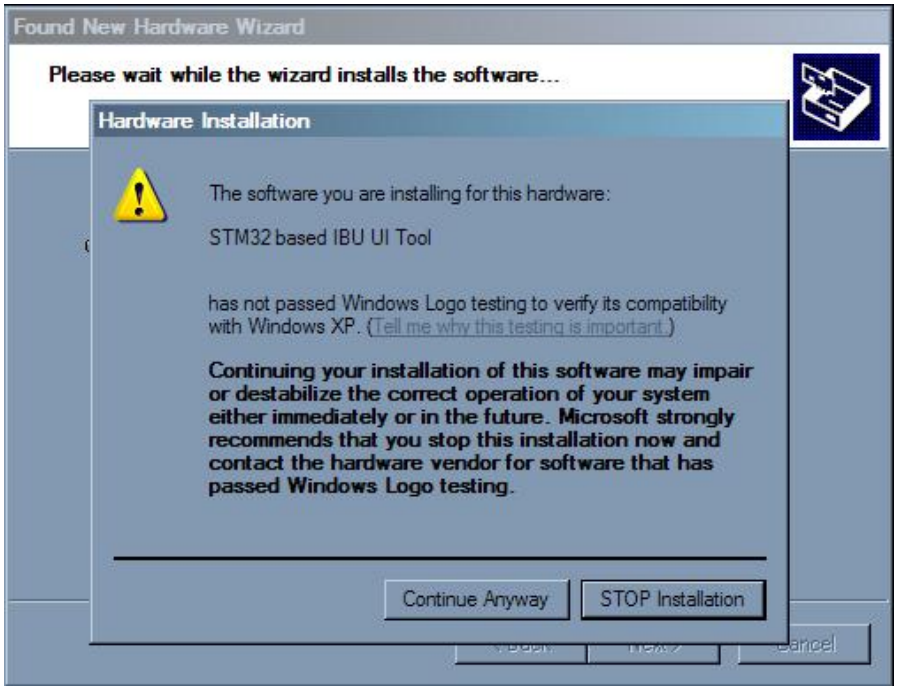
6. If the board has never been connected to the PC before, when the board is connected to the PC, the new hardware installation procedure of Windows XP is started (Found New Hardware Wizard).
   The user should proceed with the hardware installation BEFORE continuing with the firmware update.
   If the STEVAL-PCC009 has been already installed, the user can proceed to step 10.

7. Select "No, not this time" when the system prompts to connect to Windows Update.

Figure 26. New hardware installation procedure

8. Select the "Install the software automatically (Recommended)" option for the wizard. When the driver certification warning is shown, select "Continue Anyway" in order to complete the installation of the STEVAL-PCC009V2.

Figure 27. Driver certification warning



9. If the installation procedure has been done correctly, the following window is shown.

Figure 28. STEVAL-PCC009V2 installation procedure completed

10. Click on the OK button of the prompt message to continue the step-by-step procedure.

Figure 29. STEVAL-PCC009V2 plug request to be confirmed

11. The device is switched to DFU mode and the firmware upgrade begins.
During the firmware upgrade the board MUST not be unplugged from the PC.

12. If the firmware upgrade has been done correctly, the following window is shown.

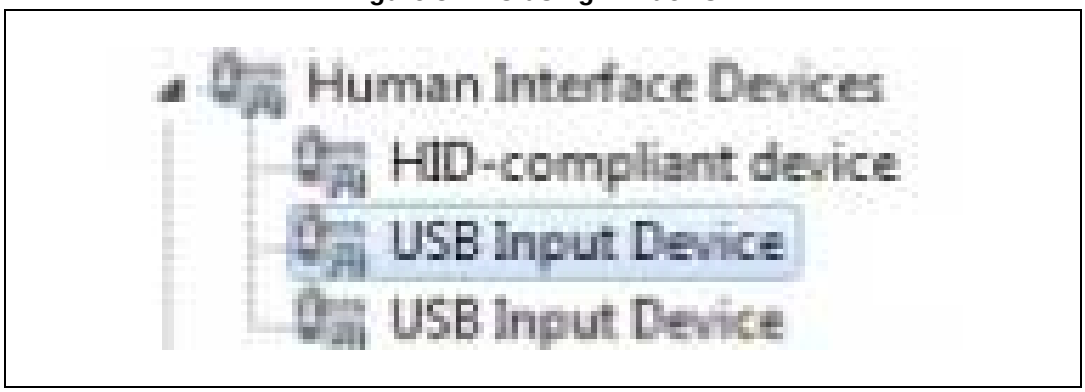
Figure 30. Firmware upgrade completed

3 How to run the board

Once the program has been downloaded, the STEVAL-PCC009V2 can be removed from the JTAG/ SWD connection. Once the user presses the RESET button (SW1), the board is listed on the PC as shown below.

Figure 31. PC using Windows XP

Figure 32. PC using Windows 7



For instructions on operating the STEVAL-PCC009V2, please refer to UM0935.

4 Revision history

Table 5. Document revision history

Date	Revision	Changes
23-Jul-2013	1	Initial release.

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