

SAU510-USB ISO PLUS
JTAG Emulator

Installation Guide

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Dear developers!

1. Sauris GmbH pleased to recommend you ask your technical questions on our [forum](#).

You can [find](#) answers to your questions on the forum pages and add a new topic to discuss the problem with our engineers.

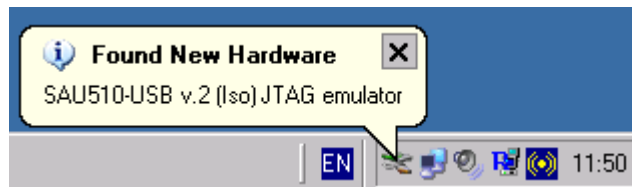
2. We suggest you to read [WiKi](#), where you can find the full description of the functionality of our products. Please [register](#) and ask your question.

Please, don't forget to subscribe to new topics to keep track of the status of your question.
You will be informed by e-mail when our engineers respond to the message.

3. Dear Friends, you could join projects support program right now sending us [RFQ](#), [Technical Questions](#) or [Samples Order](#). Also you can find [warranty terms on our web](#).

1. Installing the SAU510-USB PLUS ISO Emulator drivers

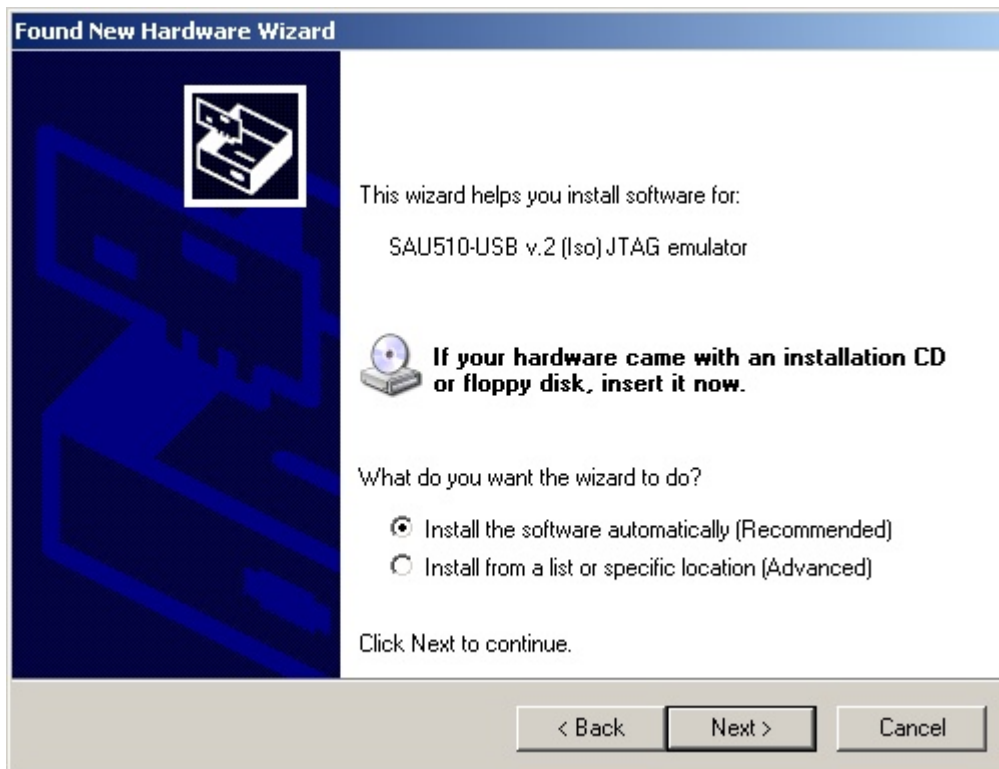
- 1.1. Open the CD with the drivers in the File Manager window
- 1.2. Turn off the antivirus software
- 1.3. Execute sau510usb_install.exe. After that follow the wizard instructions
- 1.4. Turn on the antivirus software if needed
- 1.5. Connect the Emulator to the USB-port of your PC. You are recommended to use USB 2.0 HS port to make sure that the Emulator operates at the maximum speed.
- 1.6. The system will find a new hardware.



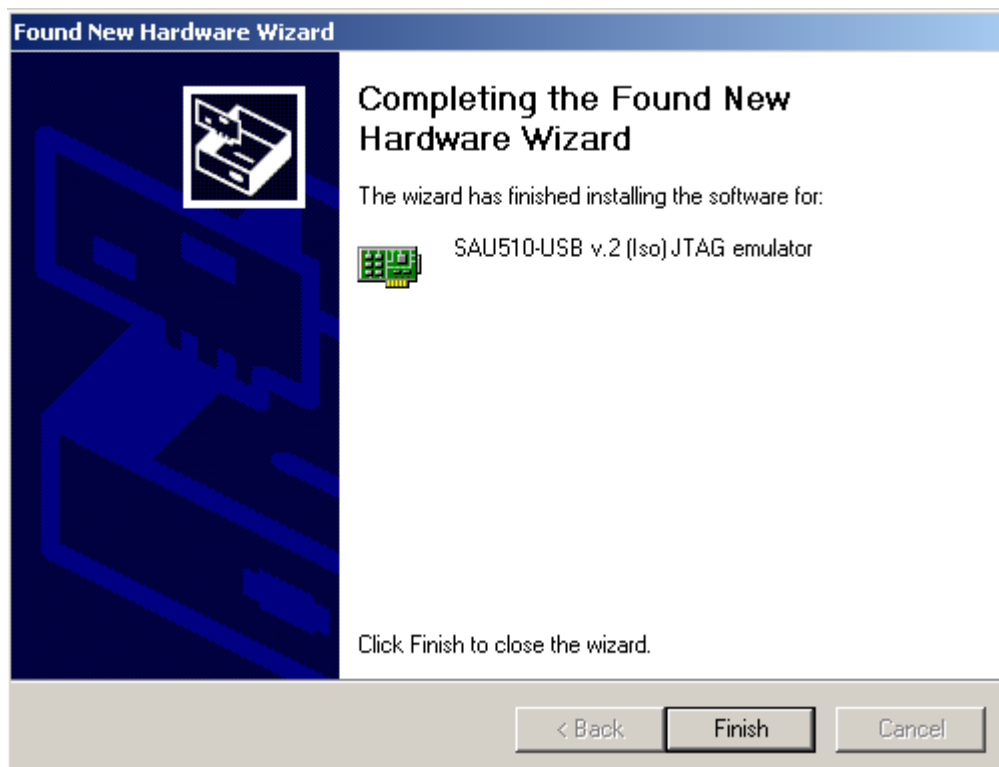
- 1.7. Refuse from connecting to *Windows Update*.



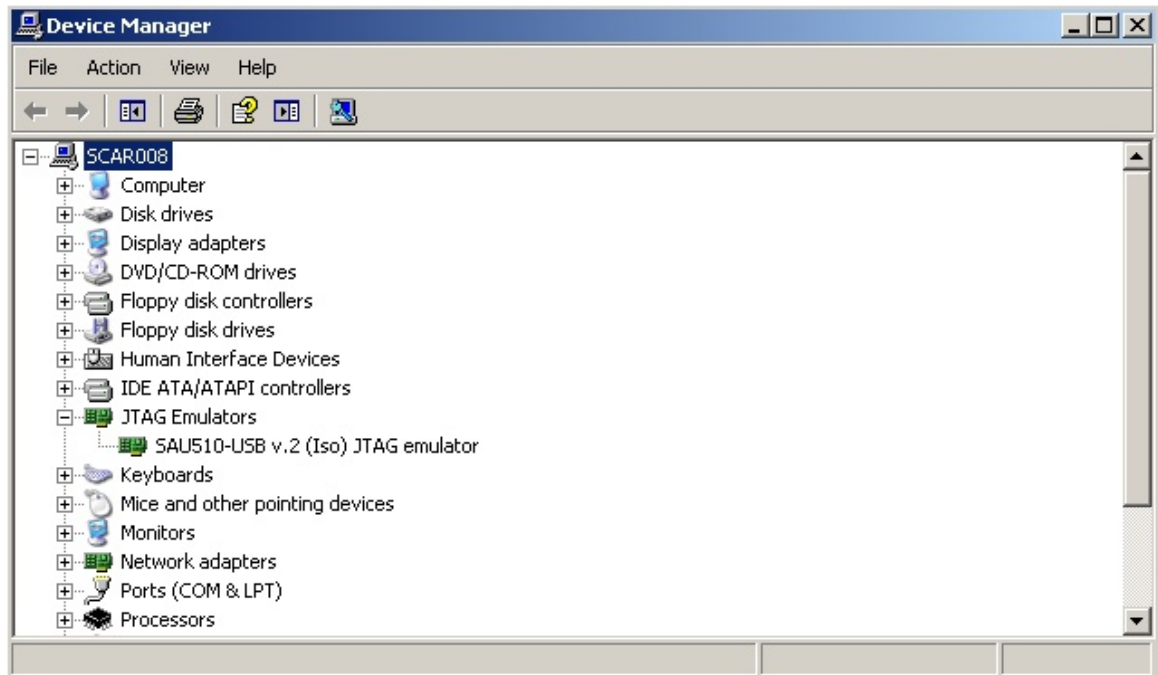
1.8. Choose Install Software Automatically.



1.9. Now you can use the SAU510-USB PLUS ISO JTAG Emulator with your CCS.



- 1.10. You can check the connection correctness in the *Device Manager* of the Windows operating system. There should appear the line *JTAG Emulators* on the list.

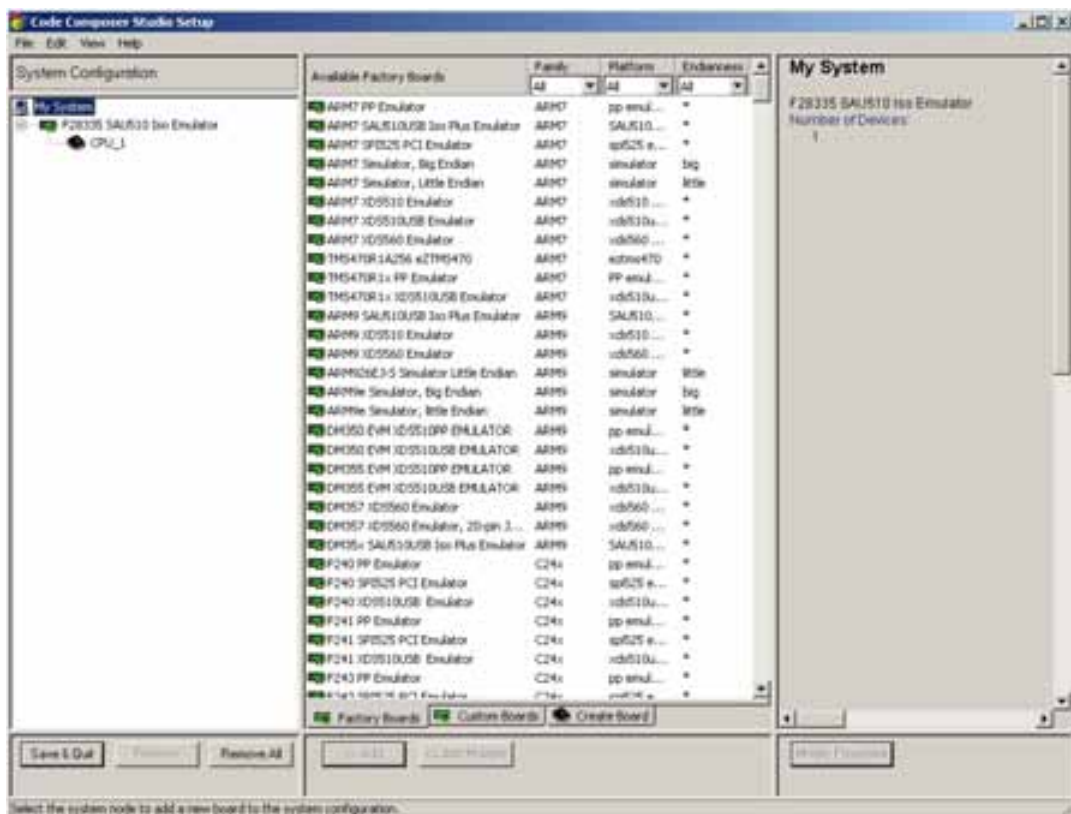


- 1.11. Detach the Emulator from the USB-port of your PC.

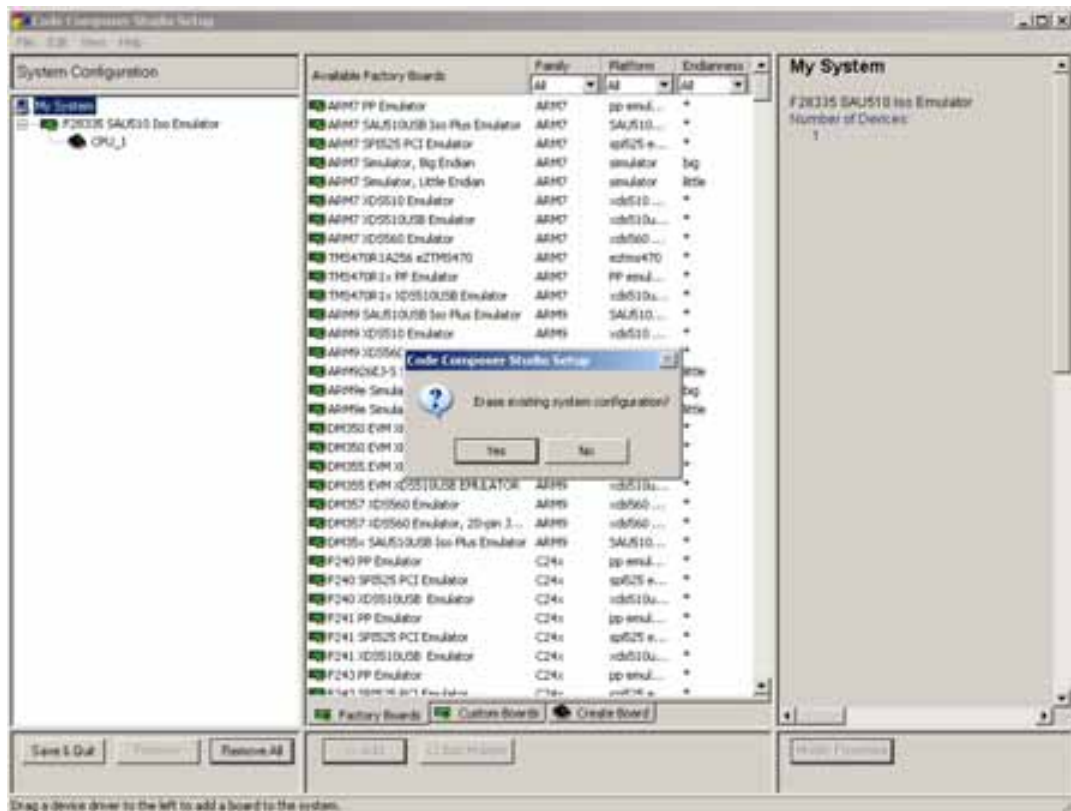
2. Connecting a board to a PC using SAU510-USB ISO PLUS through CCS v.3.3

2.1. Connecting the Emulator to a board and a PC.

- 2.1.1. Connect the Emulator to the board using JTAG interface. Supply power to the board. Connect the Emulator to the PC using the USB-cable from the Emulator delivery set.
- 2.1.2. Run *Setup CCStudio*. You will find the setup icon either on the desktop (it is called *Setup CCStudio v3.x*) or through the *Start* menu of the Windows operating system (Start → Programs → Texas Instruments → Code Composer Studio 3.x → Setup Code Composer Studio). You will see the configuration window with three panes: System Configuration, Available Factory Boards and My System.



2.1.3. Sometimes it is needed to remove the unusable targets (boards) from *CCS System Configuration*. When connecting the Emulator for the first time it is highly recommended to clear the configuration by choosing *Remove All* in the bottom of the *System Configuration* pane.

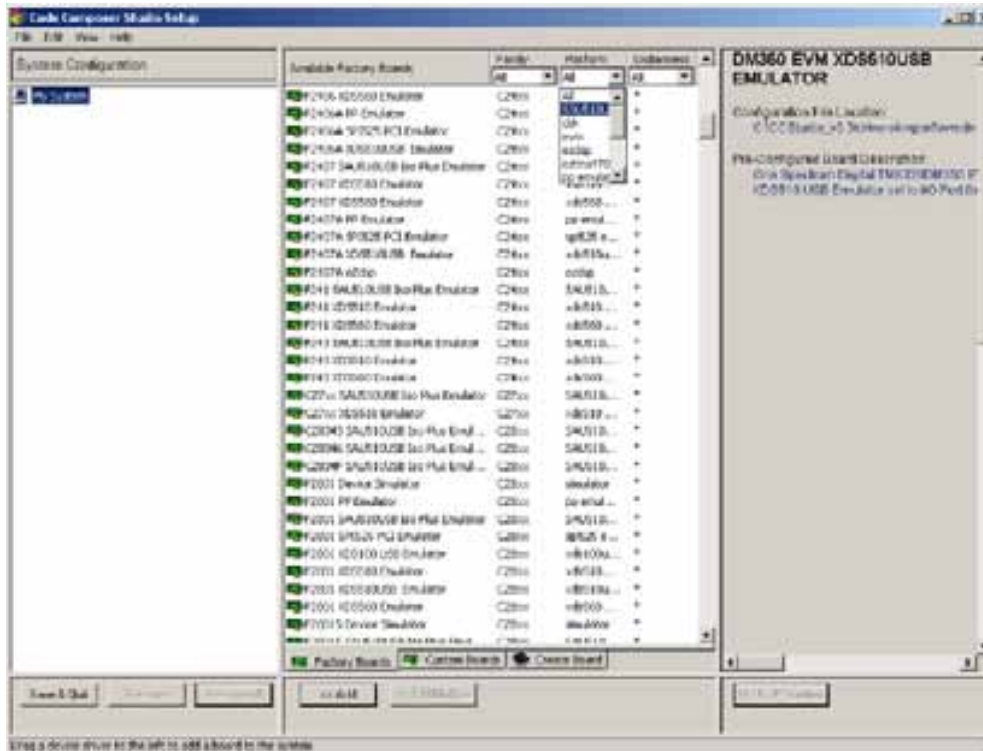


2.1.4. Now you have to decide on the way of creating the configuration file. There are two possibilities of connection:

- For factory boards ([See Section 2.2](#))
- For self-made boards ([See Section 2.3](#))

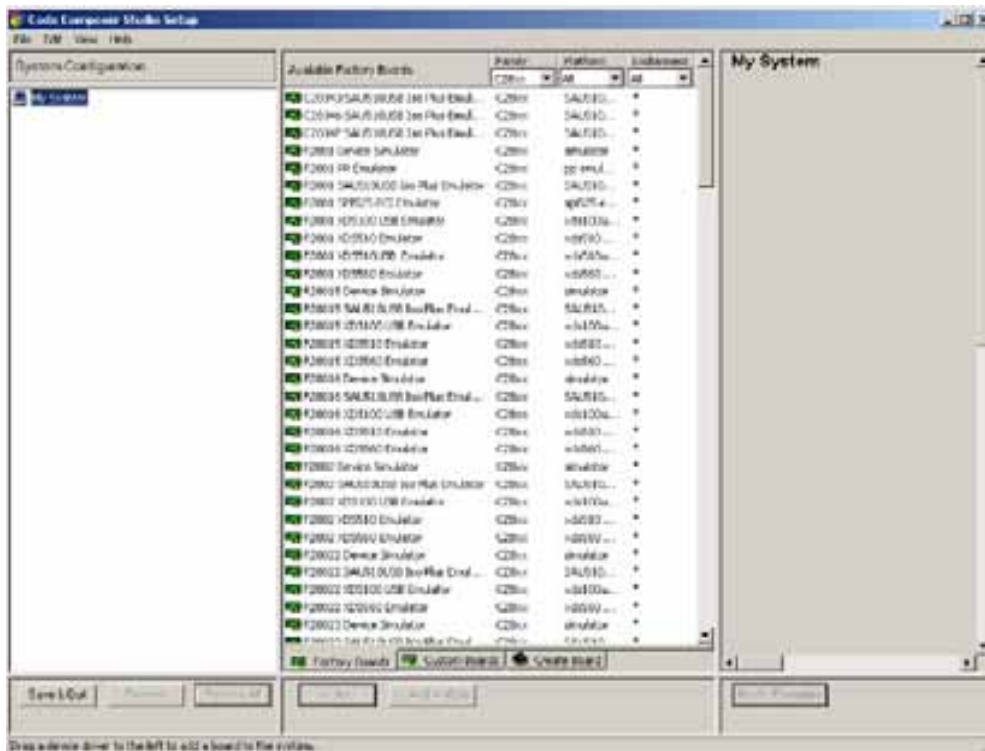
2.2. Creating the configuration for SAU510-USB PLUS on the basis of factory boards.

- 2.2.1. Click the tab *Factory Boards*. From the list *Available Factory Boards* select an SAU510USB Iso emulator based configuration that matches your system.

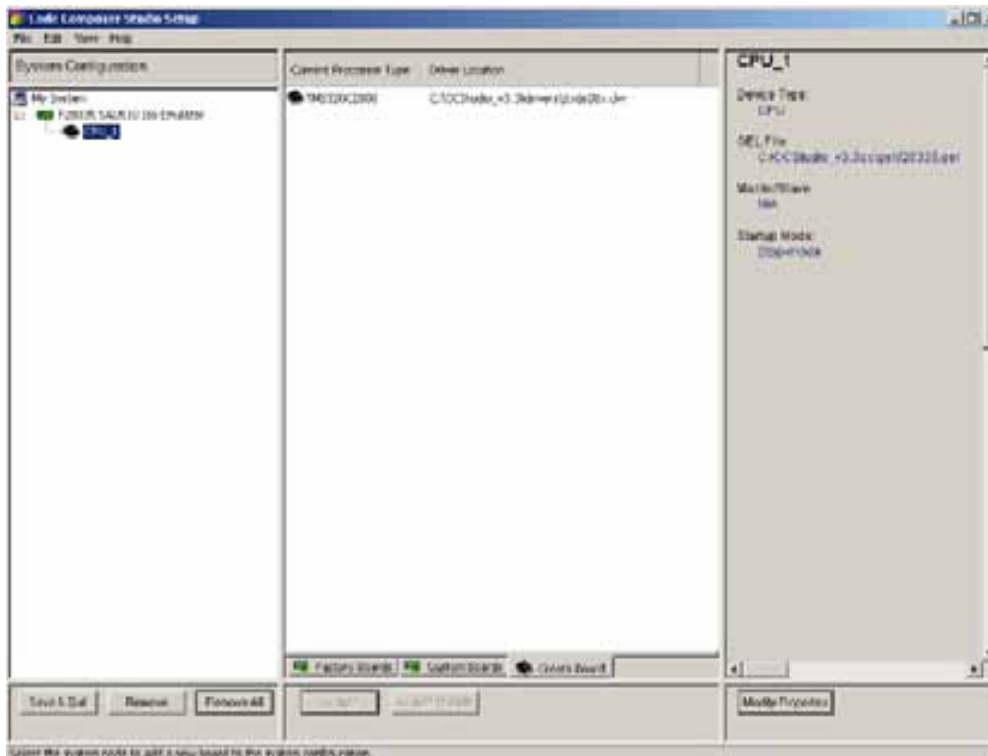


Note! To make the process of choosing easier, please use the filters *Family* (to specify the family of the target processor) and *Platform* (choose SAU510USB Iso emulator).

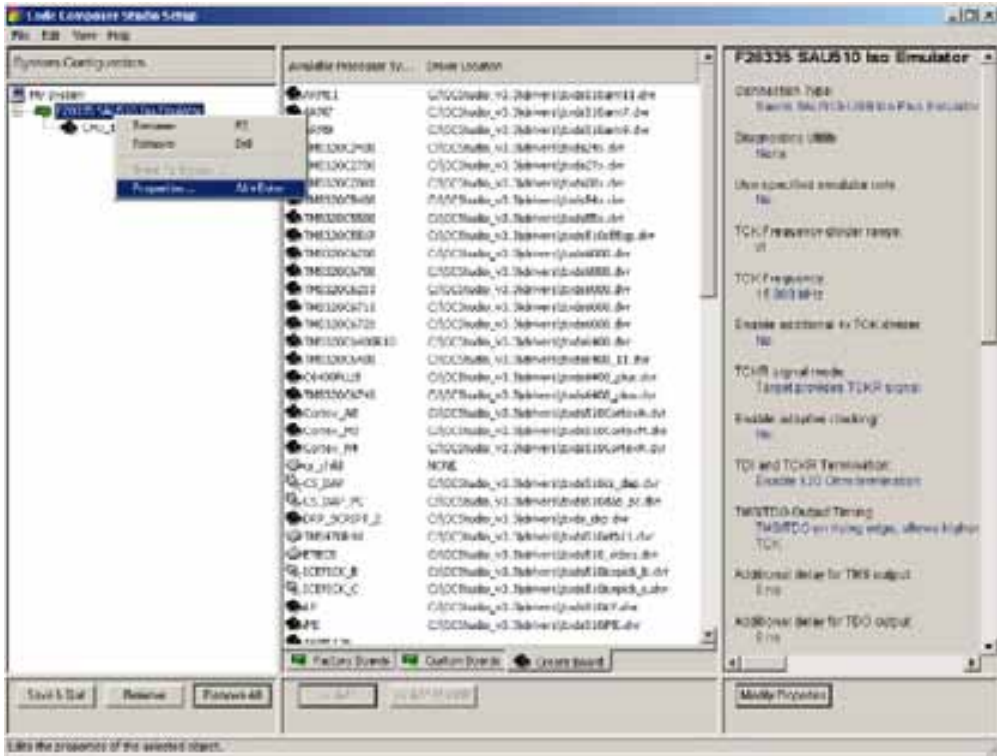
2.2.2. Select your board from *Available Factory Boards* pane.



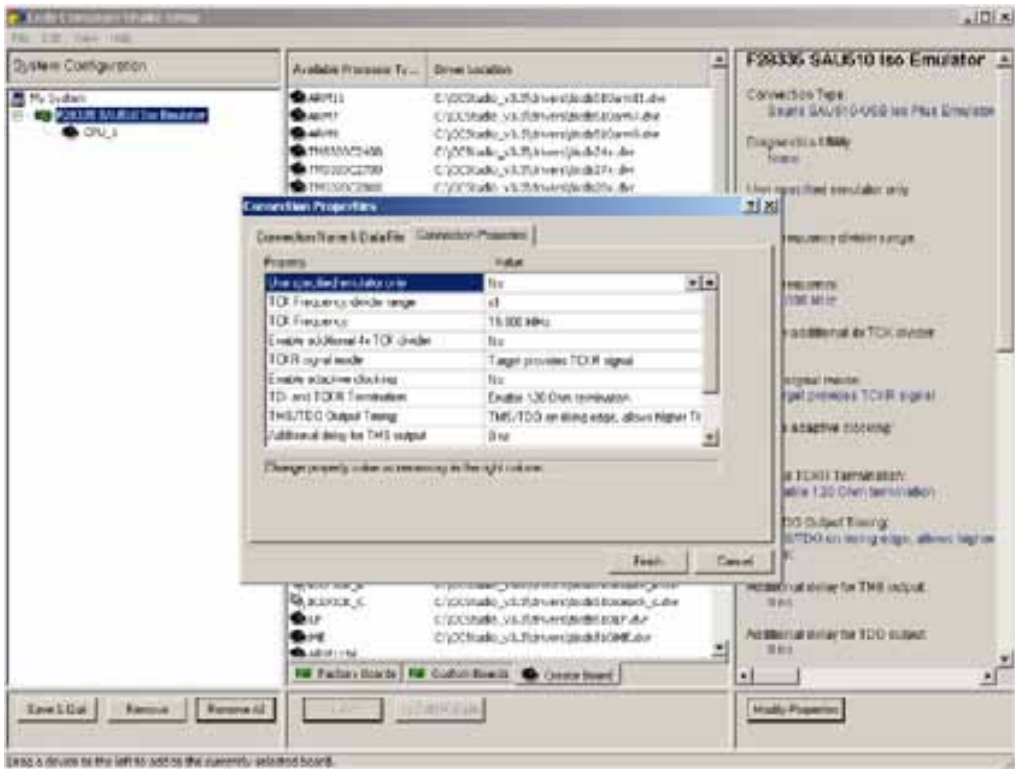
2.2.3. Drag and drop the chosen configuration from the list of *Factory Boards* pane to the *System Configuration* pane, or you can select the required configuration and click the *Add* button at the bottom of the central pane to add the configuration to your system list. Please note that you will be automatically moved to the tab *Create Board*.



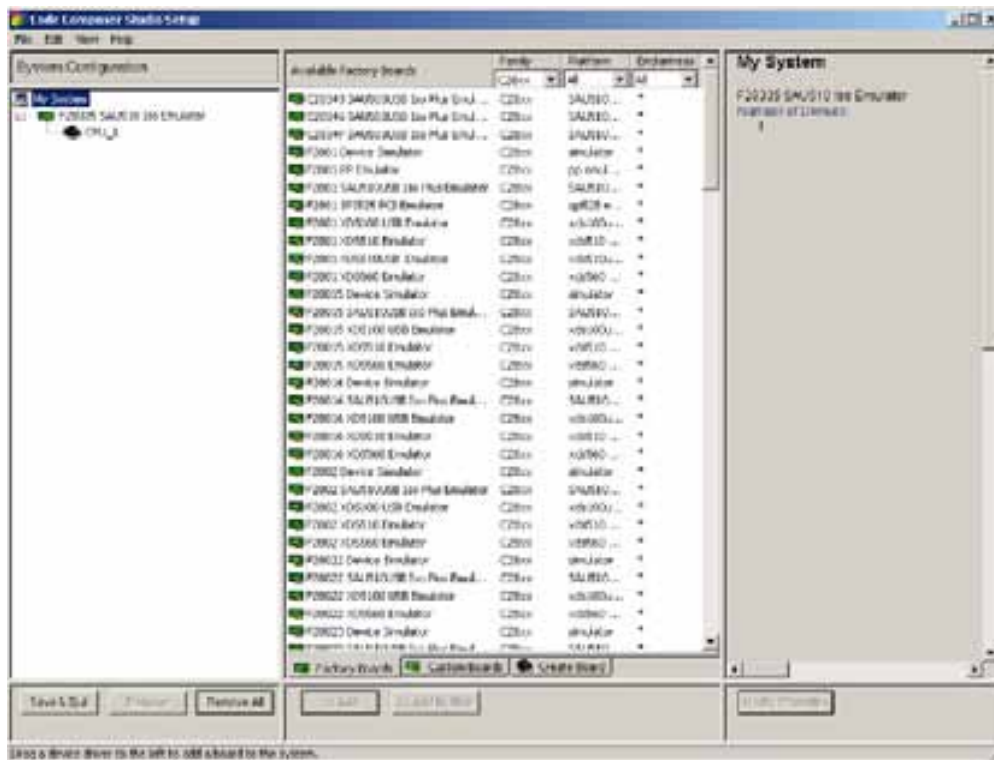
2.2.4. Right-click the board you have selected and choose *Properties* from the context menu (or press Alt+Enter).



2.2.5. Click *Next* in the *Connection Name & Data File* tab. You will be automatically moved to the tab *Configuration Properties* where you can set connection parameters.



- 2.2.6. Click *Save&Quit* to save the configuration and exit the configuration program. The configuration is saved in the System Registry as the current configuration. Before closing the program will ask permission to start the CCS IDE after the exit. By clicking *YES* – you will save the connection configuration and start the CCS at the same time.

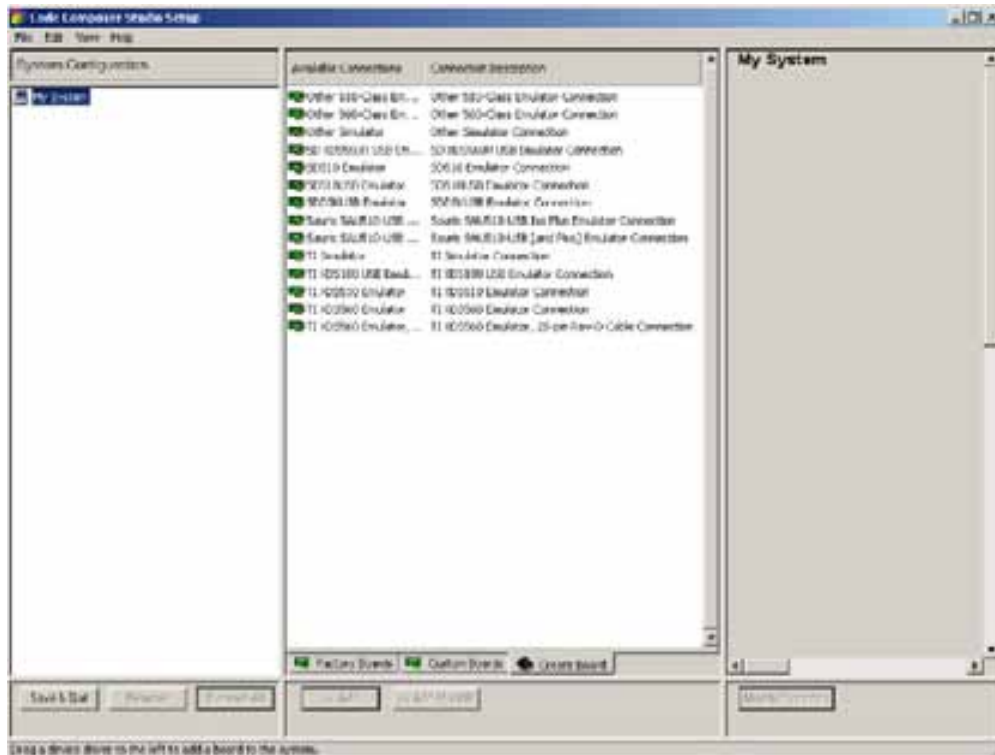


- 2.2.7. Move to [Section 2.5](#) to finish connecting the board to the PC.

2.3. Connection using self-made board

2.3.1. This type of configuration is to be chosen when there is no matching factory board, e.g. if there are several processors in the JTAG-chain or if there are some other devices in the chain that are to be set to BYPASS mode while debugging, etc.

2.3.2. Select *Create Board* pane.

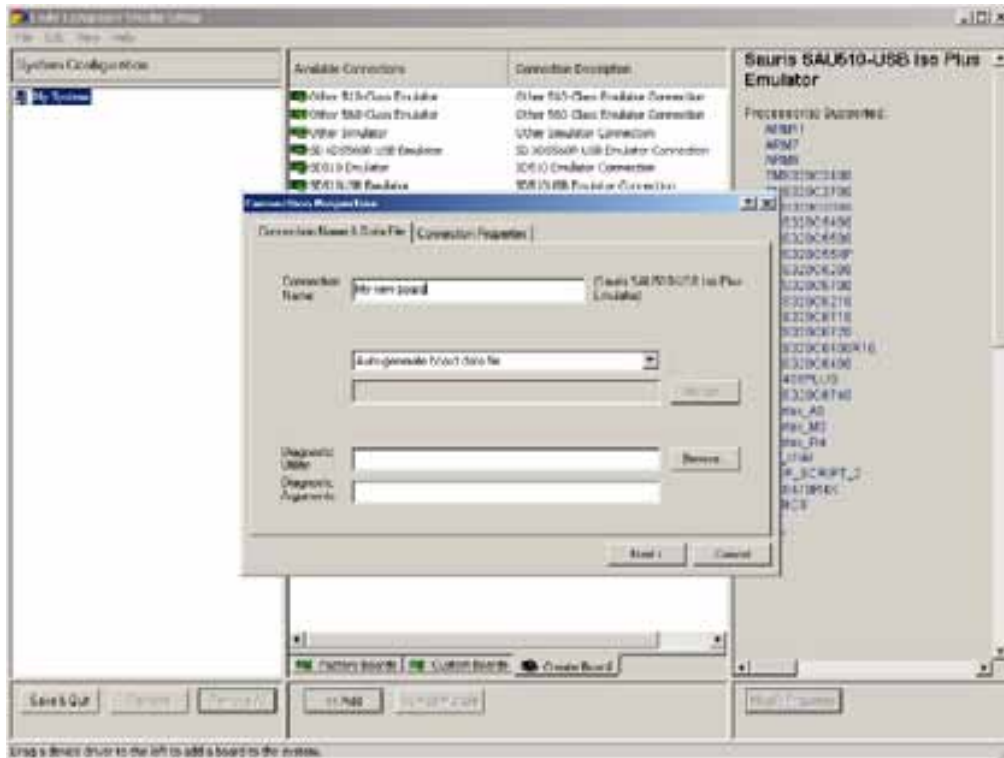


2.3.3. Drag and drop *Sauris SAU510-USB Iso Plus Emulator* from the list of *Create Board* pane to the *System Configuration* pane, or click *Add* at the bottom of the central pane to add the configuration to your system list.

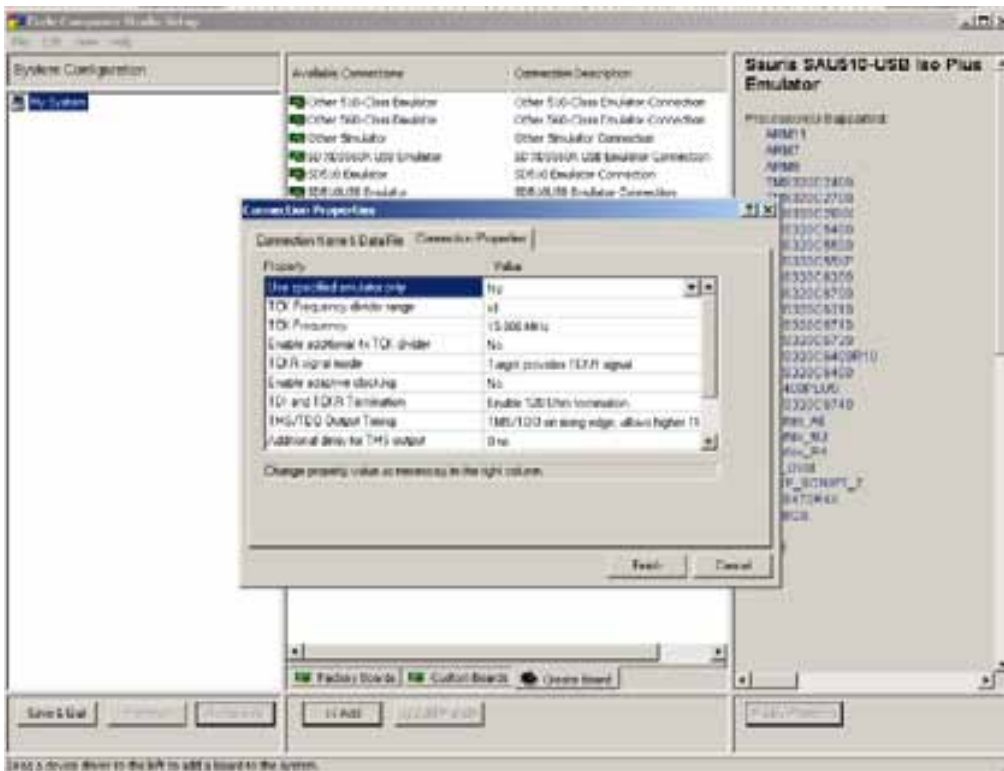
If you use emulator SAU510-USB or SAU510-USB PLUS drag and drop *Sauris SAU510-USB [and Plus] Emulator* from the list of *Create Board* pane to the *System Configuration* pane.



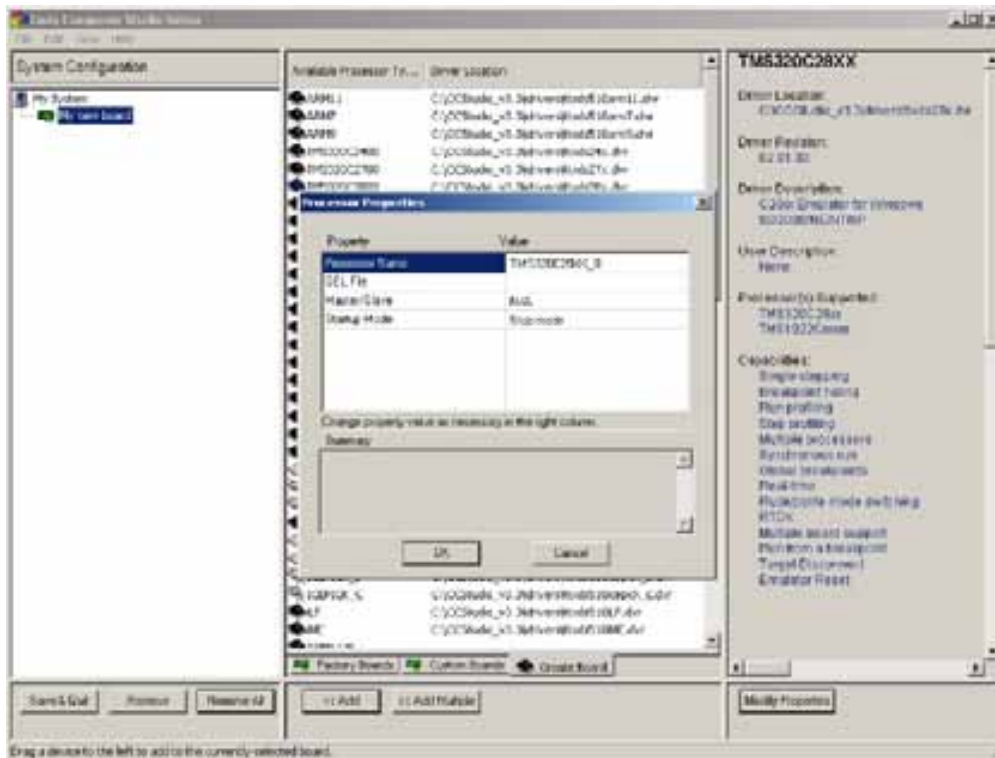
2.3.4. *Connection Properties* dialog will appear. Assign any configuration name and type it into the *Connection Name* line.



2.3.5. Click *Next* on tab *Connection name & Data File*. Set connection parameters. Click *Finish*.



- 2.3.7. Drag and drop the required device into the System Configuration pane. Make sure that you 'drop' the item onto the created connection exactly. *Processor Properties* dialogue will appear.



Note! Choose *Bypass* and specify the IR register length for each chip that is included into the JTAG-chain but is not supported by the driver. The information can be found in the chip datasheet or in the chip BSDL-model provided by the manufacturer.

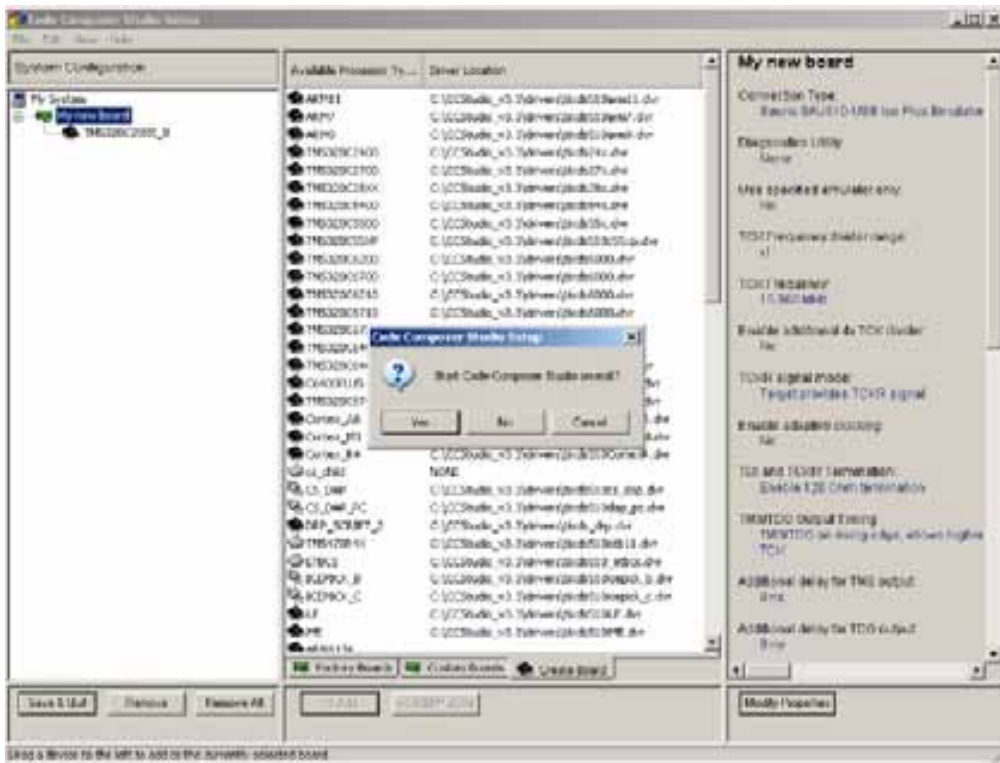
- 2.3.8. Specify the required parameters in the *Processor Properties*. E.g. when first starting, the only required information is the path to the device initialization GEL-file. On default the Gel-files are placed into `<ccstudio_install_dir\cc\gel>`, but they can also be provided by the device manufacturer (if it is a development board) or be invented by the developer.

If it is a multi-processor system or a similar one where the initialization order in the chain is important, you should also set *Master/Slave-mode*.

The IR-register length is also set in *Bypass-devices Properties*.

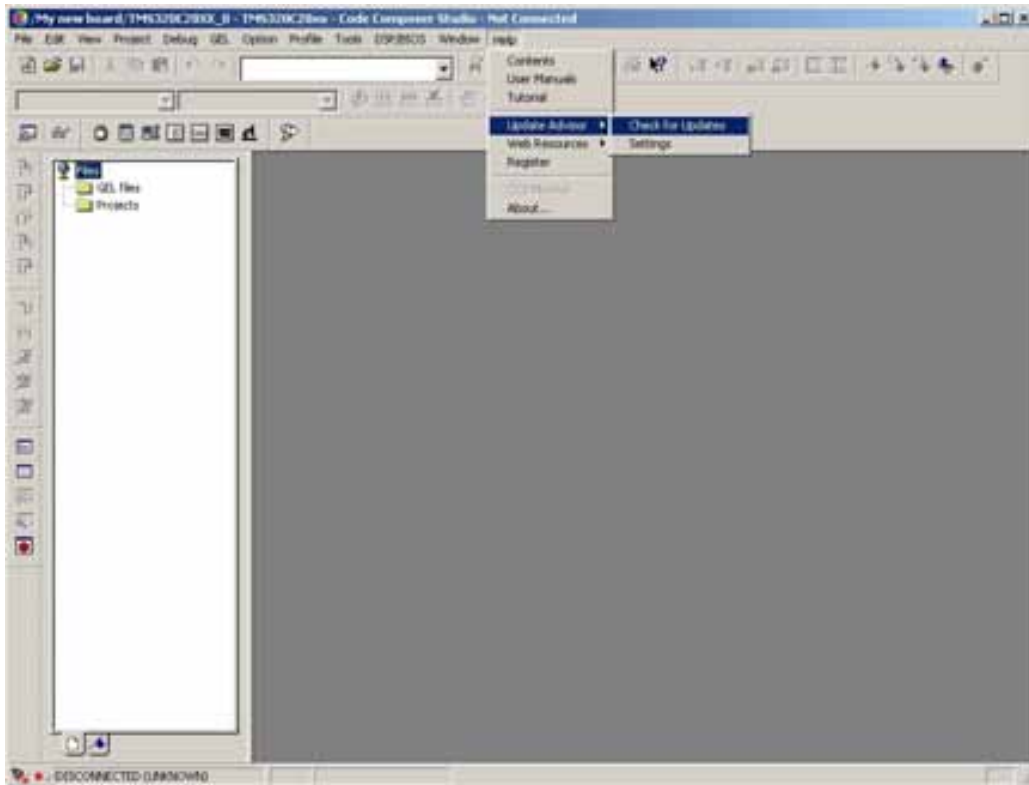
If there are more than one device in the JTAG-chain, repeat [steps 2.3.6](#) and [steps 2.3.7](#) till the whole chain is described.

2.3.9. Finish the configuration process by clicking *Save & Quit*



2.4. Connection using dual-cored processors DaVinci and OMAP that include an ARM-core

- 2.4.1. Download and setup the latest update of Code Composer Studio from the Texas Instruments web-site www.ti.com. You can also get there through the Code Composer Studio main menu: Help→Update Advisor→Check for Updates. Now follow further instructions from the web-site.



- 2.4.2. You should use the adaptive clocking for any system that includes an ARM-core with programmable CPU frequency. Set the required parameters for JTAG router control.
- 2.4.3. Processor boot mode has some requirements: please make sure that the page translation in the memory management unit (MMU) of the ARM-core is not activated while the target device is being connected to the system (the moment when you choose *Debug*→*Connect* in CCS main menu). The address space of the processor should be transmitted into the physical addresses without changes. Otherwise the ARM-core initialization might be erroneous. The boot mode is usually set by jumpers or switchers of the target board. Use TMDSEVM6446 (a development board manufactured by TI) as an example. See the description of the board here:

<http://focus.ti.com/docs/toolsw/folders/print/tmdsevm6446.html>.

The switch value for TMDSEVM6446 should be set as S3:

Configuration Switch S3 Summary
(see Technical Reference for details)

#	Default	Description
1	On	ARM Boot Mode 0
2	Off	ARM Boot Mode 1
3	On	Bus Width (16-bit)
4	Off	DSP Boot (no boot)
5-9	On	
10	Off	User Switch

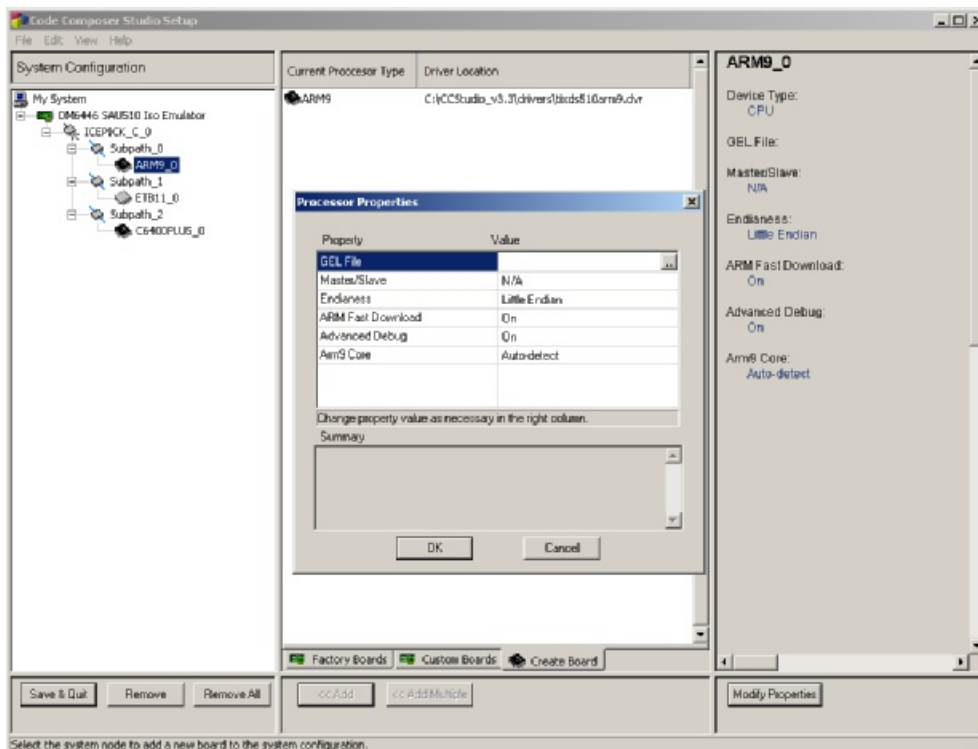
Please see the details in *Quick Start Guide and Technical Reference*:
<http://c6000.spectrumdigital.com/davincievms3/>.

The ARM-core is to be in *Master*-status and it is to have the initialization GEL-file that enables the adaptive clocking and allows the DSP-core to function. The DSP-core cannot operate without such initialization as it is disconnected.

The required GEL-files for the development board TMDSEVM6446 are *davincievms_arm.gel* for the ARM-core and *davincievms_dsp.gel* for the DSP-core. The files can be downloaded from

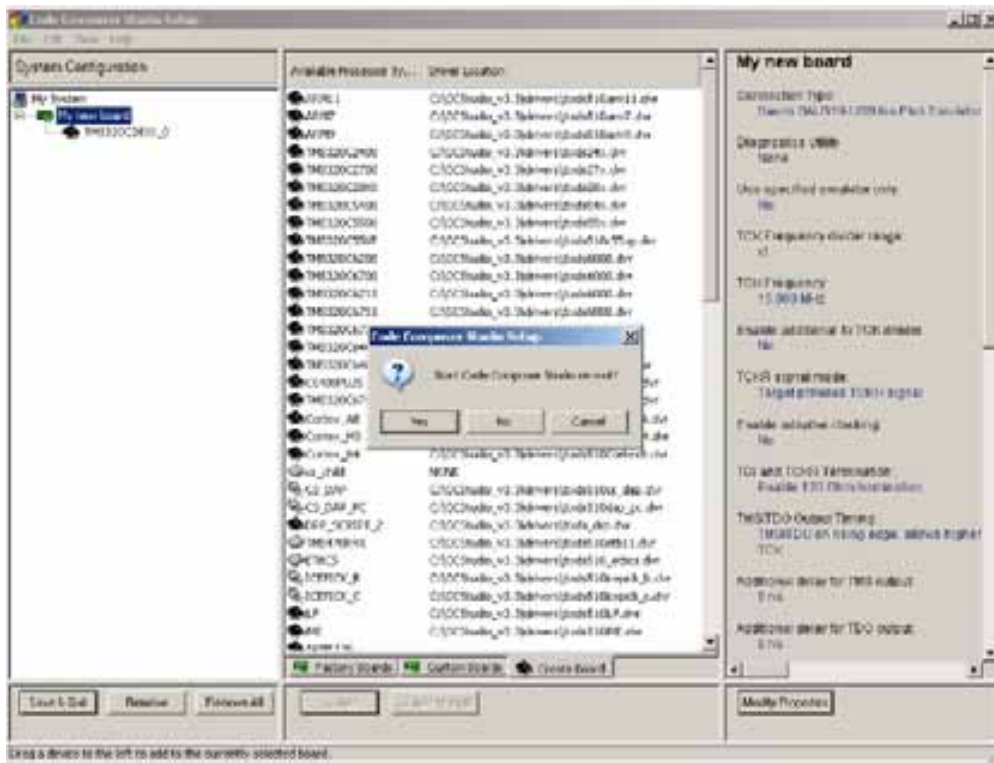
<http://c6000.spectrumdigital.com/davincievms3/>

In order to connect the Gel files to the CPU, right-click the core name in the left-hand pane (or press Alt+Enter) and choose *Property* in the context menu. *Processor Properties* dialogue will appear. Select the appropriate GEL-file in the *GEL File* pane. Follow the same procedure for both ARM and DSP cores.

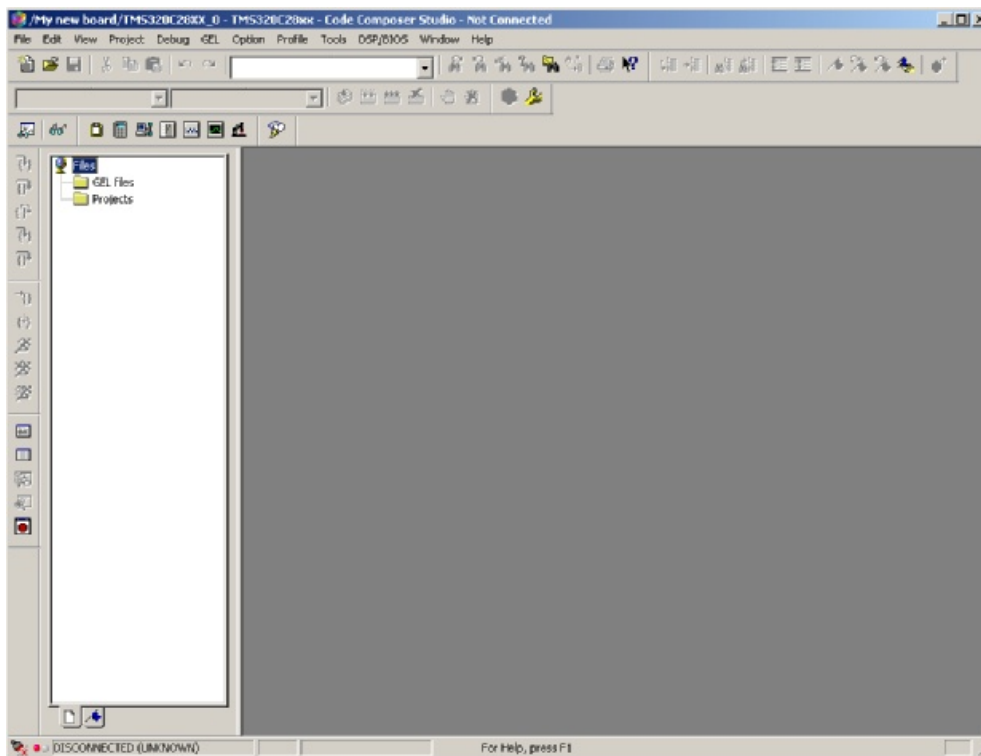


2.5. Starting Code Composer Studio

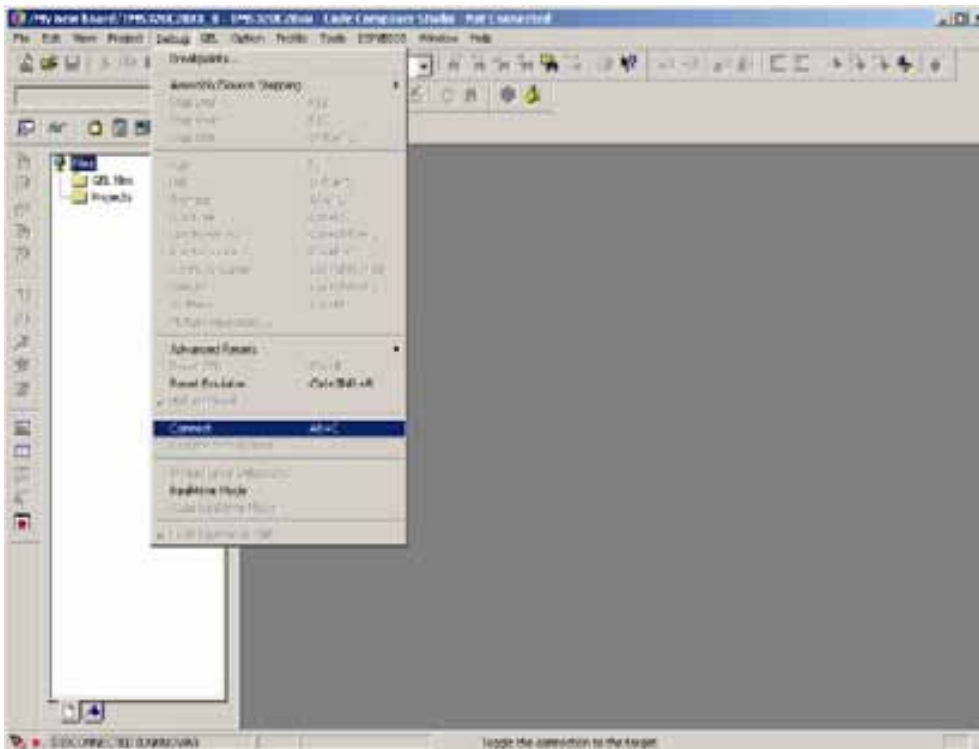
2.5.1. Agree to start code composer studio on exit by clicking Yes in the message window 'Start Code Composer Studio on exit?'



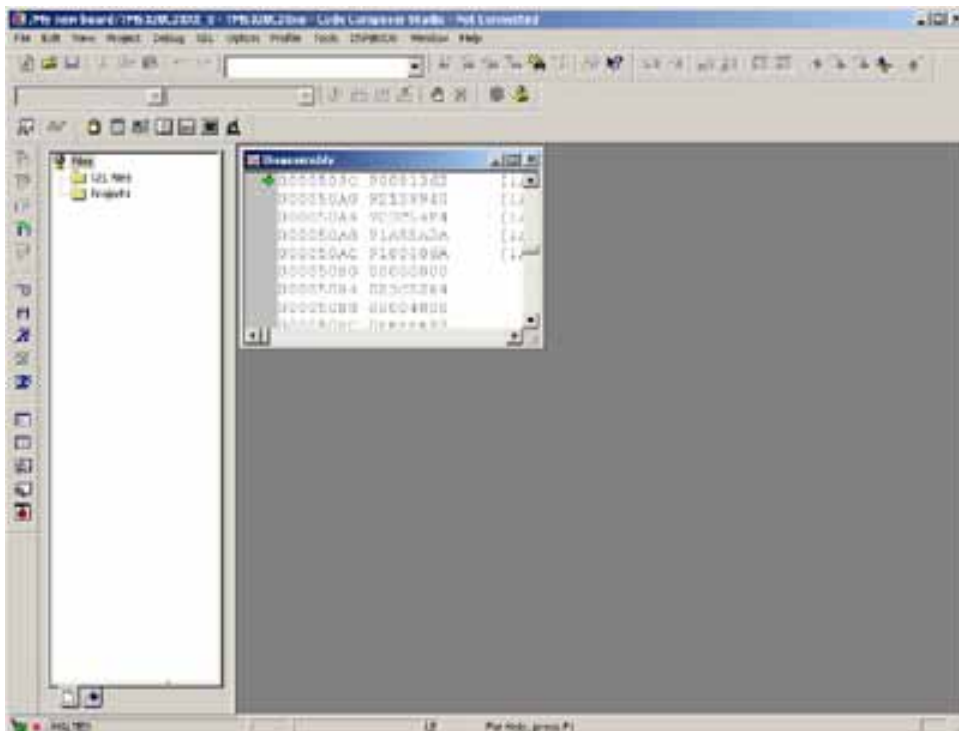
2.5.2. The Setup utility will close and Code Composer Studio will get started.



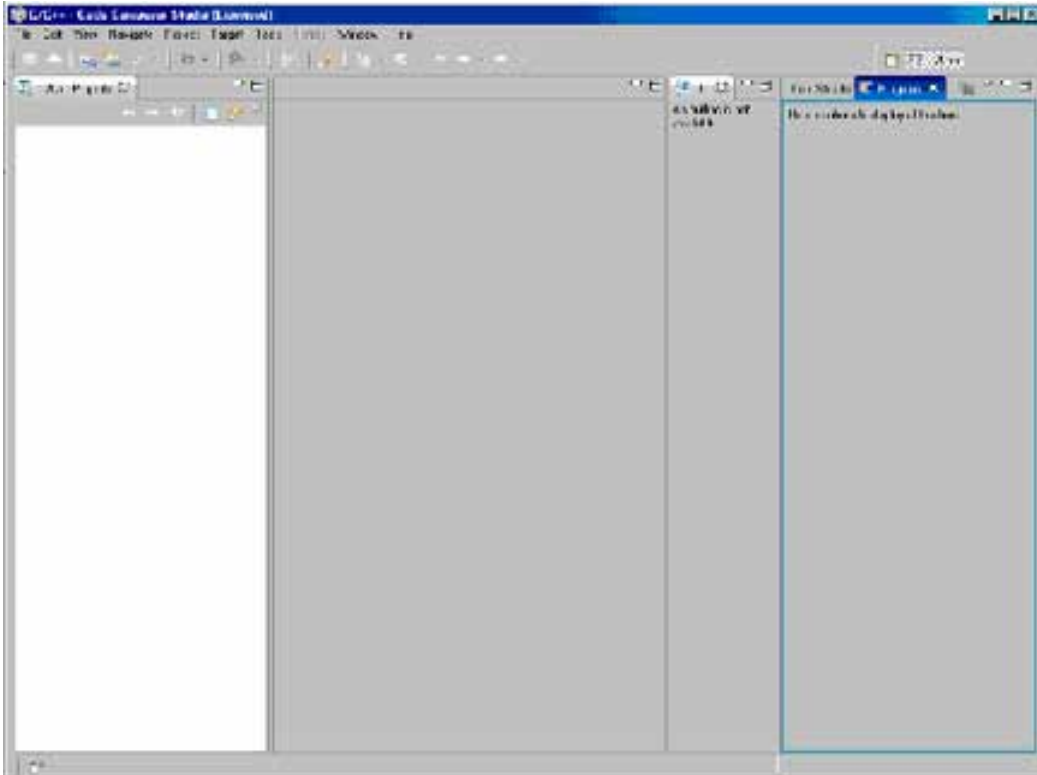
2.5.3. Connect to the target – select Debug→Connect in the CCS menu.



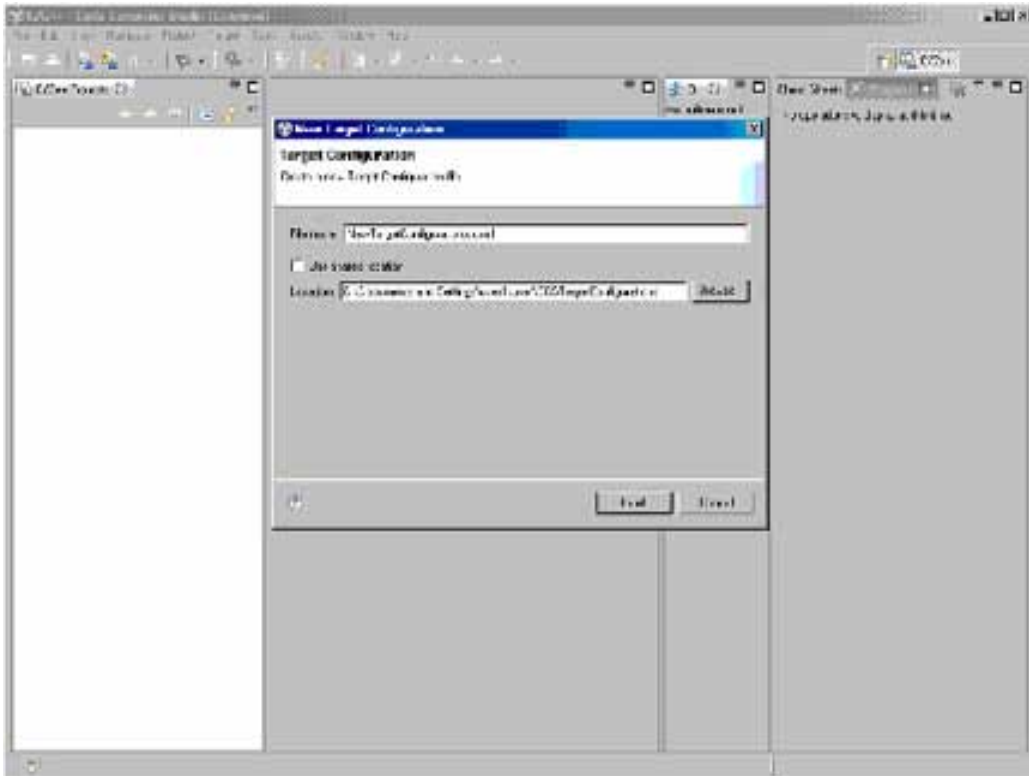
2.5.4. If the connection is correct, you will see a small green bubble help window in the bottom left-hand corner that will inform you of the target connected.



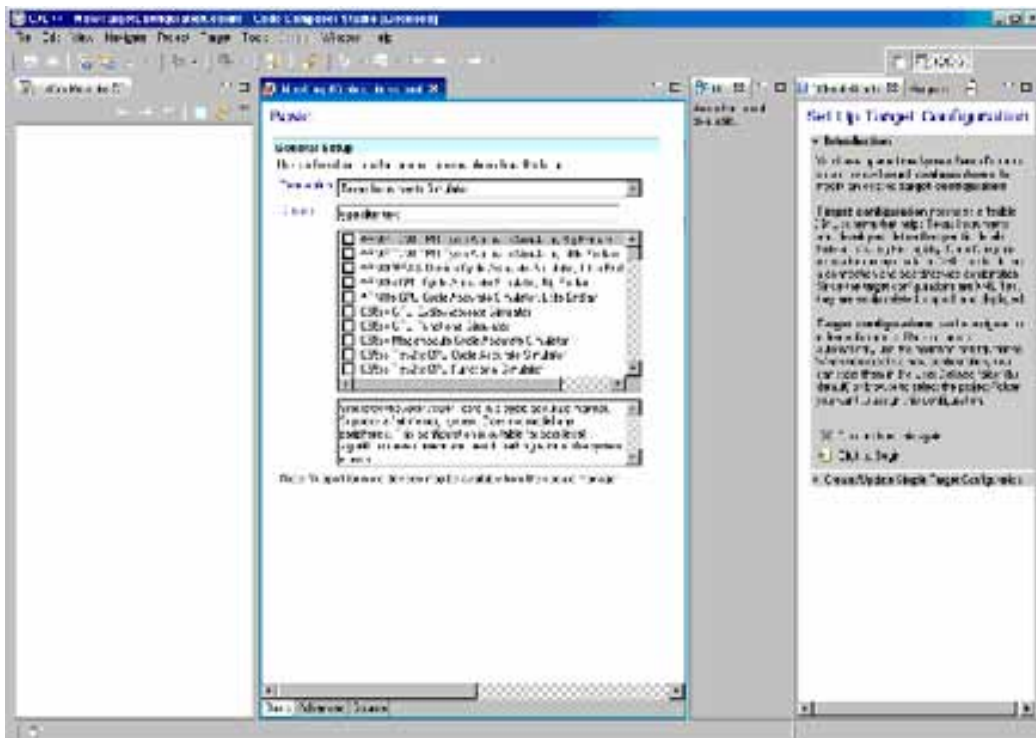
3. **Connecting a board to a PC using SAU510-USB ISO PLUS through CCS v4.**
 - 3.1. **Creating the configuration for SAU510-USB PLUS on the basis of factory boards**
 - 3.1.1. Connect the Emulator to the board using JTAG interface. Supply power to the board. Connect the Emulator to the PC using the USB-cable from the Emulator delivery set.
 - 3.1.2. Run *Code Composer Studio v4*. You will find the setup icon either on the desktop or through the *Start* menu of the Windows operating system (Start → Programs → Texas Instruments → Code Composer Studio v4 → Code Composer Studio v4).



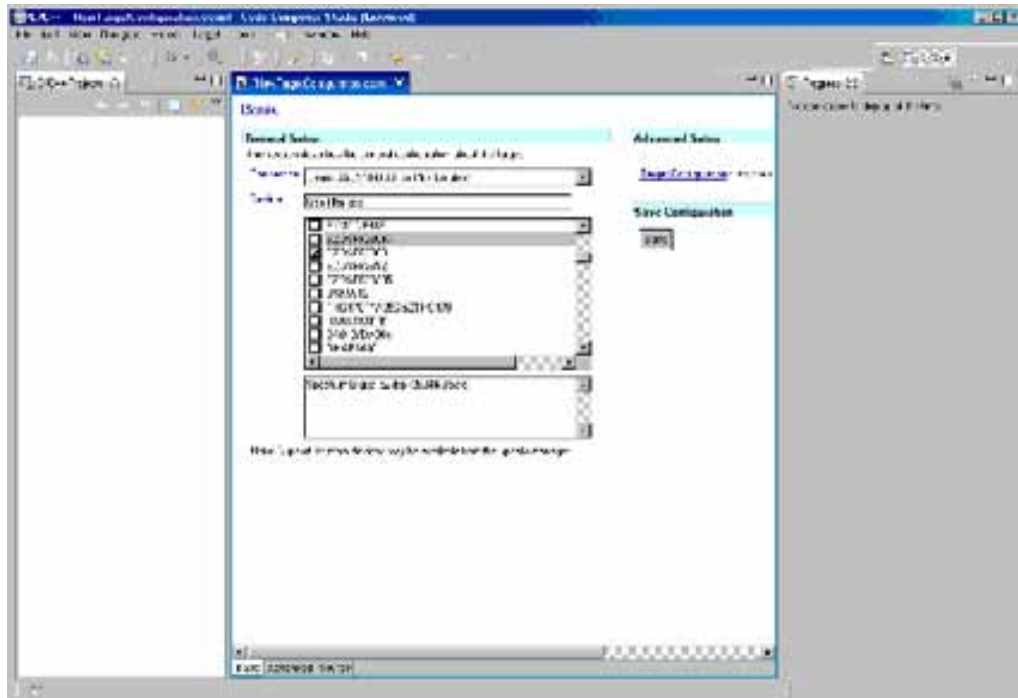
3.1.3. Select menu *Target* → *New Target Configuration...*



3.1.4. Enter the name of configuration and click *Finish* button.



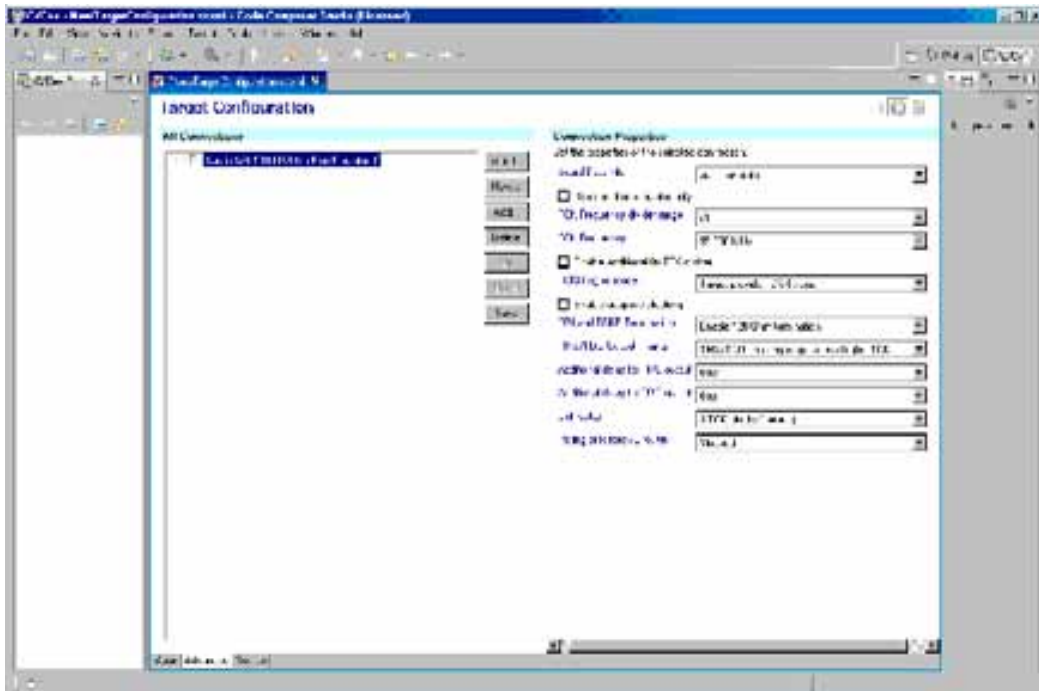
3.1.5. Choose *Sauris SAU510-USB Iso Plus Emulator* in the *Connection* field. Select your board or processor on the *Device* pane and then click *Save* button.



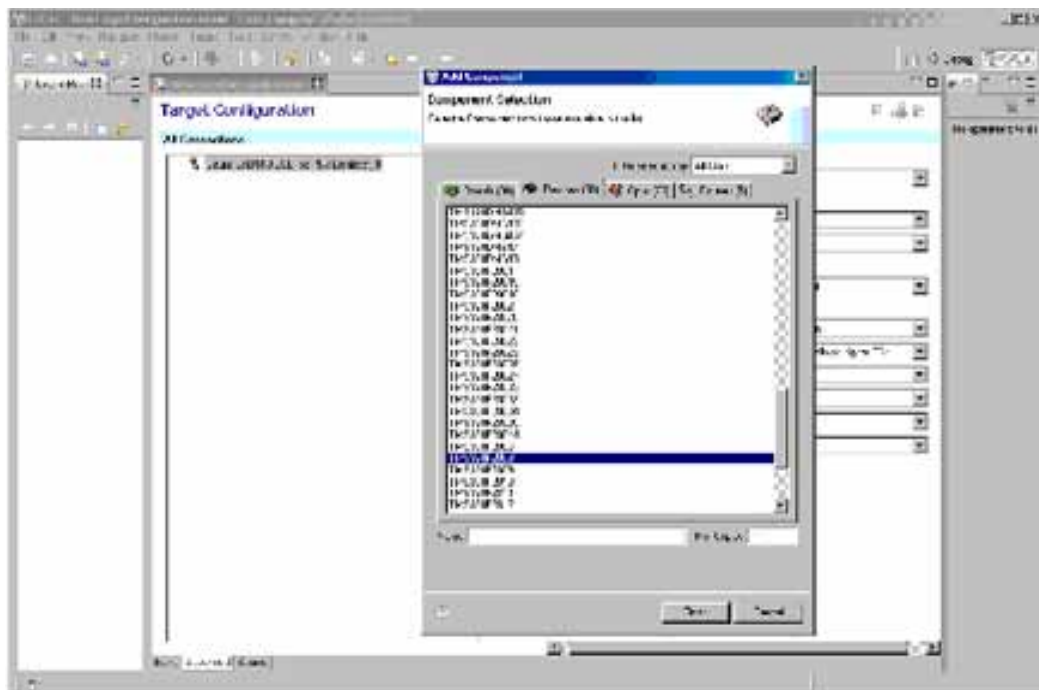
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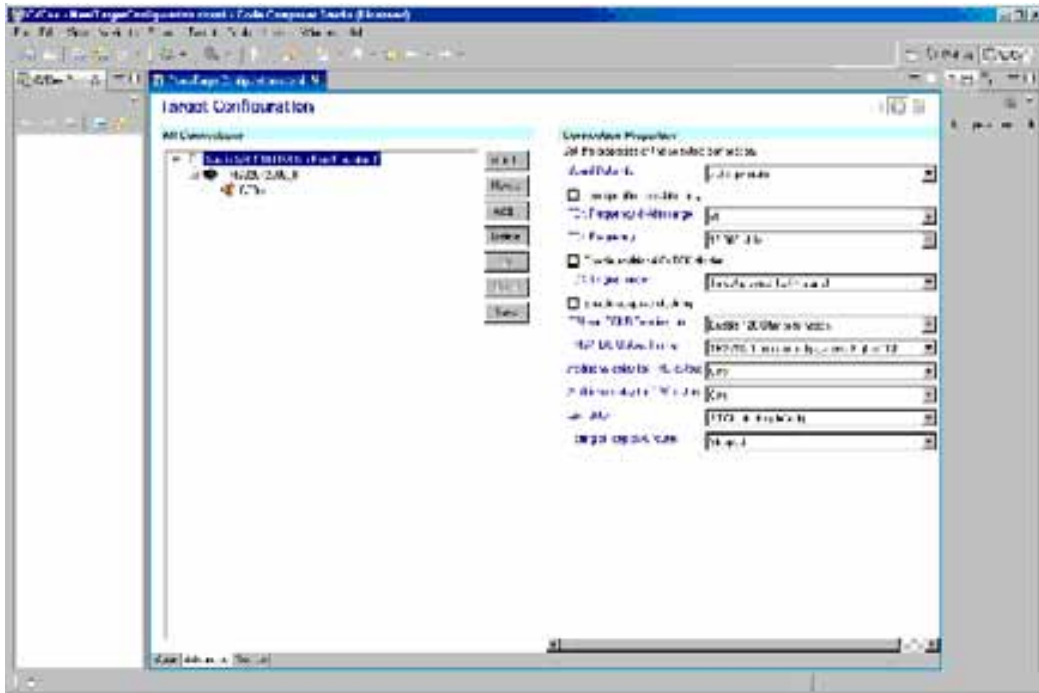
3.2.1. Select *Advanced* pane (on the bottom of CCS window).



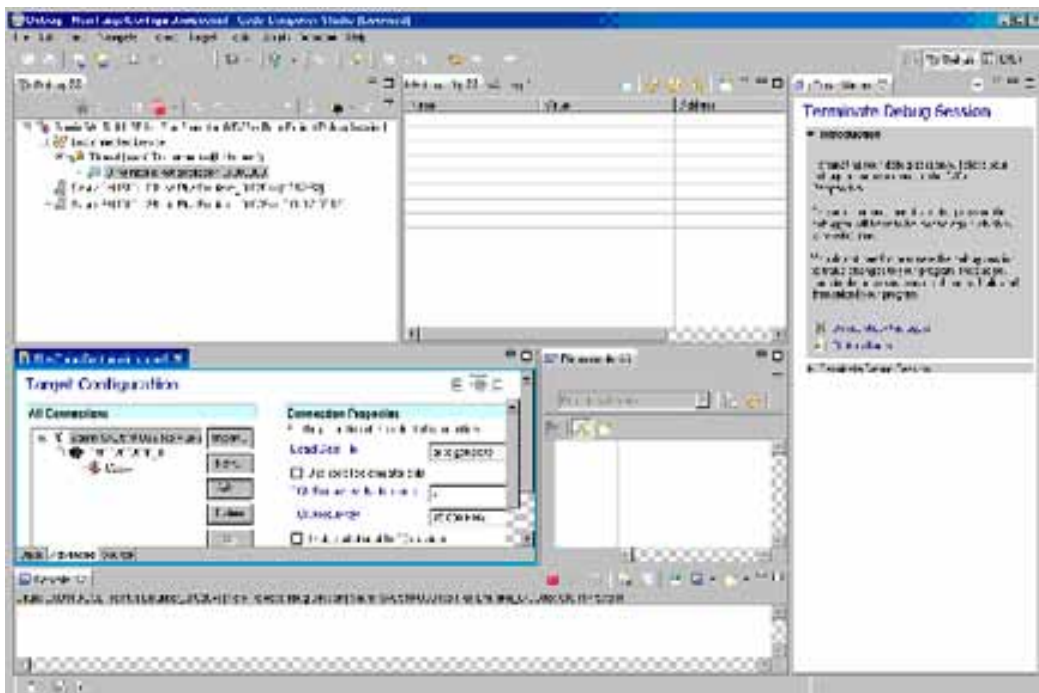
3.2.2. Click *Add* button and select Board, Device, CPU or Router.



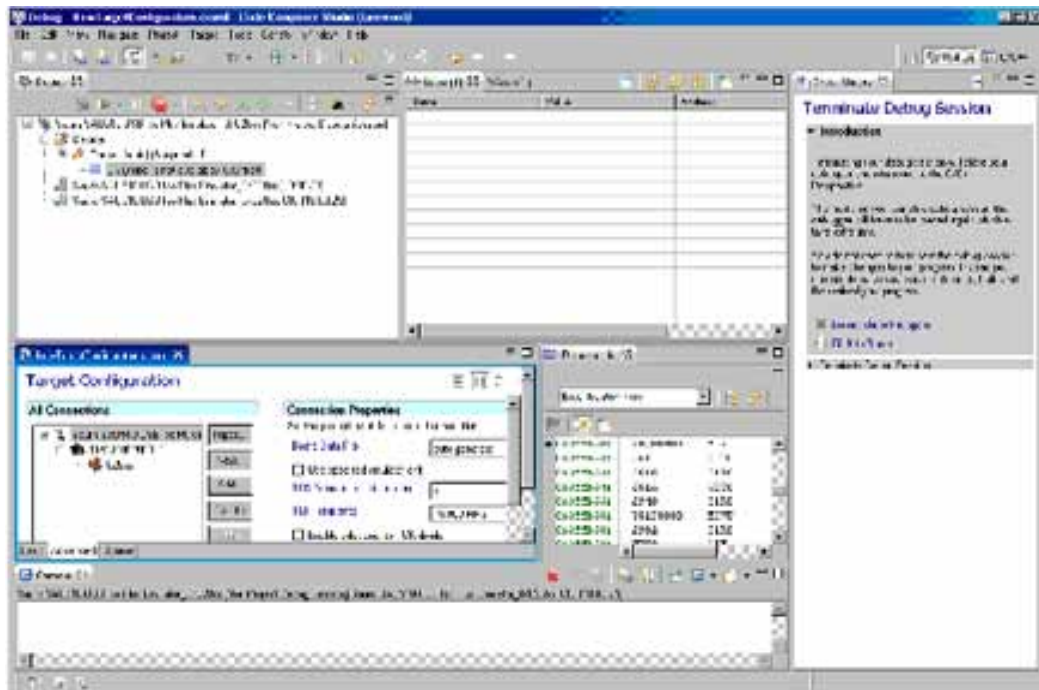
3.2.3. Click Finish button. Then you can setup your connection parameters using fields in the right part of the window. Click Save button.



3.2.4. To check your connection select menu *Target* → *Launch TI Debugger*.



3.2.5. Select menu *Target* → *Connect Target*.



If target is connected you should see disassembly code.

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