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Getting Started with Freescale MQX™ RTOS BSP Cloning Wizard

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1 Introduction

This document describes how to use the MQX™ RTOS BSP Cloning Wizard tool. The purpose of this application is to provide an easy way to make copies (clones) of BSP files and projects. This is especially useful for the customers who prepare their own version of the board based on the processor supported by the MQX RTOS.

2 Making a Clone of an Existing Board

2.1 Starting MQX RTOS BSP cloning wizard application

To start the BSP Cloning Wizard, run the "`BSPCloningWizard.exe`" executable, which is located in:

<install_dir>/tools/BSPCloningWizard.

If the application is started for the first time, a "Welcome page" is displayed as shown in the image. If the application is not started for the first time, running the application opens the "BSP Clone Wizard" dialog or it opens to the previously cloned board. You can always display the welcome page using the "Help/Welcome" menu.

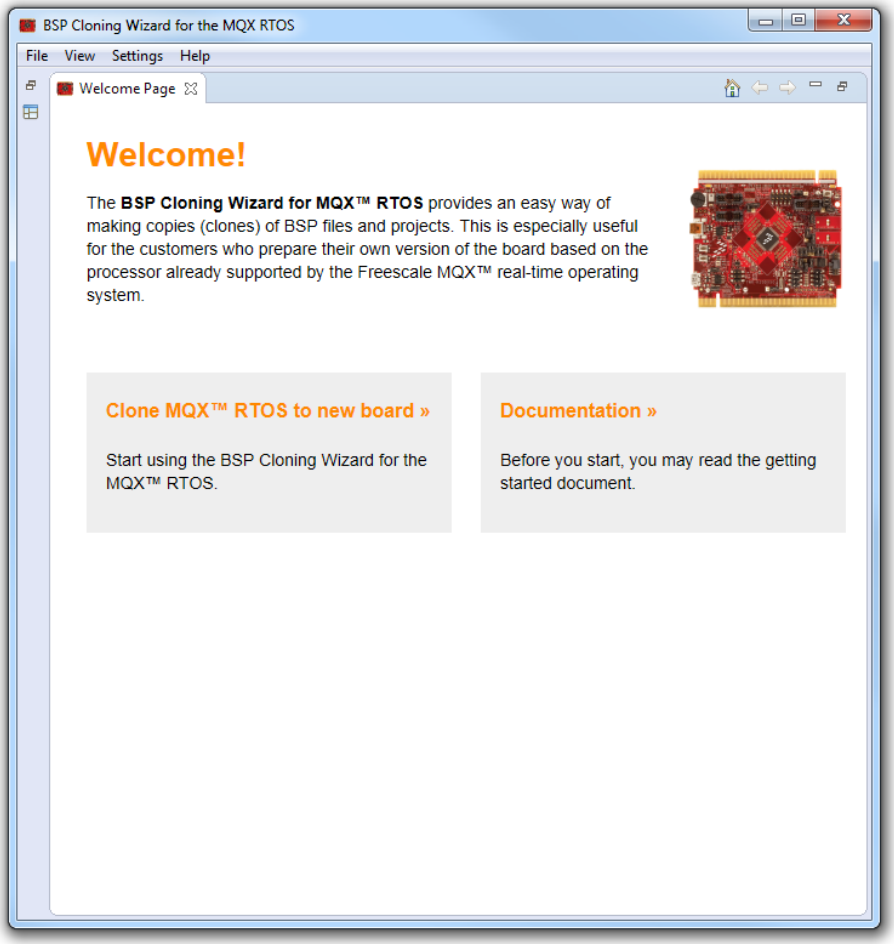

Figure 1- Welcome screen

2.2 Creating a clone of an existing board

The “BSP Clone Wizard” dialog is the main interface to the “BSP Cloning Wizard for the MQX RTOS” application.

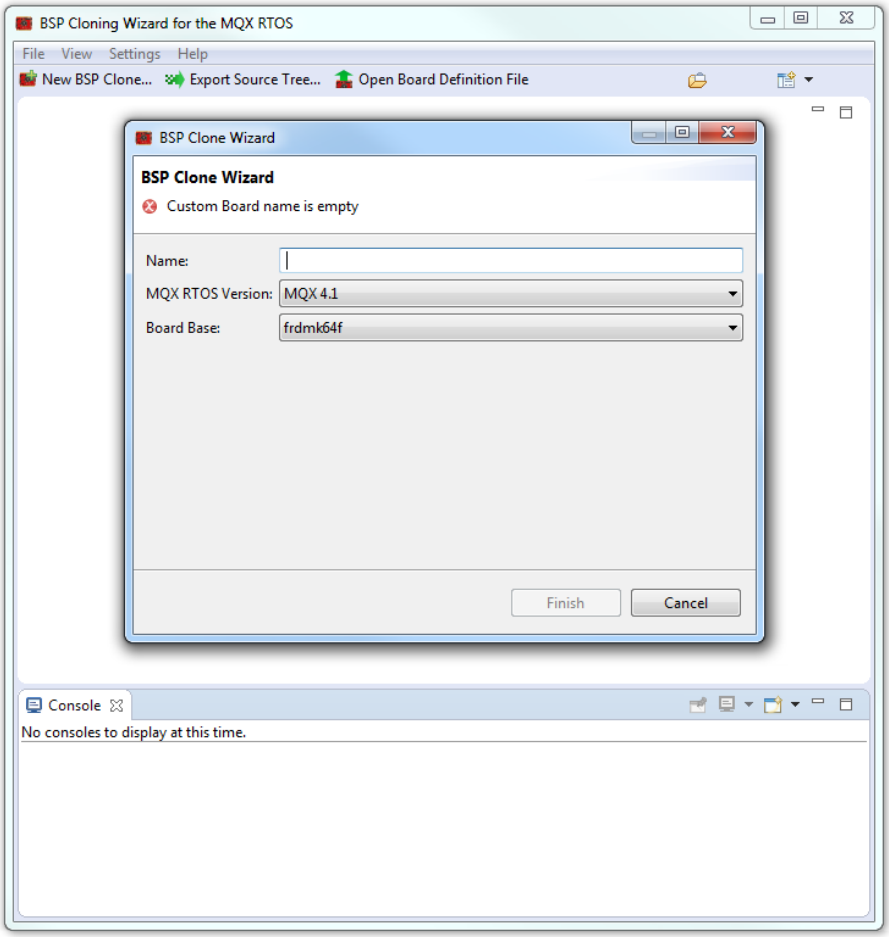

Figure 2 –BSP clone wizard

This dialog is opened automatically. The user may also open it by clicking on the “New BSP Clone” button icon which is located in the left corner of application or in the File menu.

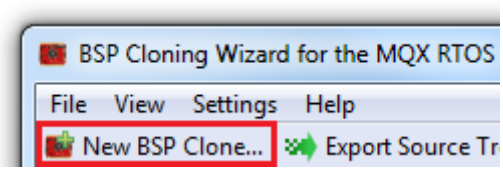

Figure 3 – BSP cloning wizard for MQX RTOS

To clone a specific MQX RTOS board to the new board, follow these steps:

- Select the MQX RTOS software version to use as a base for the clone.
- Select an appropriate board that serves as a template for the custom board.
- Type the name of your custom board in the name input.
- Click the “Finish” button to open a window with available libraries and examples:

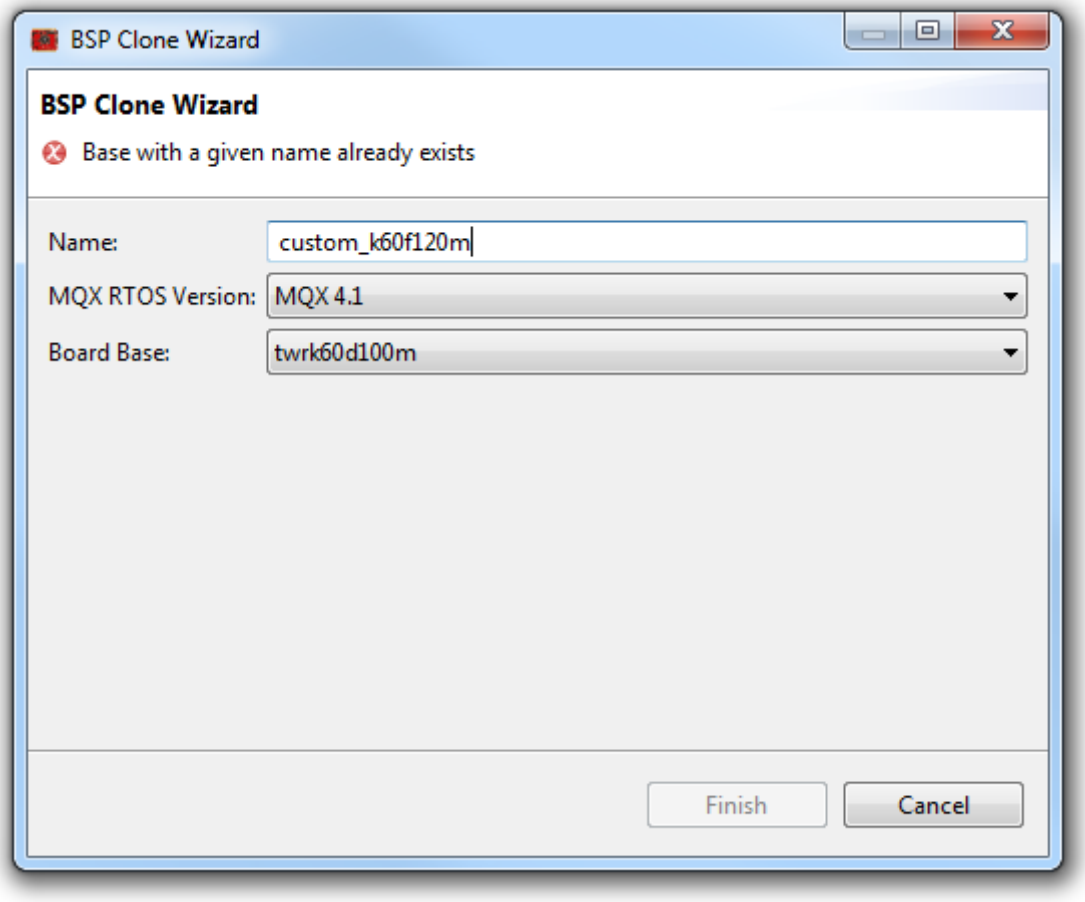

Figure 4 – Custom board

2.3 Generating project files

To generate the project files, select at least one IDE and one project from Libraries or Examples sections. The selected IDEs, Libraries and Examples for a particular board, which the user has opened or cloned already, stay selected when using the BSP Cloning Wizard next.

Note that the user can generate both makefiles and regular IDE project files for MQX RTOS 4.1.1 and newer versions.

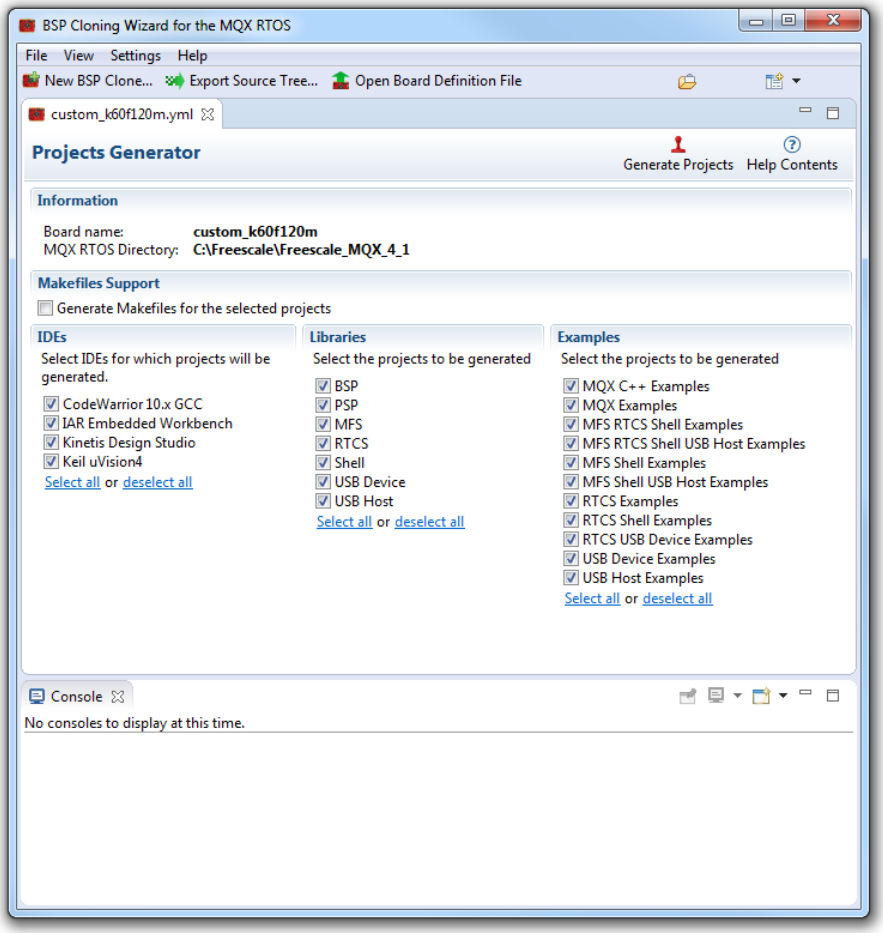

Figure 5 – Select IDE and project

After selecting IDEs and libraries/examples, the user can generate the project files. To do this, click the “Generate Projects” button with the icon located in the right application corner next to the “Help Contents” button or in the File menu.

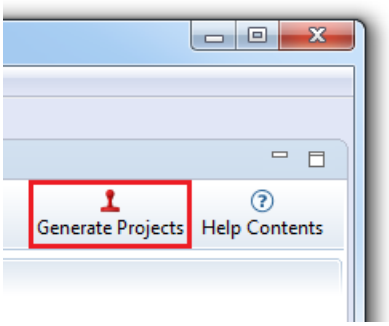

Figure 6 – Generate MQX RTOS projects

The modal window indicates the operation progress and status output in the console window.

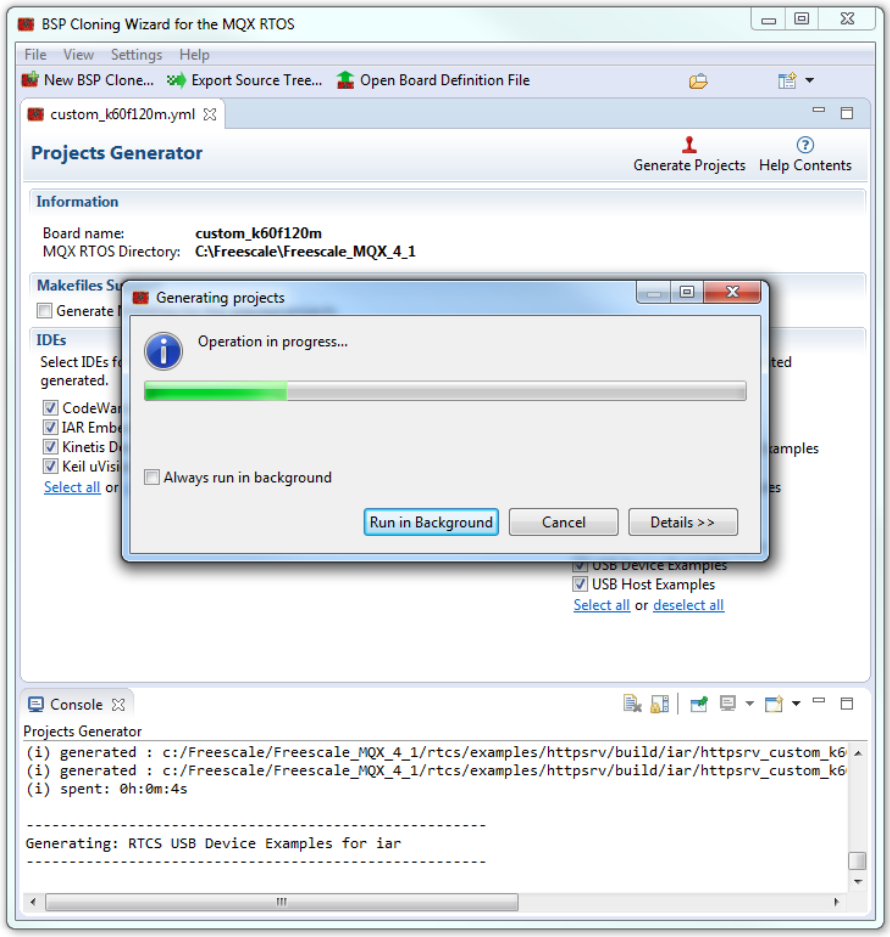

Figure 7 – MQX RTOS project generator

After the generation process, the generated projects are in the MQX RTOS folder structure.

3 Exporting MQX RTOS Source Tree

The user can export the MQX RTOS source tree for a given board, either for the board which comes with MQX software, or for the custom board. The exported source tree is a full MQX RTOS with all tools including the BSP Cloning Wizard. It is important to note that exported source tree does not contain project files, even if they were created in the original location. Use the BSP Cloning Wizard to generate project files.

1. To export the source tree, click the “Export Source Tree” button with the icon located next to the “New BSP Clone” button or in the File menu.

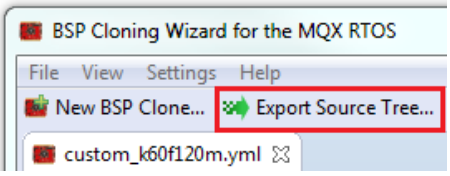

Figure 8 – Export Source Tree

2. The Source Tree Export Wizard is now visible:

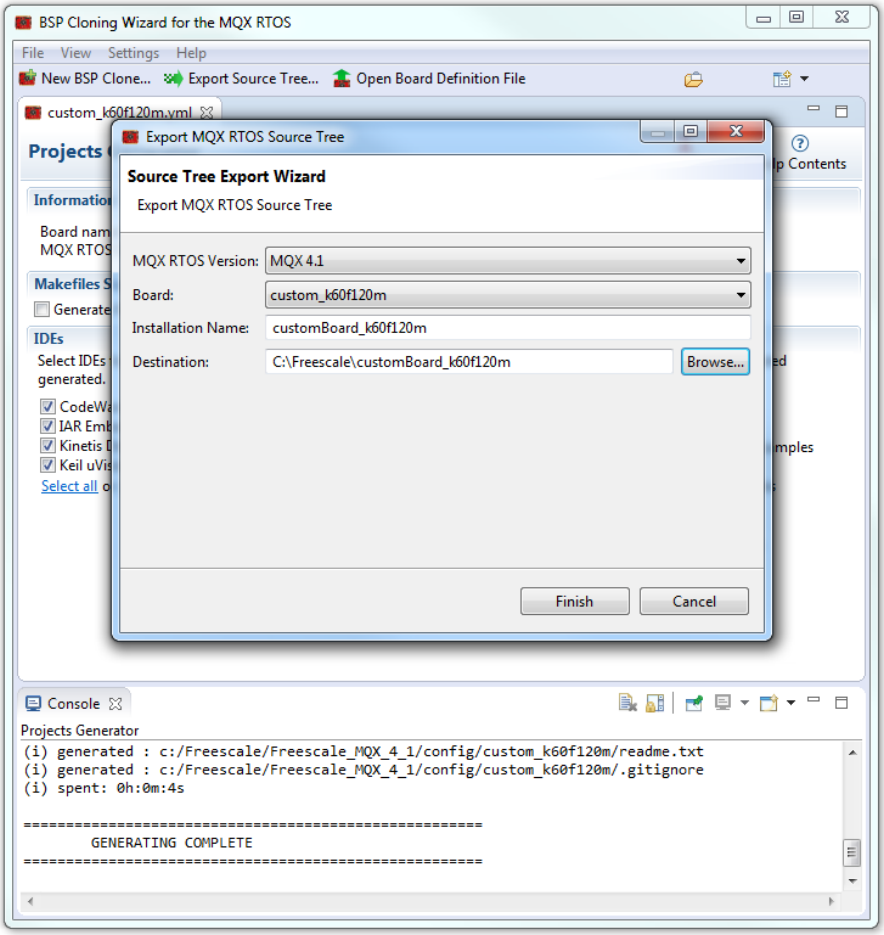

Figure 9 – MQX RTOS Source Tree Export Wizard

3. Select the MQX RTOS version, where the board to be exported is stored, and then select the appropriate board.
4. Fill in the name of the installation in the field “Installation Name”. This is visible in the MQX software installation manager (see Section MQX Software Installation Manager) and can be used to quickly open the board definition.
5. Select the folder where the source should be exported and click the “Finish” button.

When the exporting process is done, zip the destination folder to share it with another team member as an example. Note that, on a new machine, it should be registered in the MQX software installation manager (see Section MQX Software Installation Manager).

4 MQX Software Installation Manager

When you install MQX RTOS using the installer from the Freescale web page, your MQX RTOS installation is registered in the Windows® registry. However, this is not the case when you get the MQX RTOS source tree from someone else, or when you move your MQX RTOS installation to some other directory. The registry entries become outdated.

To register the MQX RTOS source tree go to the “Settings/Preferences” menu:

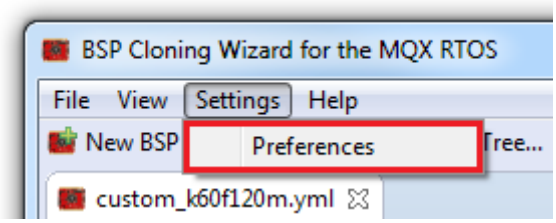

Figure 10 – Preferences

There, you can see the MQX RTOS Installation Details page:

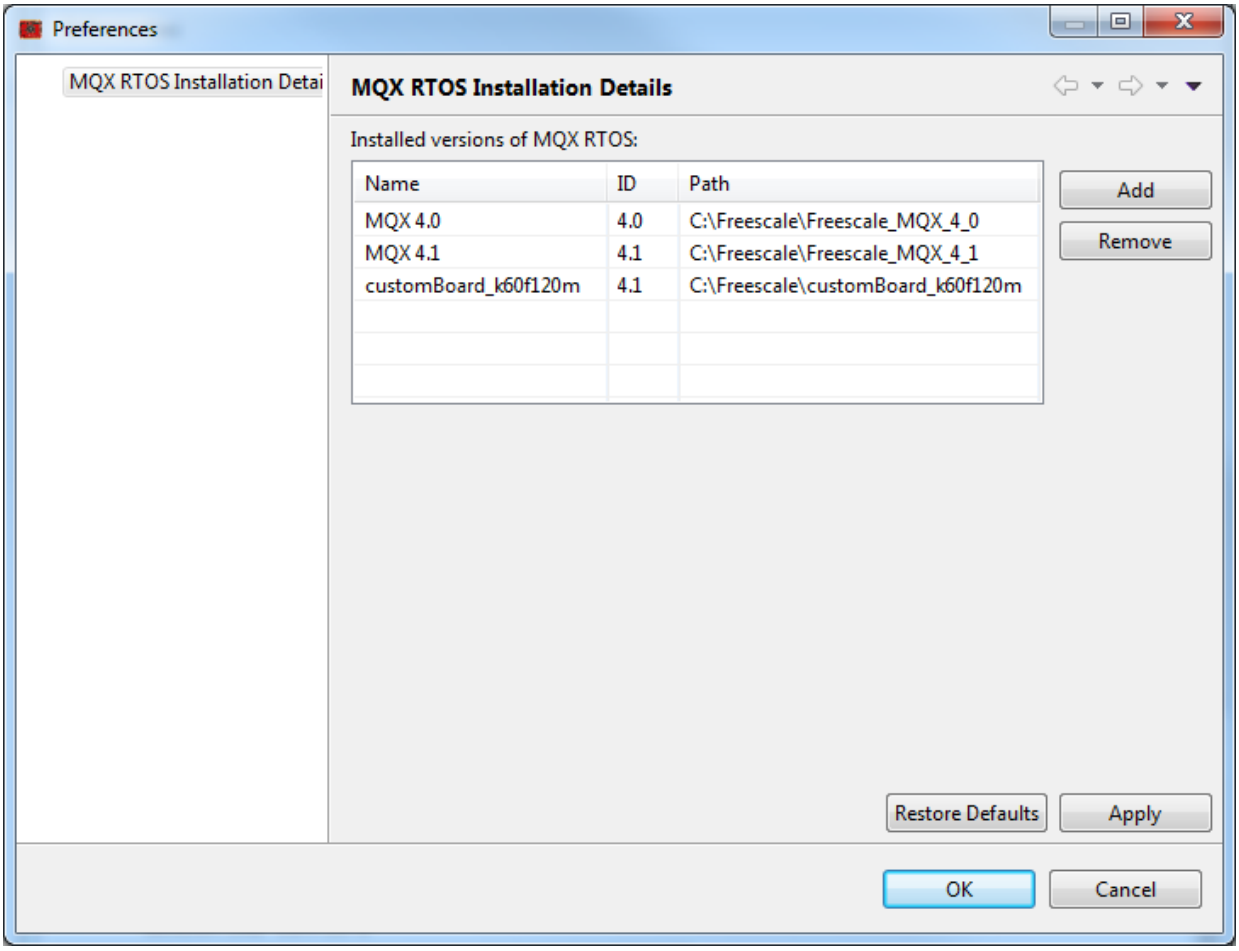

Figure 11 – MQX RTOS installation details

The user can add another entry which contains:

- Name (it is used in many dialogs)
- ID is used to identify the MQX RTOS version. Note that the ID is designated by a truncated version number. For example, MQX RTOS version 4.1.1 has a truncated ID value 4.1. The ID can be selected from any previous MQX RTOS version.
- Path to the installation

After adding MQX software installation, click the “Apply” button and then the “OK” button.

5 Opening Board Definition File

To open a board definition file if you have a source tree and you want to generate project files for it, click the “Open Board Definition File” button with icon located next to the “Export Source Tree” button or in the File menu.

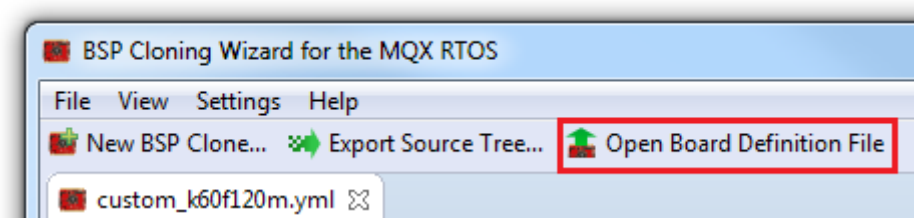

Figure 12 – Open board definition file

The dialog window opens:

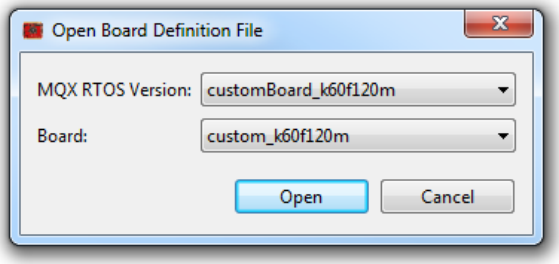

Figure 13 – Dialog for open board definition file

Select the appropriate MQX RTOS and the board to open. Keep in mind that the MQX RTOS installation has to be registered in the MQX software installation manager (see MQX Software Installation Manager section) to be visible in this dialog. Click the “Open” button.

The board definition file is opened as shown here:

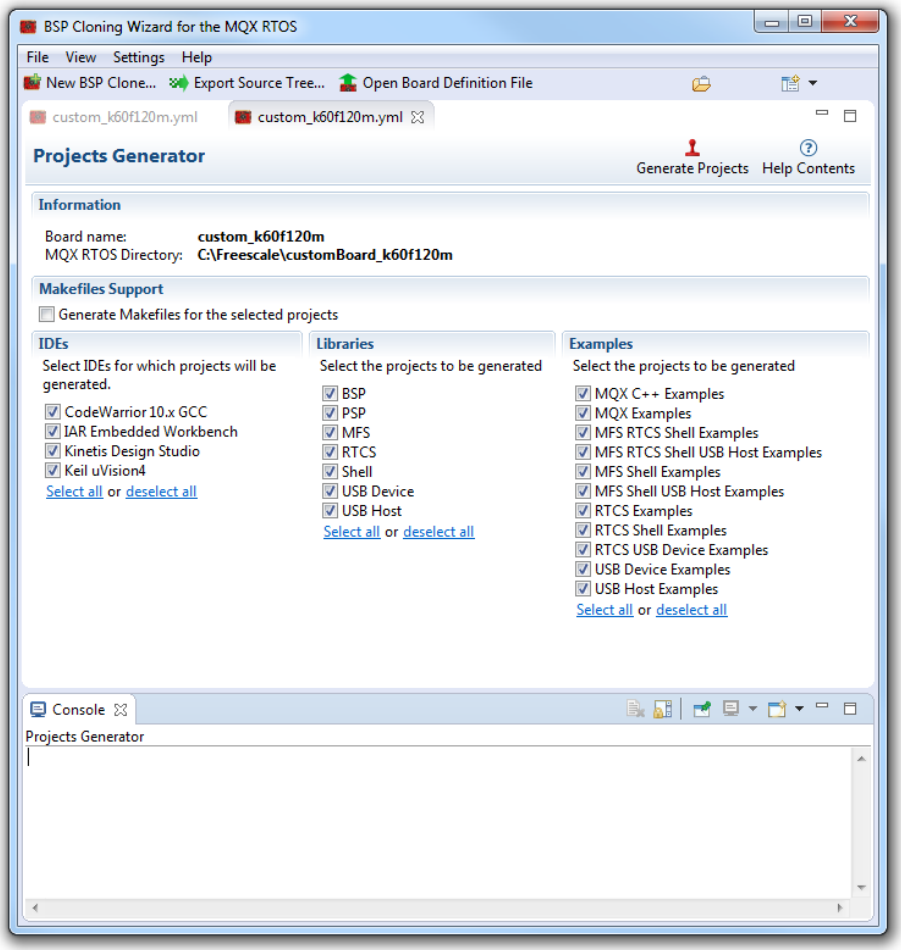

Figure 14 – Board definition file

6 Support for MQX Software New Project Wizard in CodeWarrior

If projects for CodeWarrior are selected, at the end of the generation process the “BSP Cloning Wizard” creates an additional XML file and two Windows registry files. One file is for the 32-bit system and the other file is for the 64-bit system. The files are named accordingly. Ensure that you use the appropriate file corresponding to the registry. The files may be used to add the custom board into the CodeWarrior “New Project Wizard”.

It is important to ensure that the New Project Wizard for MQX software plug-in in version 1.4.0 or later is used.

The generated XML file and the registry files may be found in this directory:

<install_dir>/tools/CodeWarriorNPW

The registry file is used to add the MQX software path to the Windows Registry, which is especially important if you have exported the MQX RTOS source tree to a new location. The CodeWarrior “New Project Wizard” uses the Windows registry to get the root folder of the MQX RTOS.

All MQX RTOS installations are registered under this node in the Windows Registry:

[HKEY_LOCAL_MACHINE\SOFTWARE\Freescale\Freescale MQX]

After importing the registry file in Windows, the XML file has to be copied into the CodeWarrior folder structure. The general schema of folders is as follows:

<codewarrior_install_dir>/MCU/lib/wizard_data/mqx/<mqx_version>/<architecture>

For example, for MQX RTOS version 4.1.1 and the ARM® architecture, the XML file should be copied to this directory:

<codewarrior_install_dir>/MCU/lib/wizard_data/mqx/4.1/arm

7 Remarks

The other method to open board definition files is by using the “File/Open File…” command. The files with the board descriptions are located in this directory:

<install_dir>/tools/generator/records/<your_custom_board_name>.yml

Note that you should not move these files to another folder.