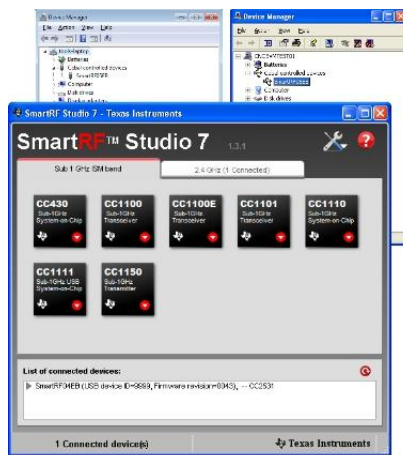# Cebal – CCxxxx Development Tools
USB Driver Installation Guide

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Keywords

- *Cebal*
- *Driver*
- *Windows x86*
- *Windows x64*
- *SmartRF™ Studio*
- *SmartRF™ Packet Sniffer*

- *SmartRF™ Flash Programmer*
- *SmartRF05EB*
- *SmartRF04EB*
- *CC Debugger*
- *SmartRF TrxEB*
- *CC2430DB*

1   Introduction

The USB driver used together with the CCxxxx Development Tools has recently been updated in order to also support 64-bit editions of the Microsoft Windows operating systems.

During the transition from the old driver to the new driver there will be a mix of tools using the old and new USB Driver. This document is created to help the users of the different tools with handling of the drivers.

The USB driver can be downloaded directly from the Texas Instruments web pages: http://www.ti.com/lit/zip/swrc212.

The driver files are available in either a zip file or a complete installer file.

With the installer, the driver will be automatically installed on the system. That means when a CCxxxx USB device is connected, the correct driver will be detected and registered for that particular device.

The zip file can be downloaded and unpacked to any directory of choice. When a CCxxxx USB device is connected, the user must point to this directory when the system tries to install the device drivers.

3   About this manual

This manual describes how to install and handle the Cebal USB Driver.

There will be one chapter for Windows XP and a combined chapter for Windows Vista and Windows 7. Windows 7 is used as example but most of the dialogs and actions required by the user will be equal or similar to Windows Vista.

Problems that might occur with older versions of development tools will be described together with the appropriate solution.

The old and new driver file has been given different names in order to easily make the difference. The old driver is called *cebal.sys* and the new driver is named *cebal2.sys*. This also means that both drivers can be used in parallel. PC tools that require the old driver can be operated in parallel with tools using the new driver.

In this document the name "*CCxxxx USB device*" will be used to refer to any Evaluation Board supported by the Cebal USB Driver.

List of currently supported Evaluation Boards:

- SmartRF04EB
- SmartRF05EB
- SmartRF TrxEB
- CC Debugger
- CC2430DB

4 Windows XP

4.1 Installation of the Cebal USB Driver

The USB driver can be installed either with the installer or by pointing to the unpacked driver files contained in the zip file using the HW Wizard. The following two sections will describe both methods, but it is only necessary to complete one of them in order to install the USB driver. Both the installer and zip file option are included in the zip file on the TI web [6].

4.1.1 Installer

Run the setup file and follow the instructions. A security warning may be given on startup.

Figure 1, Security warning (XP)

Click on "Run" to start the installation and the "Welcome" dialog of the installer will appear.
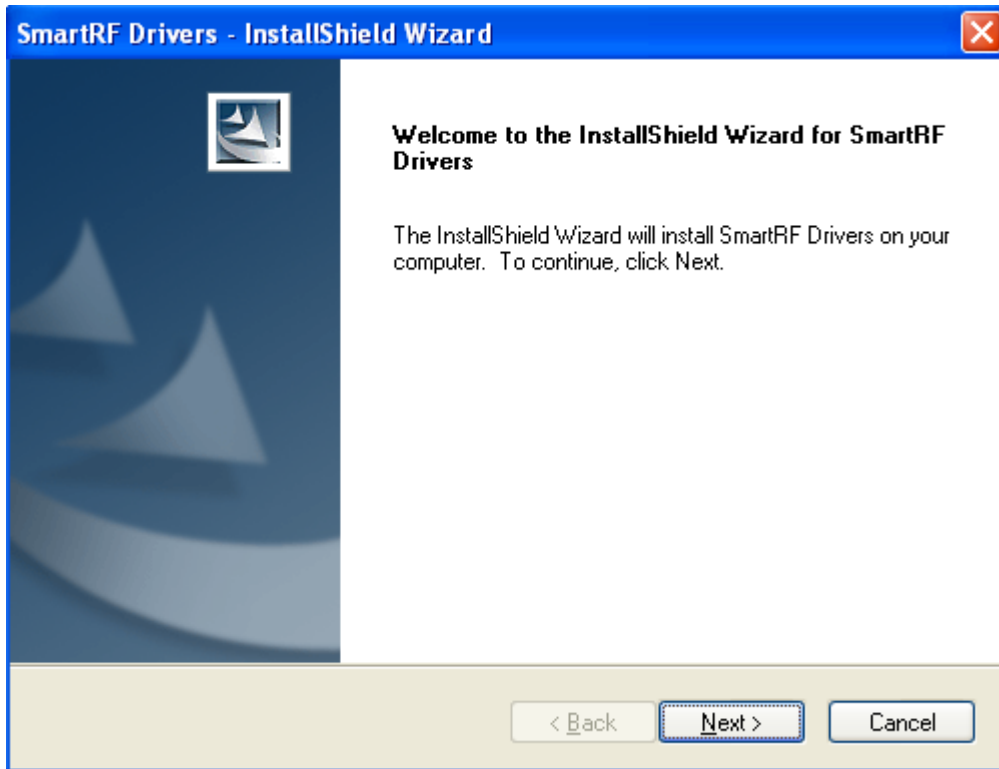
Figure 2, Welcome dialog of the Installer

Click "Next" on all the following dialogs.

The required driver files will be copied to the target directory and installed on the system. The installer will automatically detect if it is a 32-bit or a 64-bit system.

Further actions are not required. When the applicable CCxxxx USB device is connected, it will be detected and the correct driver software will be installed. An indication that the device has been detected will appear. It looks a bit different from operating system to operating system, but it is clear what's going on. Figure 3 shows an example.
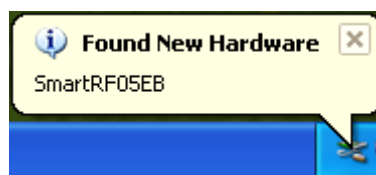
Figure 3, XP: Found new HW

After installation the driver files can be found on the target directory. Typically this would be:

C:\Program Files\Texas Instruments\SmartRF Tools\Drivers\cebal\win_32bit_x86\ cebal2.inf
                                                                    cebal2.sys
                                                                    cebal2.cat

4.1.2   Zip file

When using the zip file, the driver must be installed when a CCxxxx USB Device is connected to the PC.

First, you must open the zip file and extract the driver files to a local directory of your choice. In these instructions, driver files have been extracted to "*c:\cebal2*" and a SmartRF05EB Evaluation Board is used as USB device.

The "Hardware Update Wizard" will appear when the device is connected for the first time. To install the driver from a specific location, the "No, not this time" option must be selected on the first dialog.

Figure 4, Hardware Update Wizard

Click "Next" to continue to the second dialog.
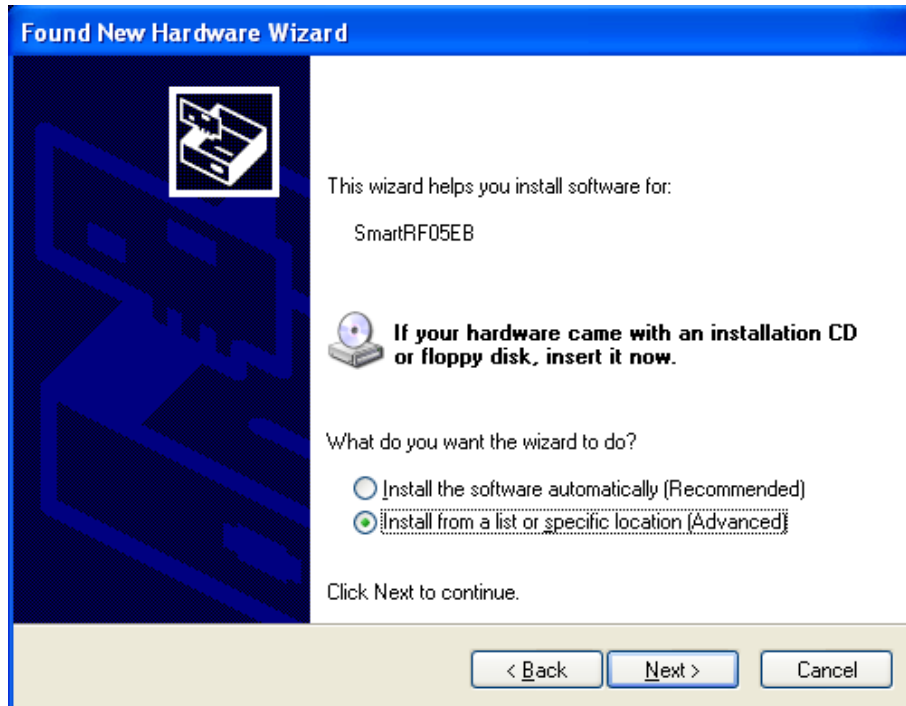
Figure 5, HW Wizard: What do you want the wizard to do?

Select "Install from a list or specific location". Click "Next".
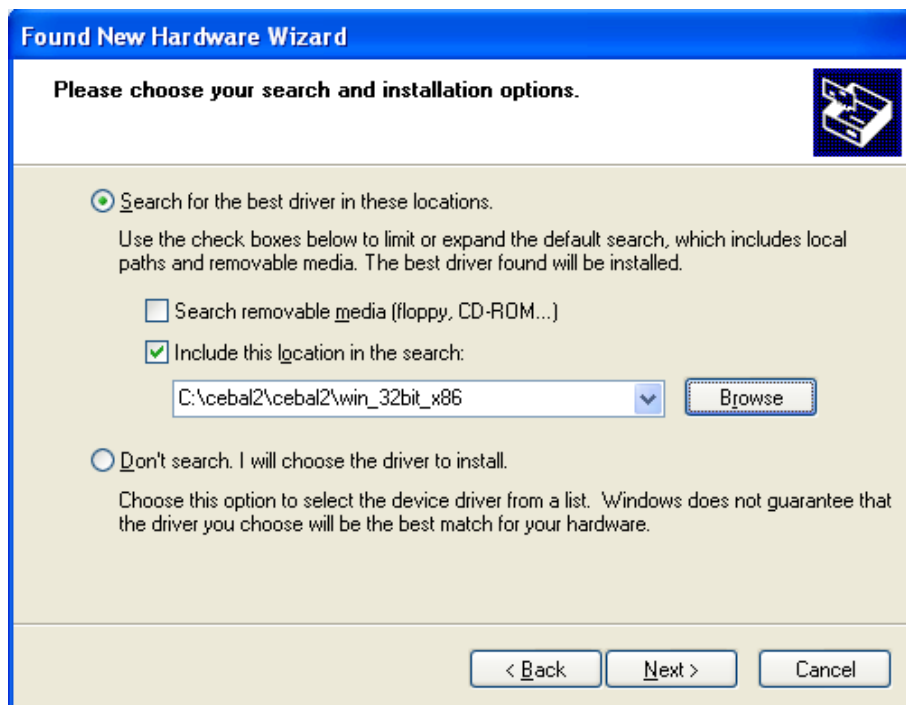
Figure 6, HW Wizard: Choose your search and installation options

Select "Search for the best driver in these locations" and "Include this location in the search". Click on the "Browse" button and point to the location where the driver files have been unpacked.

Click "Next" and the installation will be completed.

Verify that the CCxxxx USB device is associated with the correct driver by opening the Device Manager on your PC (this can be done by: Start menu > Run... > "devmgmt.msc").

When the SmartRF05EB is connected, the "Cebal controlled devices" list contains "SmartRF05EB". This means that the USB driver have been correctly installed for our CCxxxx USB device.
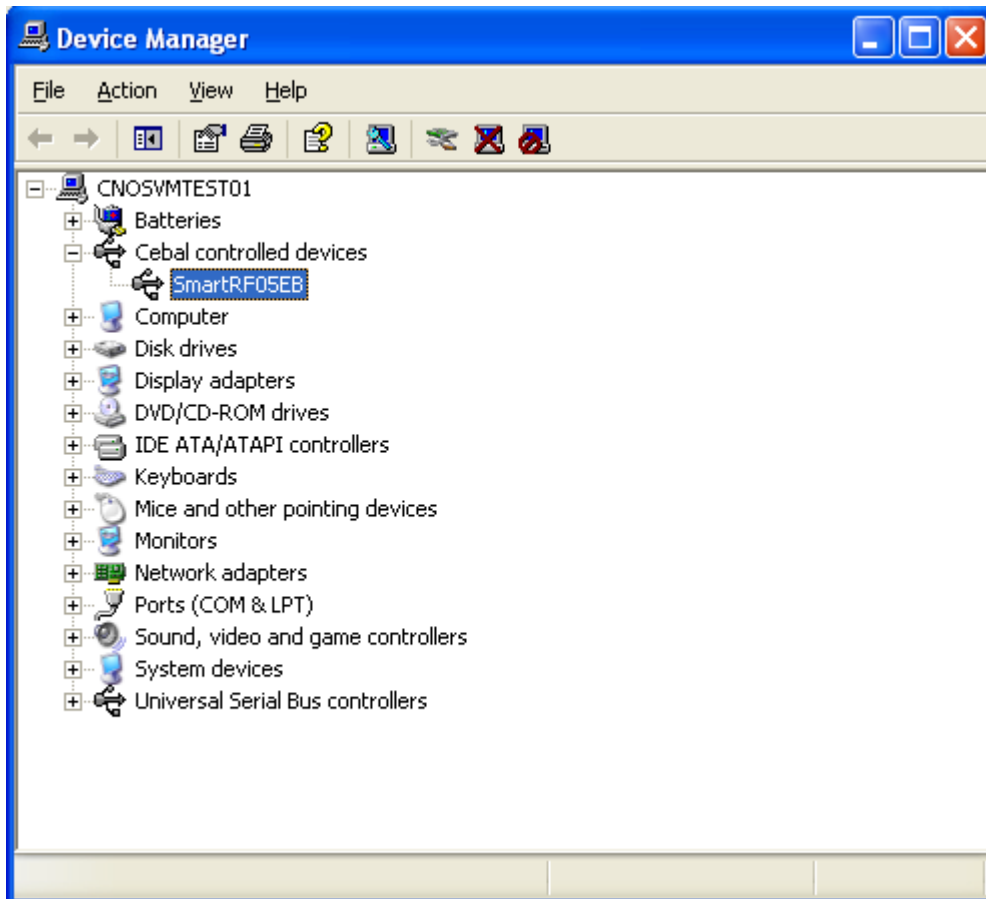
Figure 7, Device Manager: Cebal controlled devices

4.2   Update driver

In some cases it might be that the connected CCxxxx USB device has already been used together with the old driver. In those cases it is required to update the driver. The driver of the specific device will not be automatically updated when running the installer of the new driver. The already used USB device will still be registered with the old driver. To find the version of the device driver used for a specific device, the Device Manager should be opened. The device should be listed under "Cebal controlled devices". Right click on the device and select "Properties". Select the "Driver" tab. The old Driver Version is "2.0.0.0", as shown in Figure 8, while the new Driver Version is "2.50.0.0".
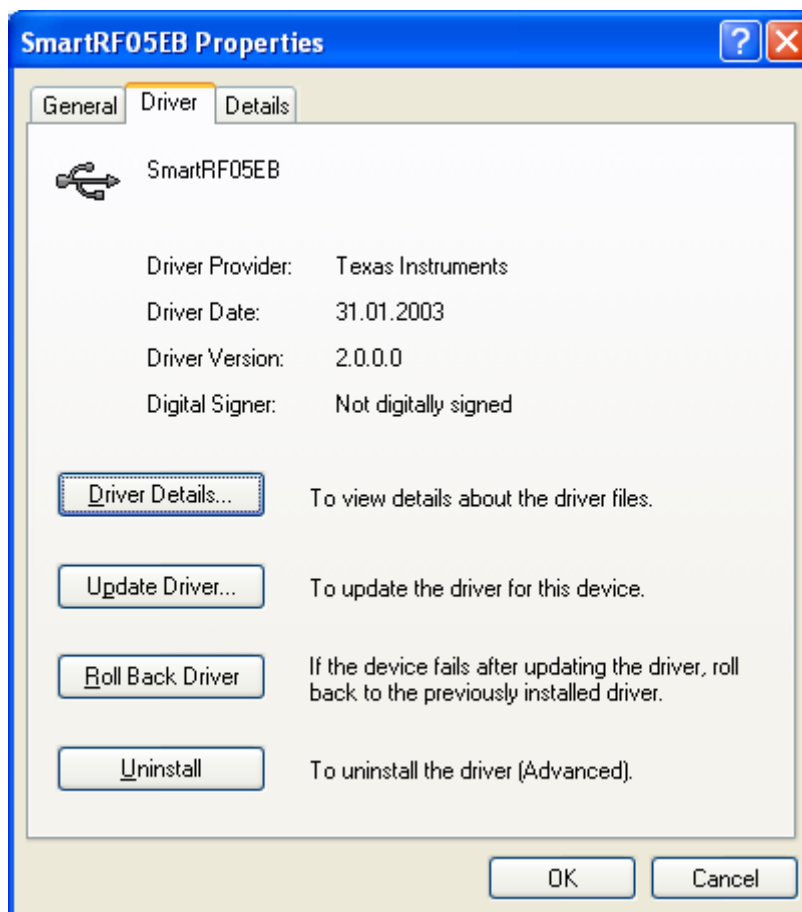
Figure 8, Driver Properties old driver

The Device Manager should be used to update the driver of a specific device. Right click on the device and select "Update Driver…" as shown in Figure 9.
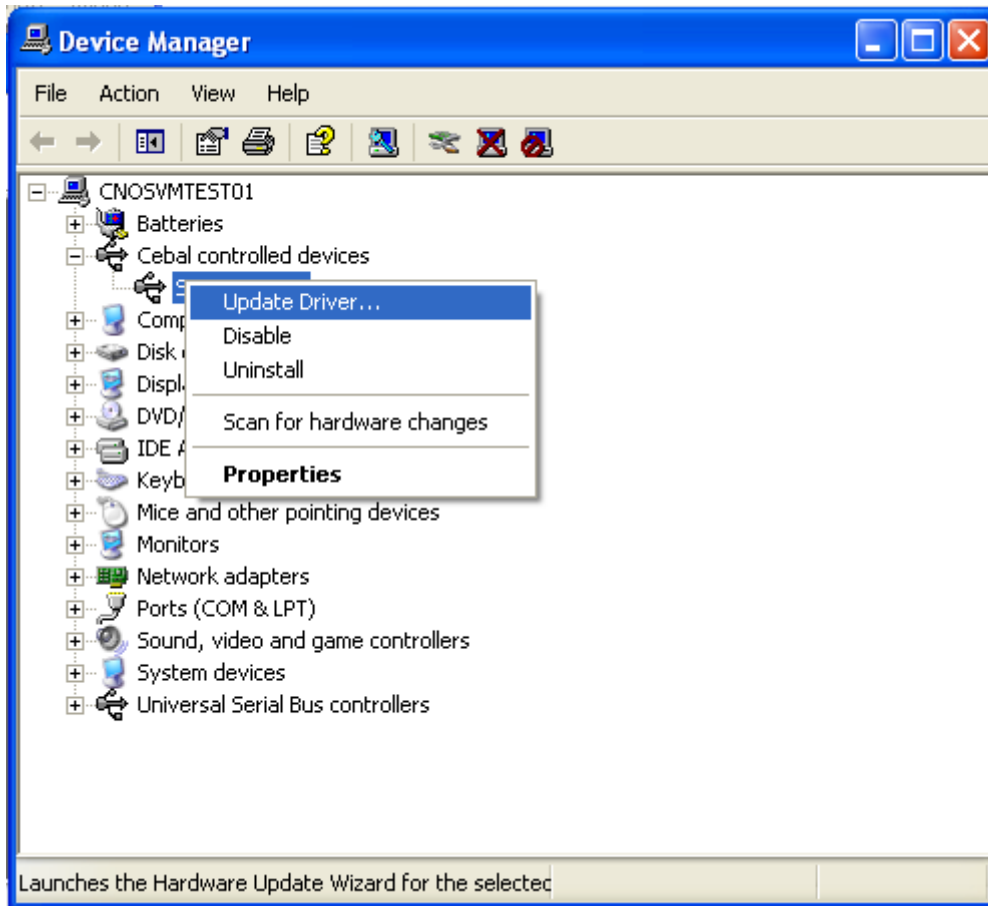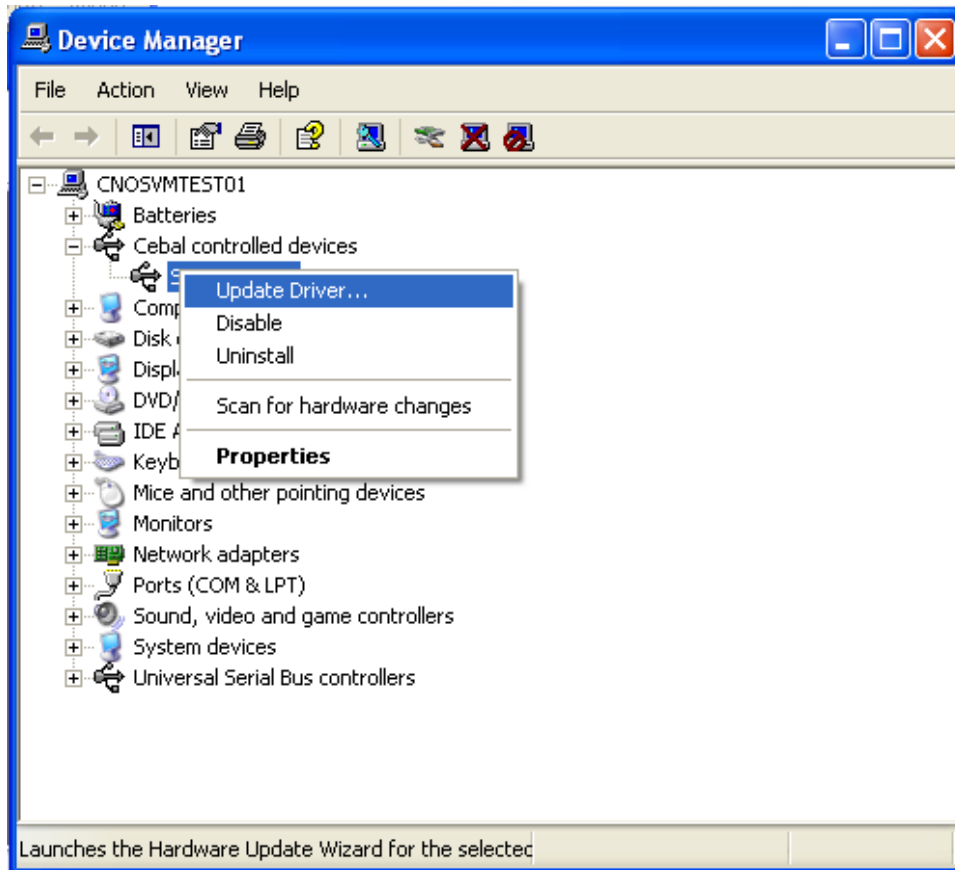
Figure 9, Device Manager

This will launch the "Hardware Update Wizard".
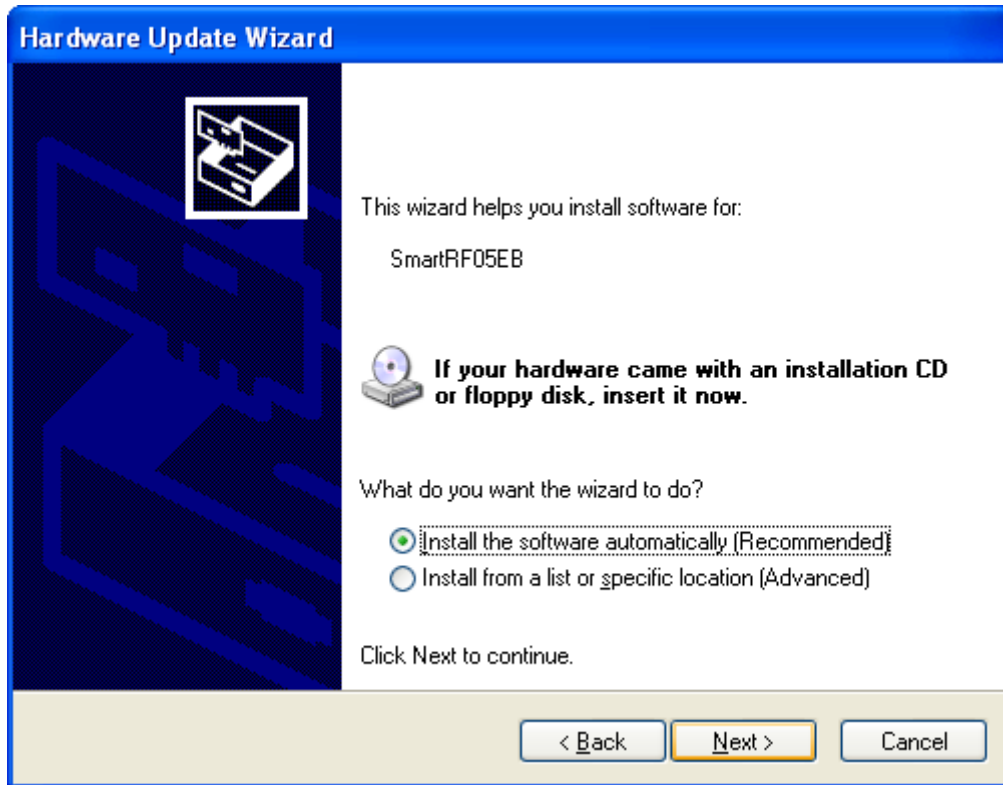
Figure 10, HW Wizard: Install the software automatically

If the new driver has been installed with the installer, the "install the software automatically" option should be selected.

Click "Next" and the driver will be updated.

If the new driver has been downloaded as a zip file, the "Install from a list or specific location" option in Figure 10 should be used. The following steps will be the same as described in chapter 4.1.2.

Design Note DN304

4.3 Downgrade to old driver

Some PC tools might still require the old USB driver in order to work. It is possible that both the old and the new driver have been installed in parallel. The old driver was installed together with the PC tools and the new driver has been installed with the driver installer. When the applicable CCxxxx USB device is connected to the PC, the new driver will be selected automatically. This may cause the legacy PC tool to no longer be functioning with the device. When this occurs the device will not be "visible" for the tool. The driver must be "downgraded" to the old driver. To verify that the device is using the new driver, use the Device Manager and check the driver properties. The device should be listed under "Cebal controlled devices". Right click on the device and select "Properties". Select the "Driver" tab.

The new Driver Version is "2.50.0.0" as shown in Figure 11 (the old Driver Version is "2.0.0.0").

Figure 11, Driver properties new driver

The Device Manager should be used to "downgrade" the driver of a specific device. Right click on the device and select "Update Driver…" as shown in Figure 12.

Figure 12, Device Manager: Update Driver

The Hardware Update Wizard will be launched. Select "No, not this time" and click "Next".

Figure 13, HW Wizard: Do not connect to Windows Update
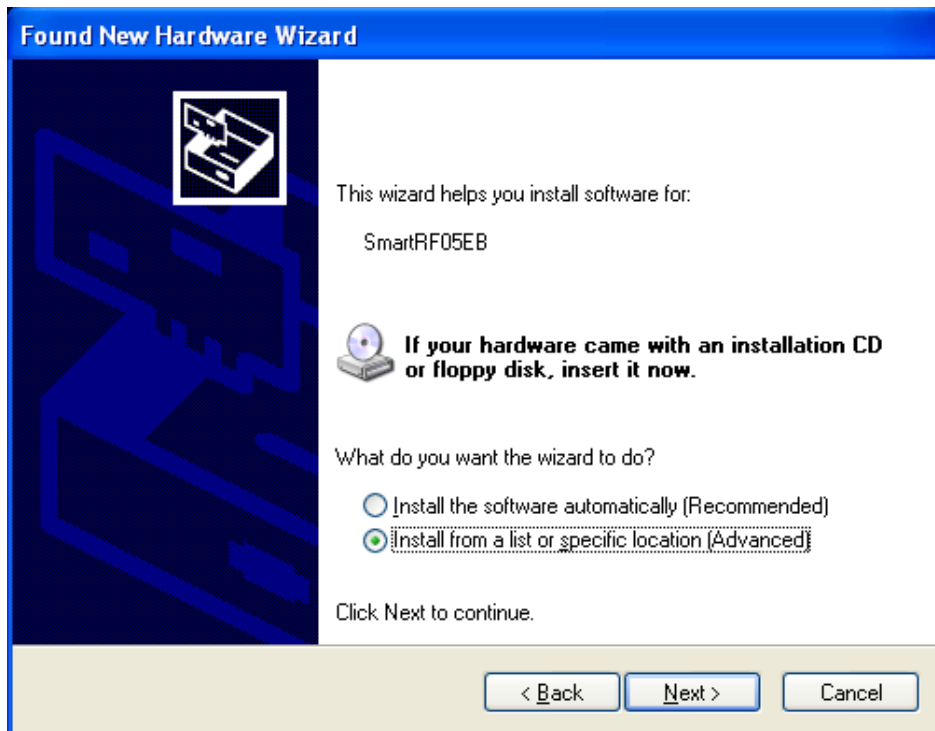
Figure 14, HW Wizard: What to do?

Select "Install from a list or specific location" and click "Next".
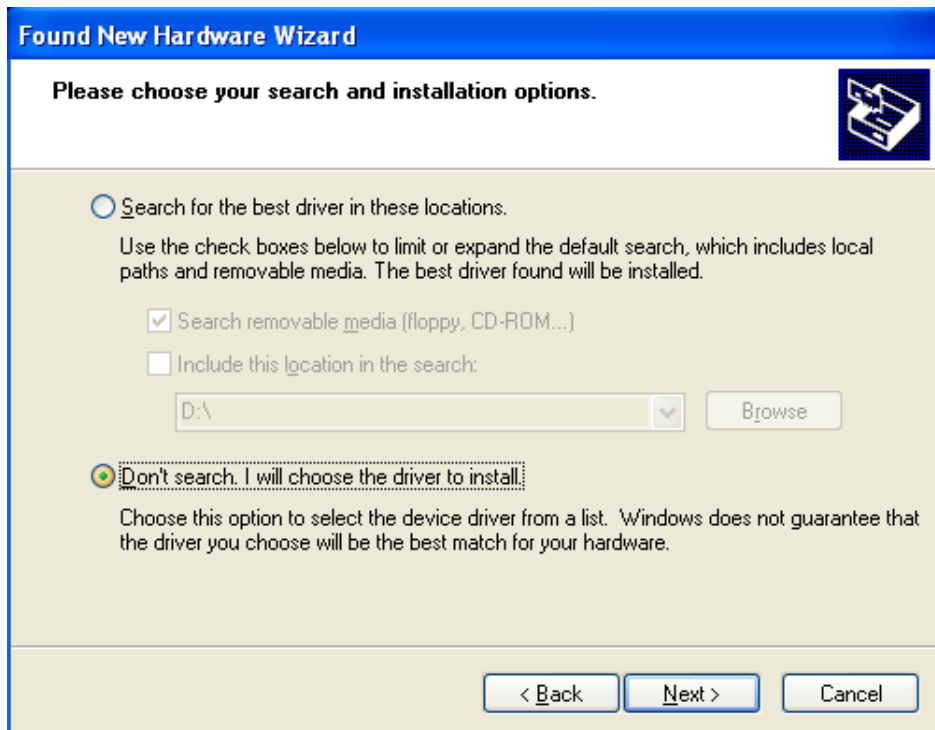
Figure 15, HW Wizard: Search options

Select "Don't search. I will choose the driver to install" and click "Next".
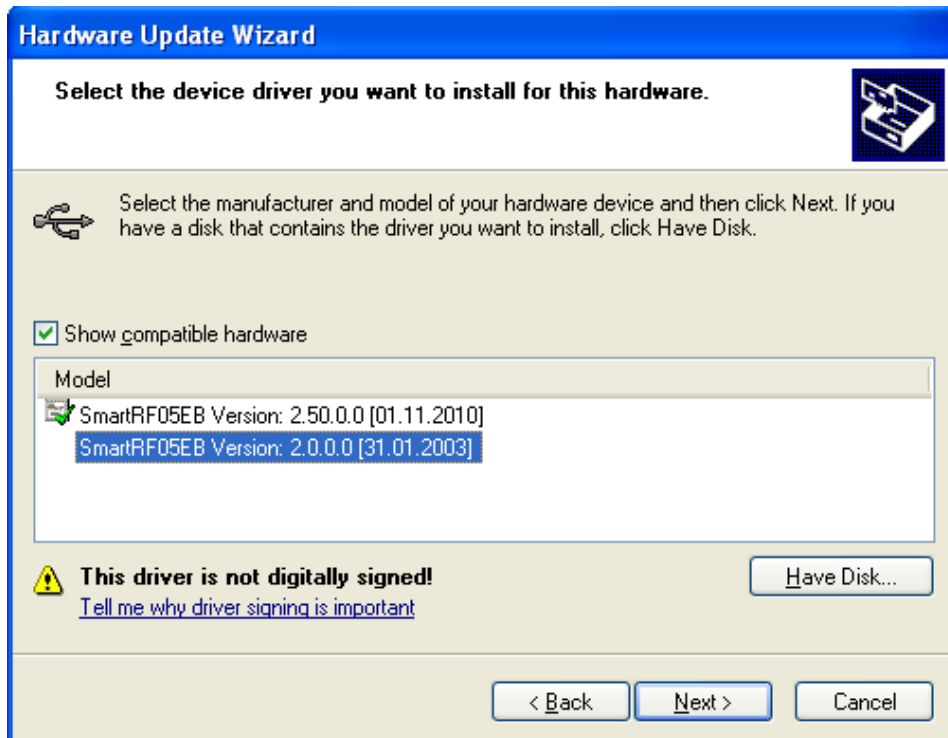
The Wizard should find *two* drivers that are compatible for this hardware.

Figure 16, HW Wizard: Select device driver

Version "2.0.0.0" is the old driver and should be selected.

If the driver file is not found automatically, the "Files Needed" dialog will appear.
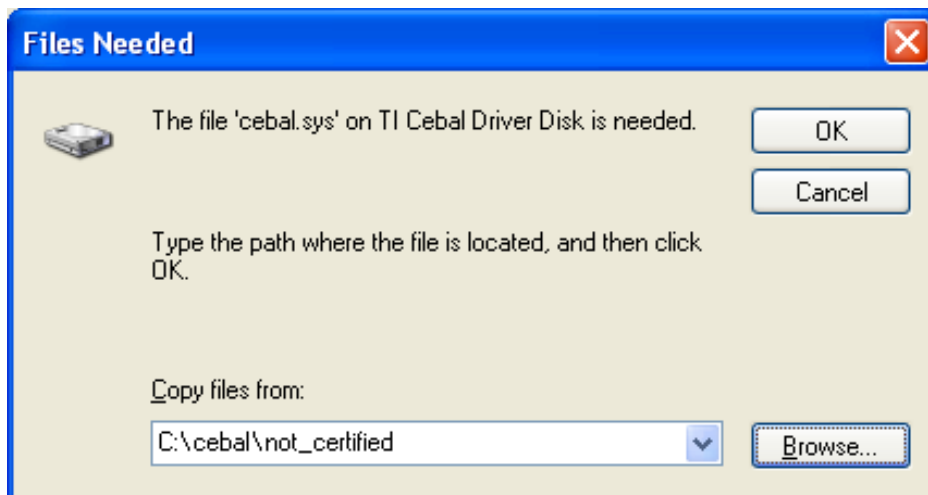
Figure 17, Files Needed

Browse to the location of the old driver and click "OK". The old driver can be found in the "*not_certified*" subdirectory of where the zip file was extracted, "*C:\cebal\not_certified*" in this example. The installer will by default store the old driver in "*C:\Program Files\Texas Instruments\SmartRF Tools\Drivers\Cebal\not_certified*".

After completing this final step, the CCxxxx USB device will use the old USB driver.

5   Windows 7 and Windows Vista

5.1   Installation of the Cebal USB Driver

The USB driver can be installed either with the installer or by pointing to the unpacked driver files contained in the zip file using the "Update driver software" Wizard. The following two sections will describe both methods, but it is only necessary to complete one of them in order to install the USB driver. Both the installer and zip file option are included in the zip file on the TI web [6].

5.1.1   Installer
Run the setup file and follow the instructions.

For Windows 7 a warning about "unknown publisher" will be shown (Figure 18).
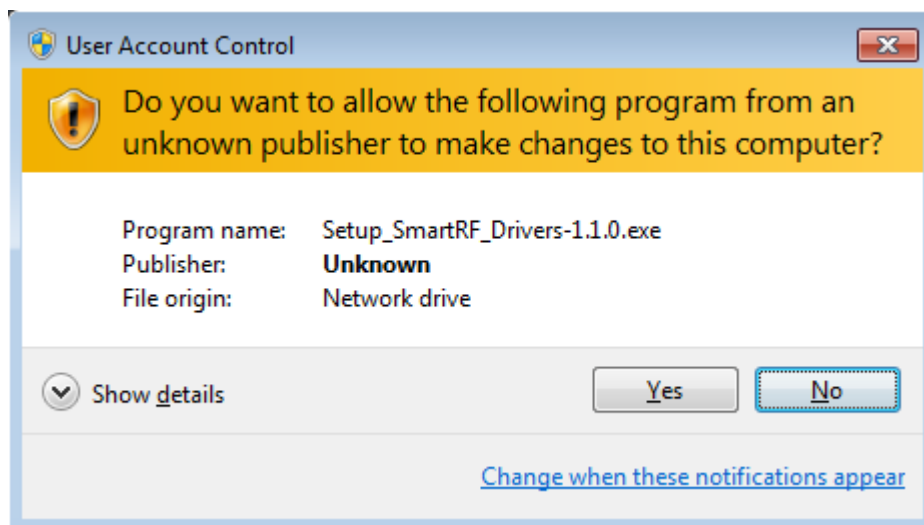
Figure 18, Unknown publisher (Windows 7)

For Windows Vista, a security warning similar to Figure 19 is given on startup.
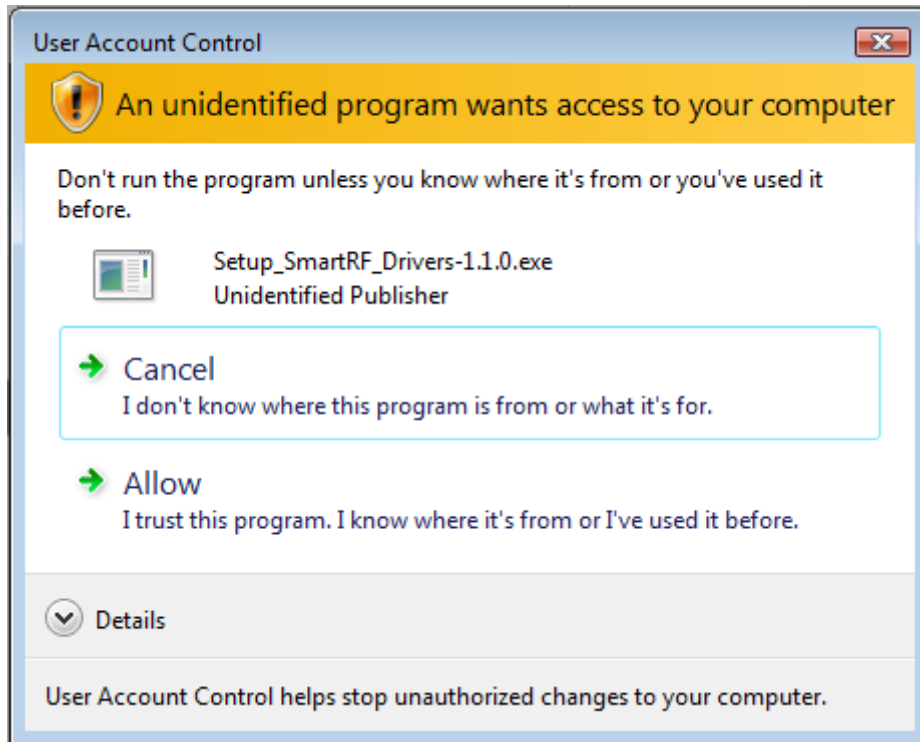
Figure 19, Security warning (Windows Vista)

Click on "Yes" or "Allow", to start the installation and the "Welcome" dialog of the installer will appear.
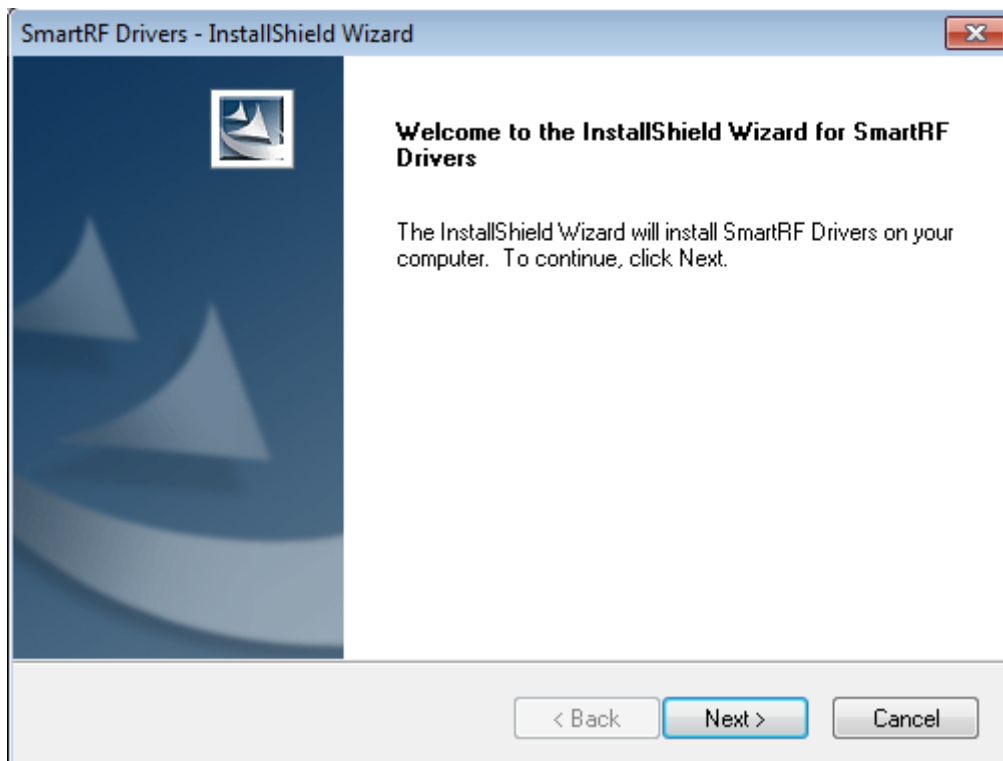
Figure 20, Welcome dialog of the Installer

Click "Next" in all the following dialogs.

The required driver files will be copied to the target directory and installed on the system. The installer will automatically detect if it is a 32-bit or a 64-bit system.

Further actions are not required. When the applicable CCxxxx USB device is connected, it will be detected and the correct driver software will be installed. An indication that the device has been detected will appear. It looks a bit different from operating system to operating system, but it is clear what's going on. Figure 21 shows an example. Figure 22 shows an example of the indication given when the driver installation is successful.

Figure 21, Installing device driver software

Figure 22, Device driver software installed successfully.

After installation the driver files can be found in the target directory. Typically this would be either:

C:\Program Files\Texas Instruments\SmartRF Tools\Drivers\cebal\win_32bit_x86\ cebal2.inf
cebal2.sys
cebal2.cat

or

C:\Program Files\Texas Instruments\SmartRF Tools\Drivers\cebal\win_64bit_x64\ cebal2_x64.inf
cebal2_x64.sys
cebal2_x64.cat

5.1.2   Zip file
When using the zip file, the driver must be installed when a CCxxxx USB Device is connected to the PC. When the device is connected, the system will attempt to install the driver. Since the system does not know where to find the driver, the installation will fail. An example is given in Figure 23.

Figure 23, Driver installation failed

The CCxxxx USB Device will be listed in the device manager as "Other devices" and it will be marked with an exclamation mark.
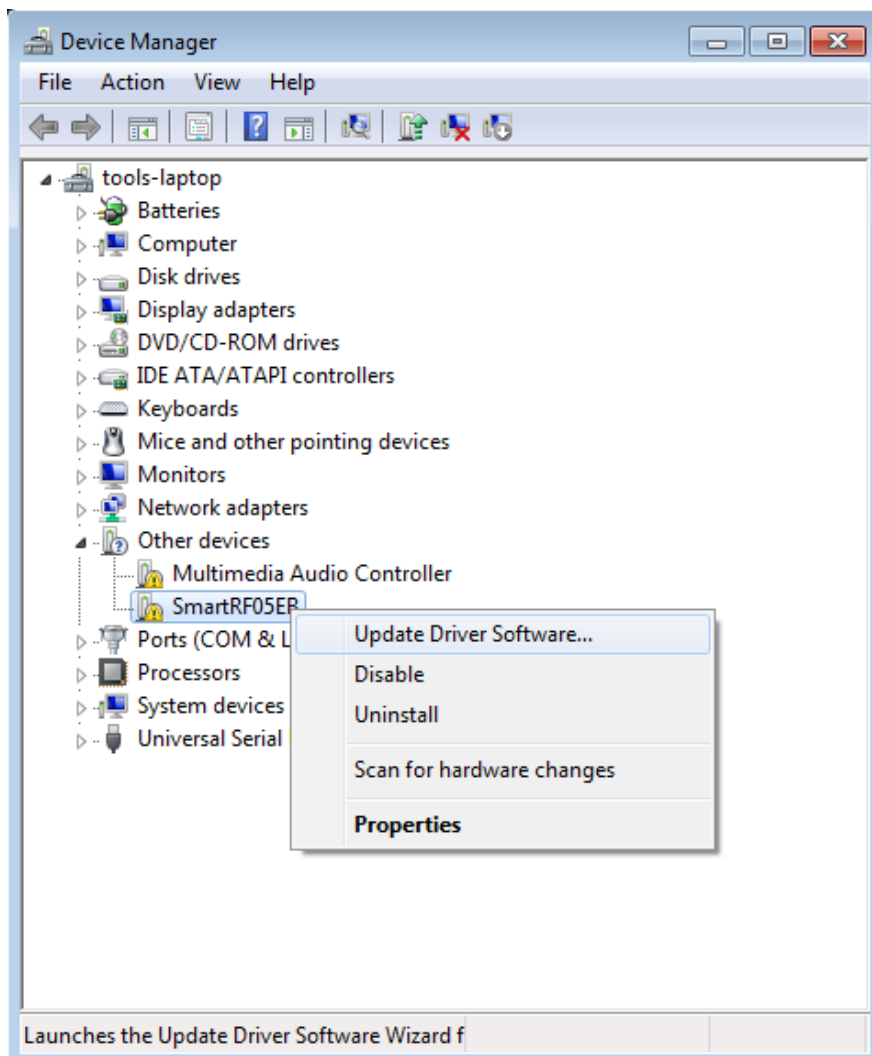
Figure 24, Device Manager

Right click on the CCxxxx USB Device and select "Update Driver Software" to launch the "Update Driver Software" Wizard. The next dialog will ask for how you want to search for the driver software.
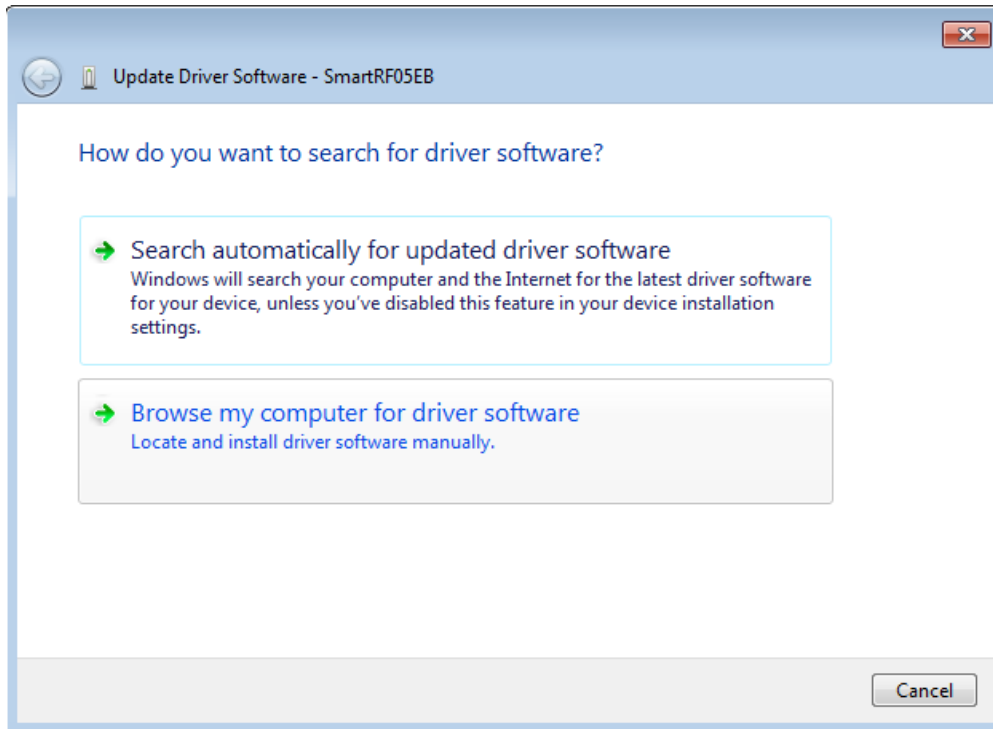
Figure 25, Browse my computer for driver software

Select "Browse my computer for driver software".
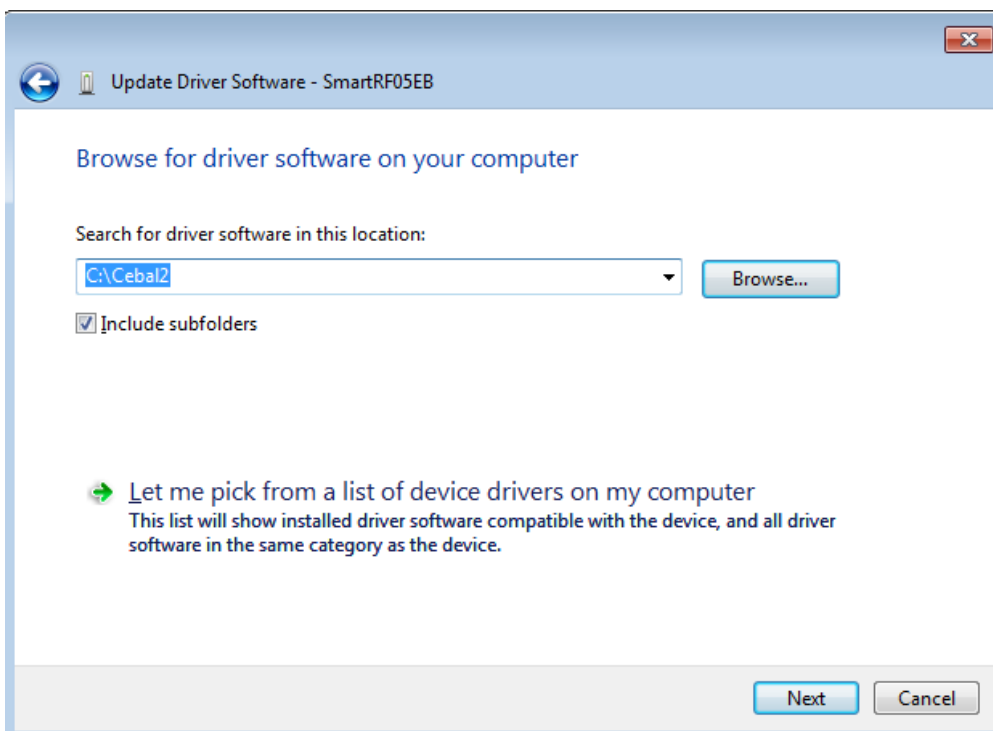
Figure 26, Browse driver software location

Browse to the location of the unpacked driver files (in our case "*c:\cebal2*") and click "Next" to complete the installation.
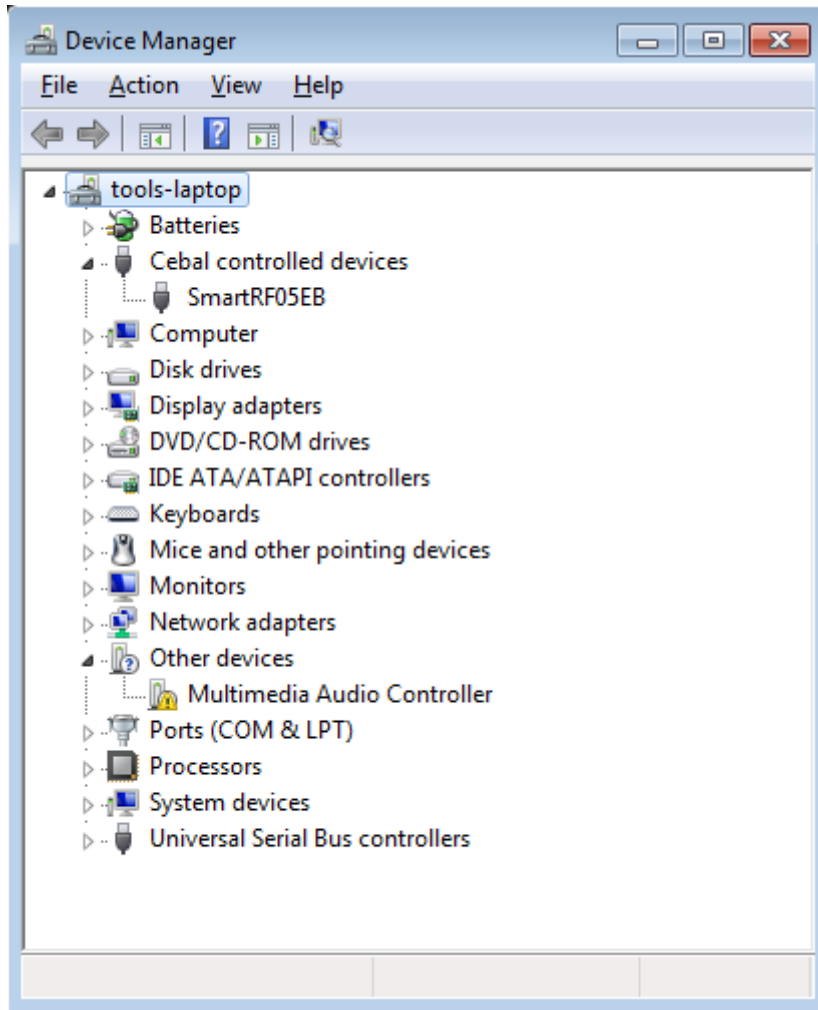
Figure 27, Device Manager: Cebal controlled devices

Verify that the CCxxxx USB device is associated with the correct driver by opening the Device Manager on your PC. When the SmartRF05EB is connected, the "Cebal controlled devices" category contains "SmartRF05EB".

5.2 Update driver

In some cases it might be that the connected CCxxxx USB device has already been used together with the old driver. In those cases it is required to update the driver. The driver of the specific device will not be automatically updated when running the installer of the new driver. The already used USB device will still be registered with the old driver. To find the version of the device driver used for a specific device, the Device Manager should be opened. The device should be listed under "Cebal controlled devices". Right click on the device and select "Properties". Select the "Driver" tab. The old Driver Version is "2.0.0.0" as shown in Figure 28, while the new Driver Version is "2.50.0.0".
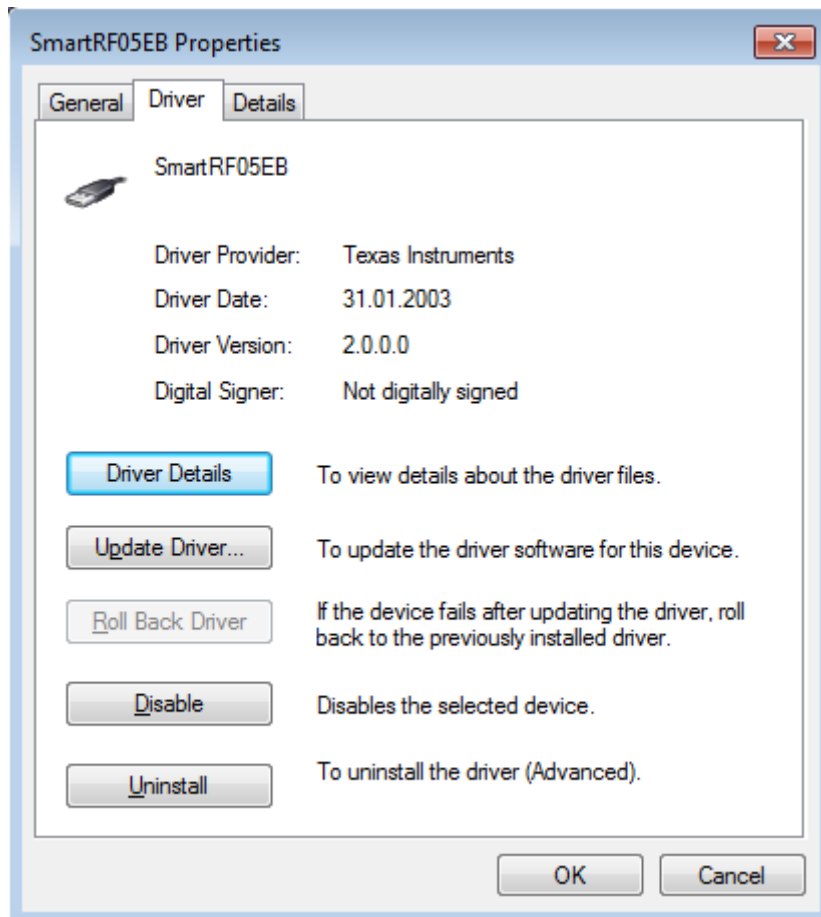
Figure 28, Driver Properties old driver

The Device Manager should be used to update the driver of a specific device. Right click on the device and select "Update Driver Software…" as shown in Figure 29.
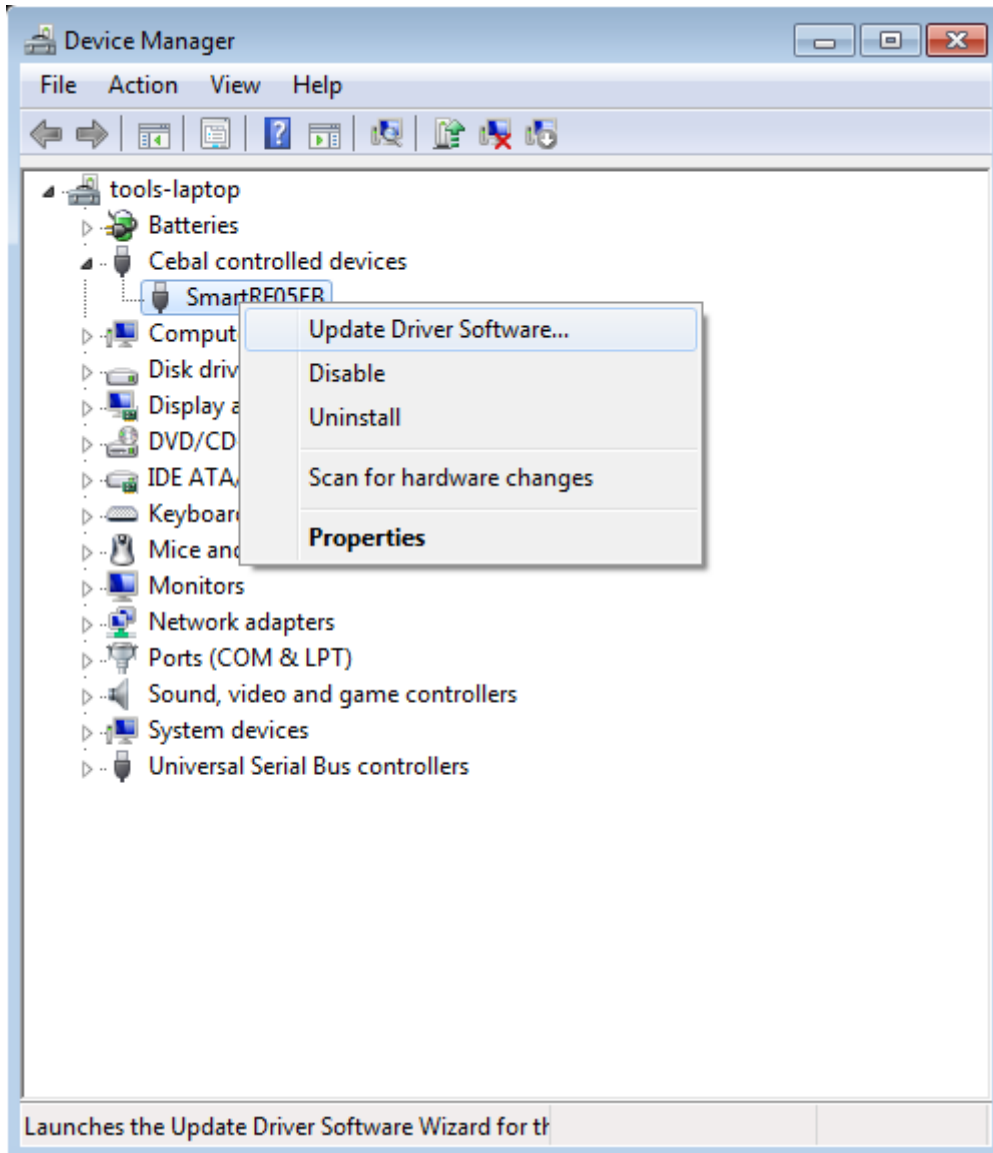
Figure 29, Device Manager: Update Driver Software

This will launch the "Update Driver Software" wizard.
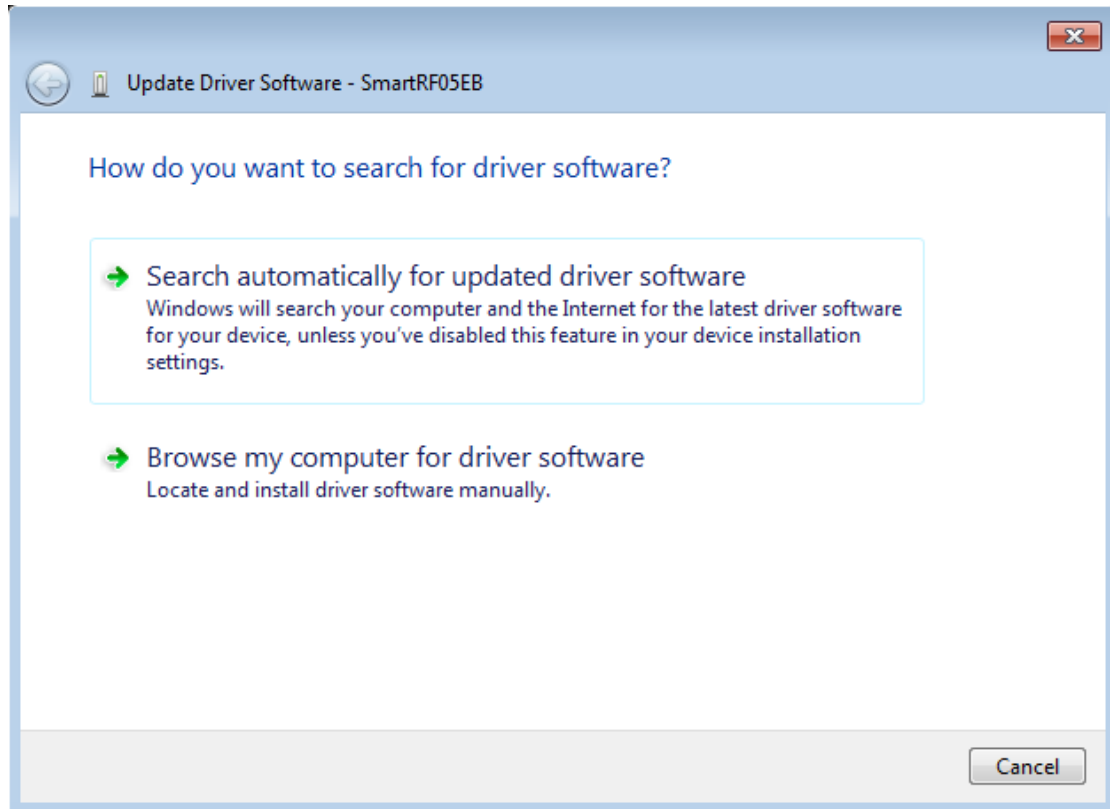
Figure 30, HW Wizard: Install software automatically

If the new driver has been installed with the installer, the "Search automatically for updated driver software" option should be selected.

The driver will be updated and the dialog in Figure 31 should be shown.

In Windows Vista: if you are asked about searching for drivers online, just select "Don't search online" and click "Next".
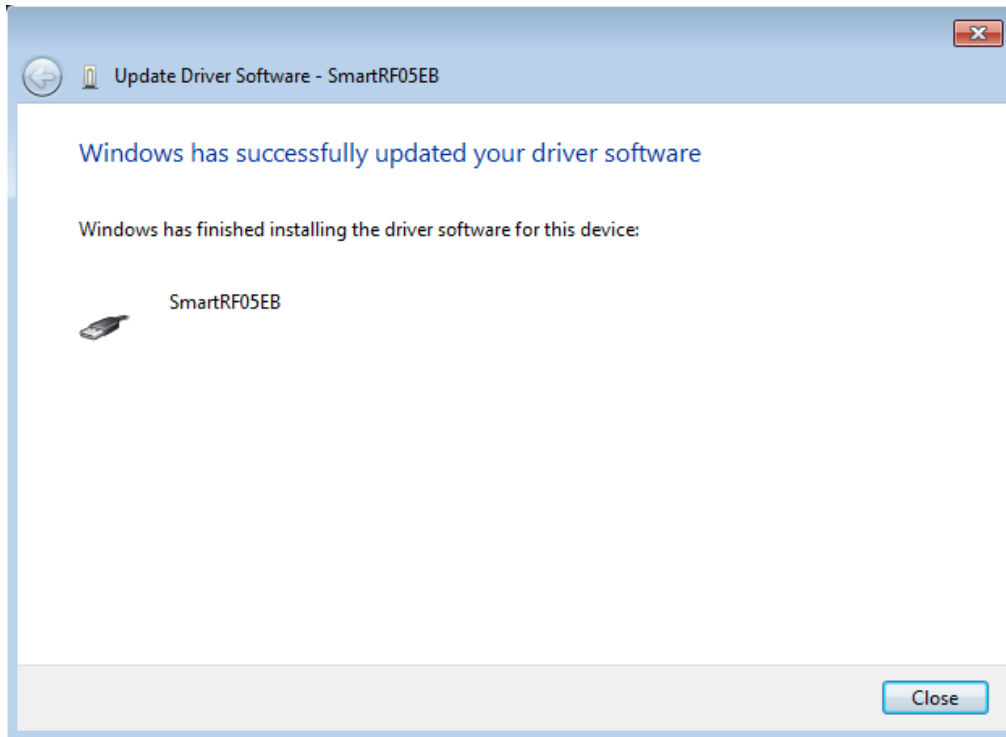
Figure 31, HW Wizard: Driver successfully updated

If the new driver has been downloaded as a zip file, the "Browse my computer for driver software" option should be used.
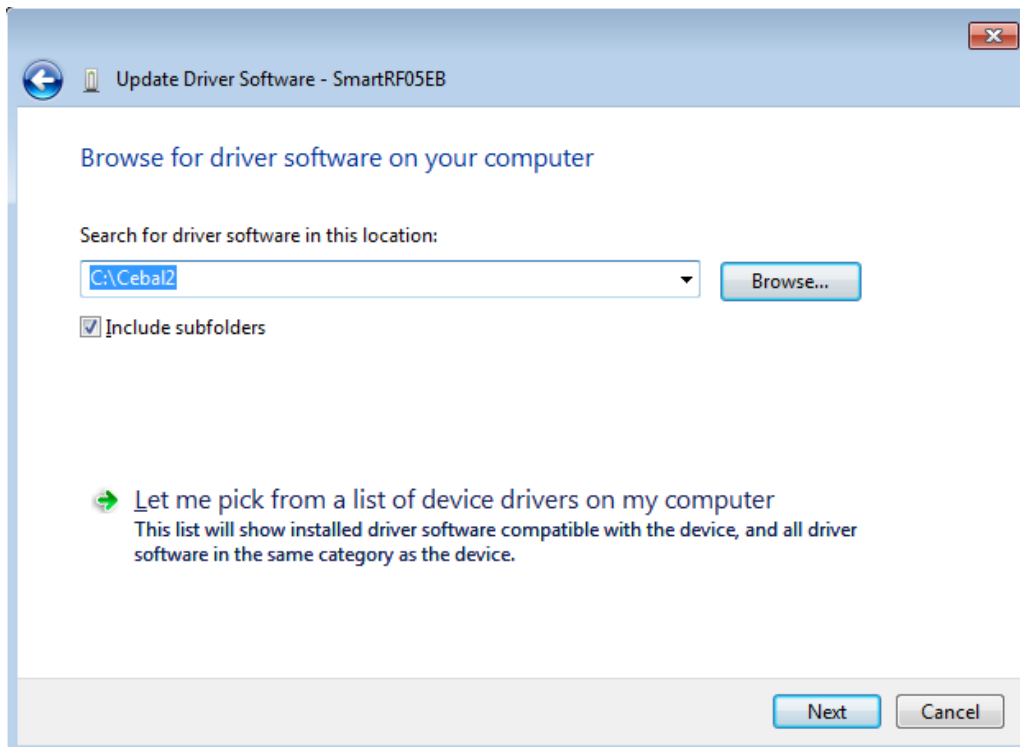
Figure 32, HW Wizard: Browse driver software location

Browse to the location where the driver files have been unpacked and click "Next" to update the driver.

5.3   Downgrade to old driver (only applicable for 32-bit Windows)

Some PC tools might still require the old USB driver in order to work. It is possible that both the old and the new driver have been installed in parallel. The old driver was installed together with the PC tools and the new driver has been installed with the driver installer. When the applicable CCxxxx USB device is connected to the PC, the new driver will be selected automatically. This may cause the legacy PC tool to no longer be functioning with the device. When this occurs the device will not be "visible" for the tool. The driver must be "downgraded" to the old driver. To verify that the device is using the new driver, use the Device Manager and check the driver properties. The device should be listed under "Cebal controlled devices". Right click on the device and select "Properties". Select the "Driver" tab. The new Driver Version is "2.50.0.0" as shown in Figure 33. (The old Driver Version is "2.0.0.0".)
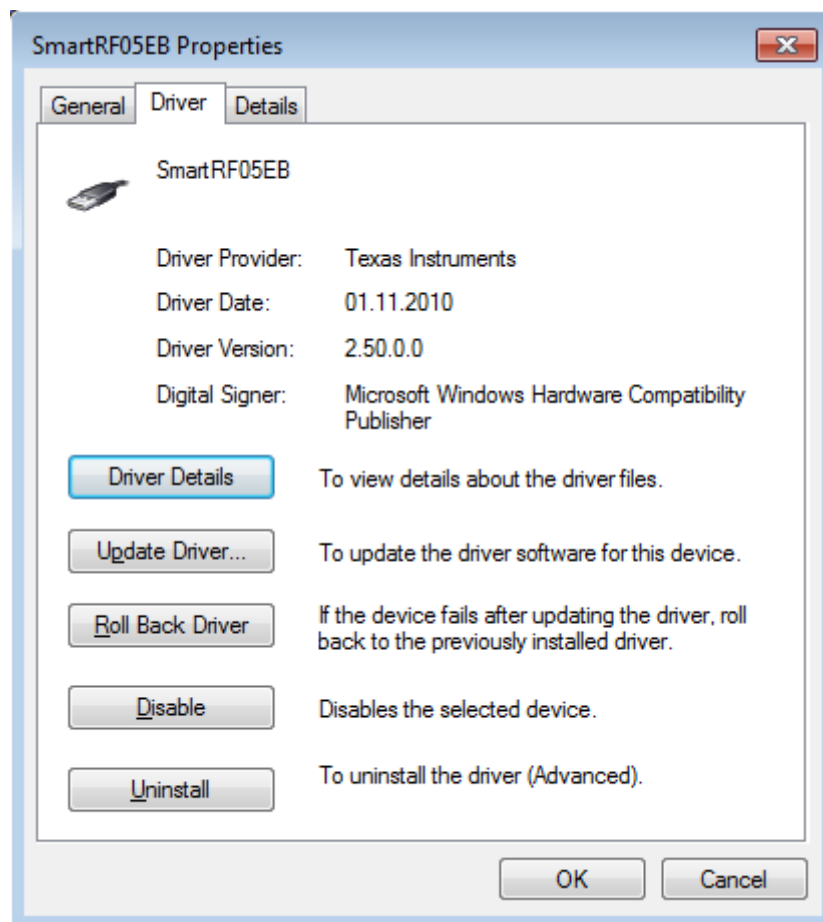
Figure 33, Driver properties new driver

The Device Manager should be used to "downgrade" the driver of a specific device. Right click on the device and select "Update Driver Software…" as shown in Figure 34.
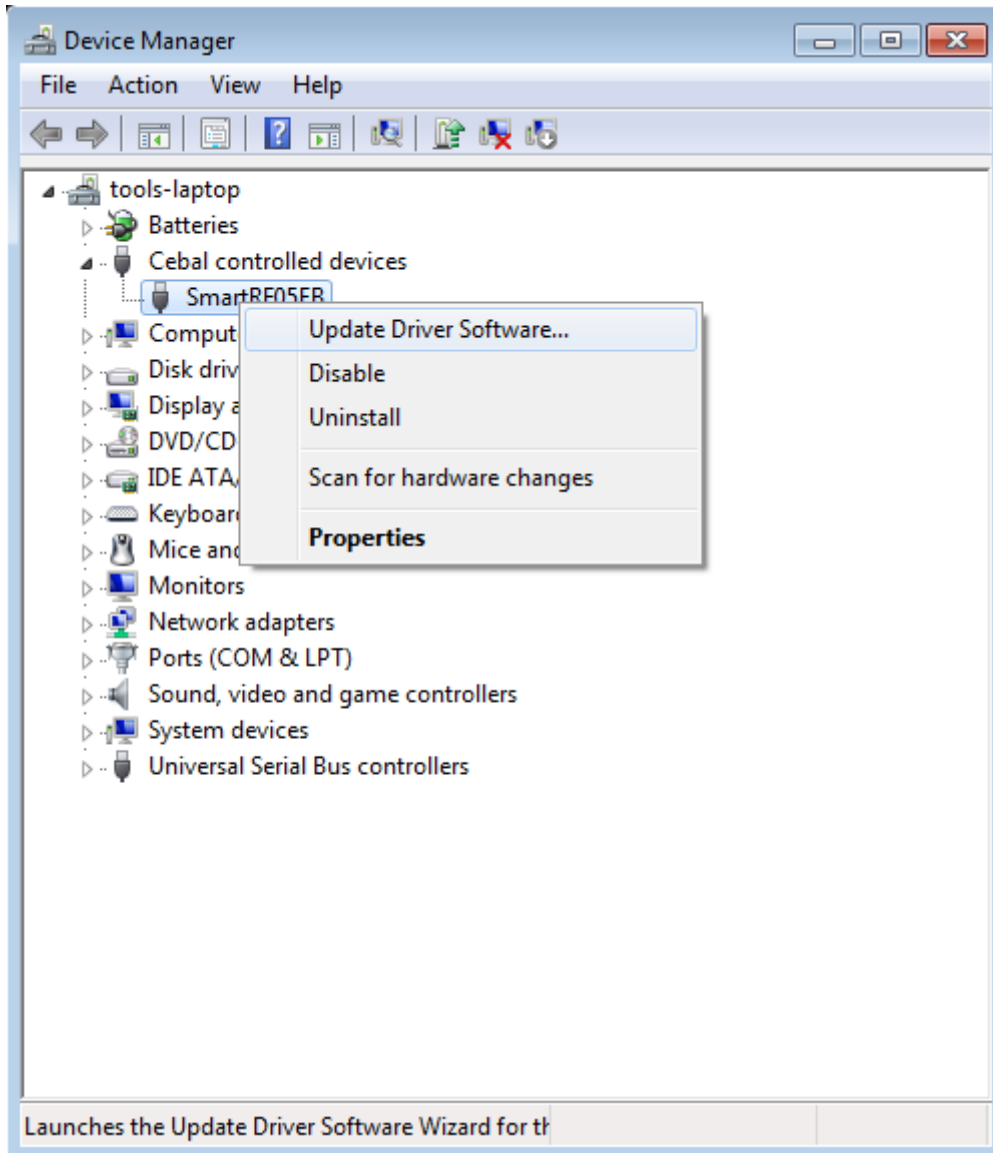
Figure 34, Device manager: Update Driver Software

The "Update Driver Software" will be launched.
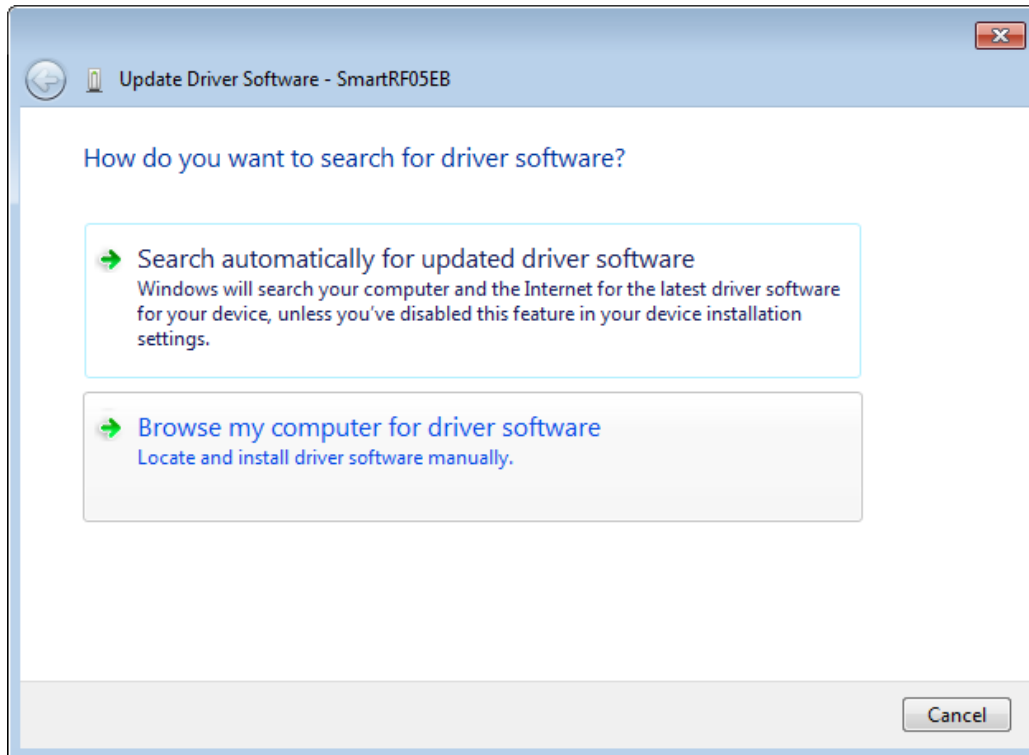
Figure 35, HW Wizard: Browse my computer for driver software

Select "Browse my computer for driver software".
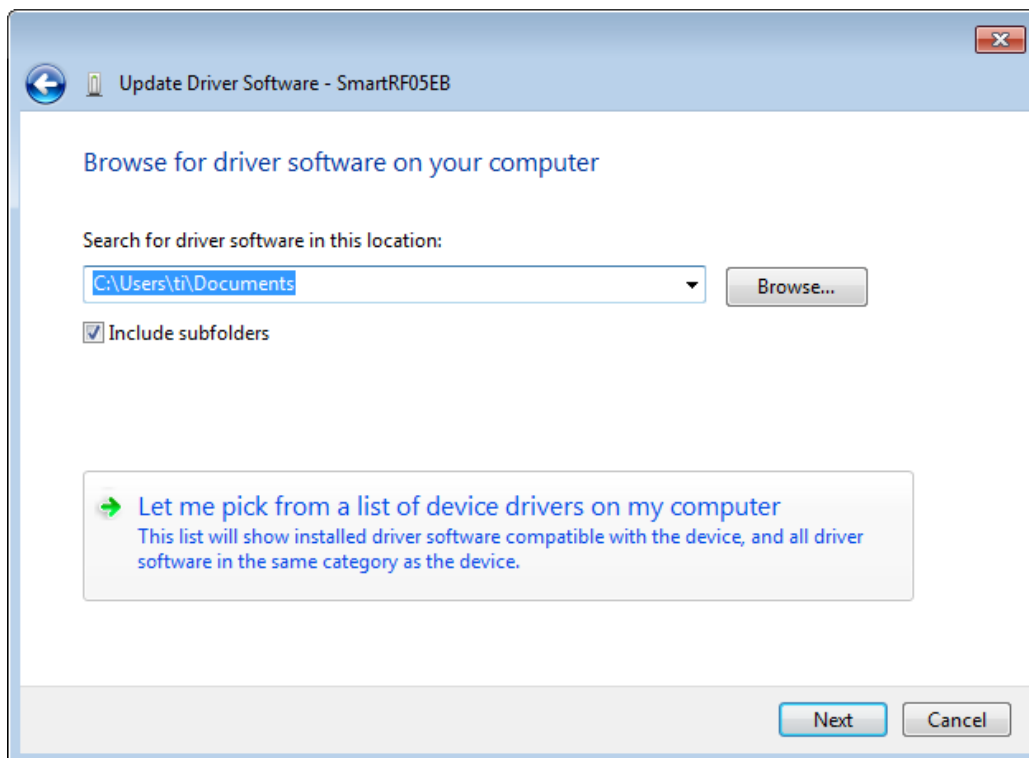
Figure 36, HW Wizard: Browse for driver options

Select "Let me pick from a list of device drivers on my computer".

There should be two drivers that are compatible for this hardware.
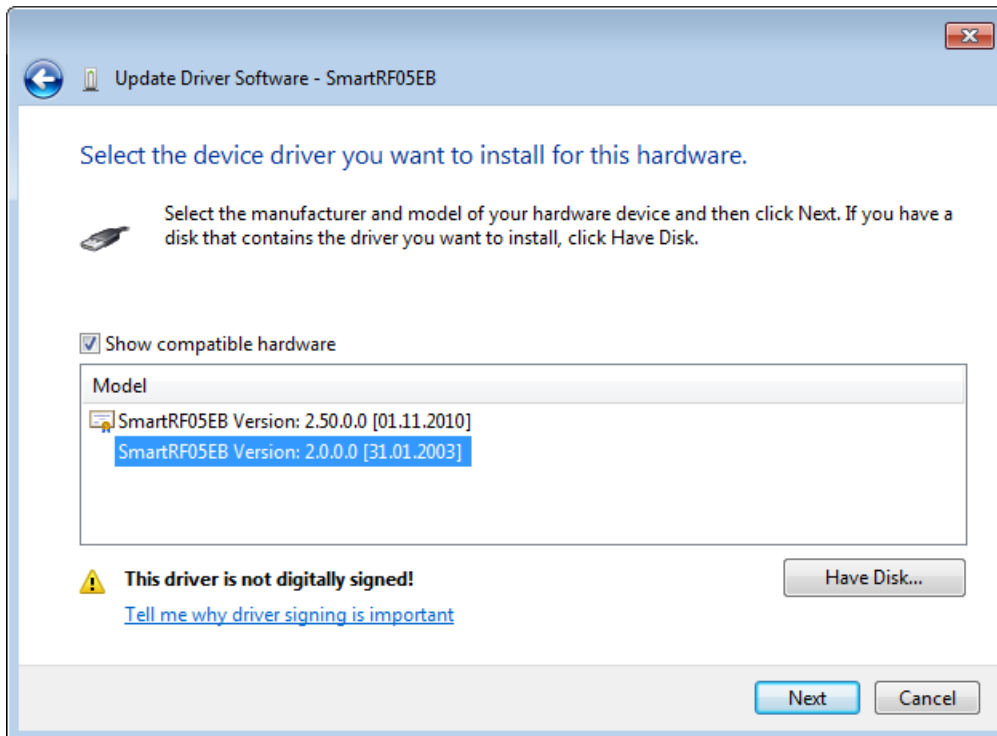
Figure 37, HW Wizard: Select device driver

Version "2.0.0.0" is the old driver and should be selected. Click "Next" to complete the update.

After completing this final step, the CCxxxx USB device will use the old USB driver.

Note: If Version "2.0.0.0" is not in the device driver list, click "Have Disk…" and browse to the location of the old driver and click "OK". The old driver can be found in the "*not_certified*" subdirectory of where the zip file was extracted, "*C:\cebal\not_certified*" in this example. The installer will by default store the old driver in "*C:\Program Files\Texas Instruments\SmartRF Tools\Drivers\Cebal\not_certified*". After clicking "OK", a warning may be shown, see Figure 38. Select "Install this driver software anyway" to complete the update.
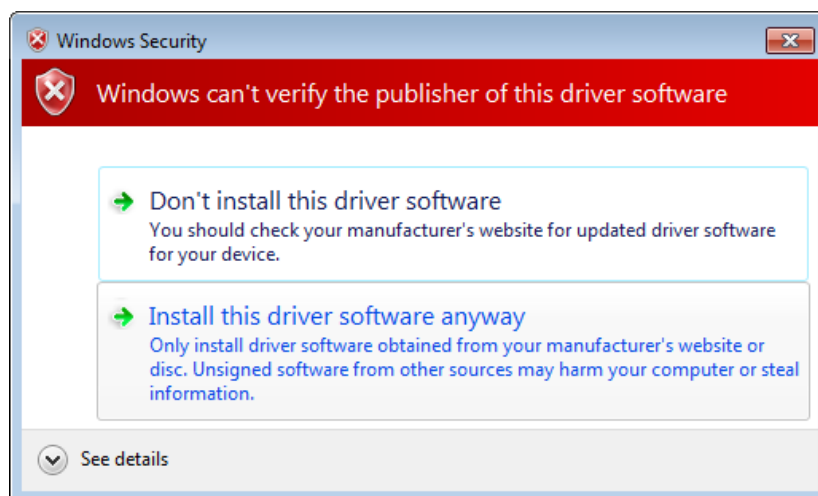
Figure 38, HW Wizard: Install unsigned driver

6 References

[1] SmartRF™ Studio Product Page
http://www.ti.com/smartrfstudio

[2] SmartRF™ Packet Sniffer Product Page
http://focus.ti.com/docs/toolsw/folders/print/packet-sniffer.html

[3] SmartRF™ Flash Programmer Product Page
http://focus.ti.com/docs/toolsw/folders/print/flash-programmer.html

[4] SmartRF05EB User's Guide
http://www.ti.com/lit/swru210

[5] SmartRF04EB User's Guide (CC1110-CC1111DK User Manual)
http://www.ti.com/lit/swru134

[6] CC Debugger Product Page
http://focus.ti.com/docs/toolsw/folders/print/cc-debugger.html

[7] CC2430DB Product Page
http://focus.ti.com/docs/toolsw/folders/print/cc2430db.html

[8] Texas Instruments Support
http://support.ti.com

[9] Texas Instruments Low Power RF Online Community
http://www.ti.com/lprf-forum

7   General information

7.1   Document History

Revision	Date	Description/Changes
SWRA366	2011.05.11	Initial release.

IMPORTANT NOTICE