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April 1st, 2010
Renesas Electronics Corporation

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User's Manual

Wow-SH7203

User's Manual

RENESAS SINGLE-CHIP MICROCOMPUTER
SuperH™RISC engine

Renesas Electronics
www.renesas.com

Rev.1.00 2007.08

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Programming the RSKSH7203 Flash Memory

It is assumed that;

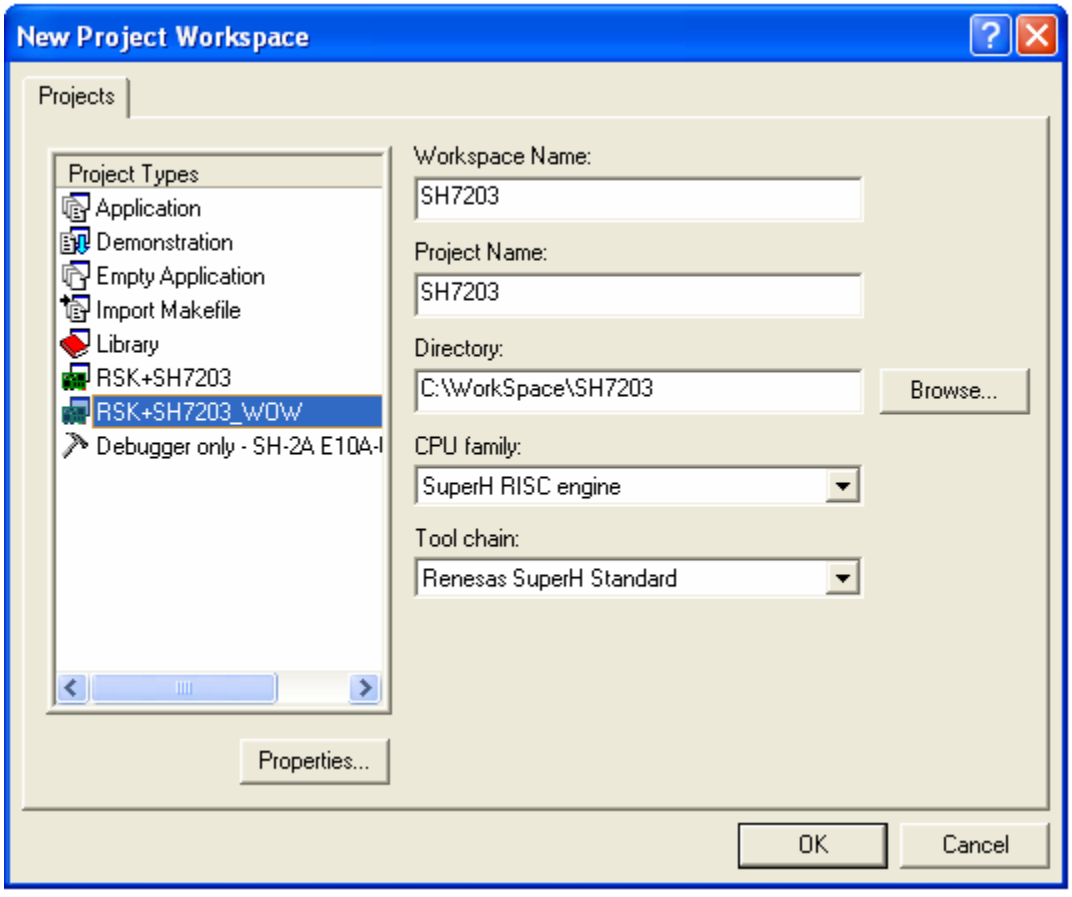
- The user has a Renesas E10A Lite in-circuit debugger.
- RSKSH7203 development board & supplied PSU.

Use the accompanying RSK Quick Start Guide to install the HEW High-performance Embedded Workbench software.

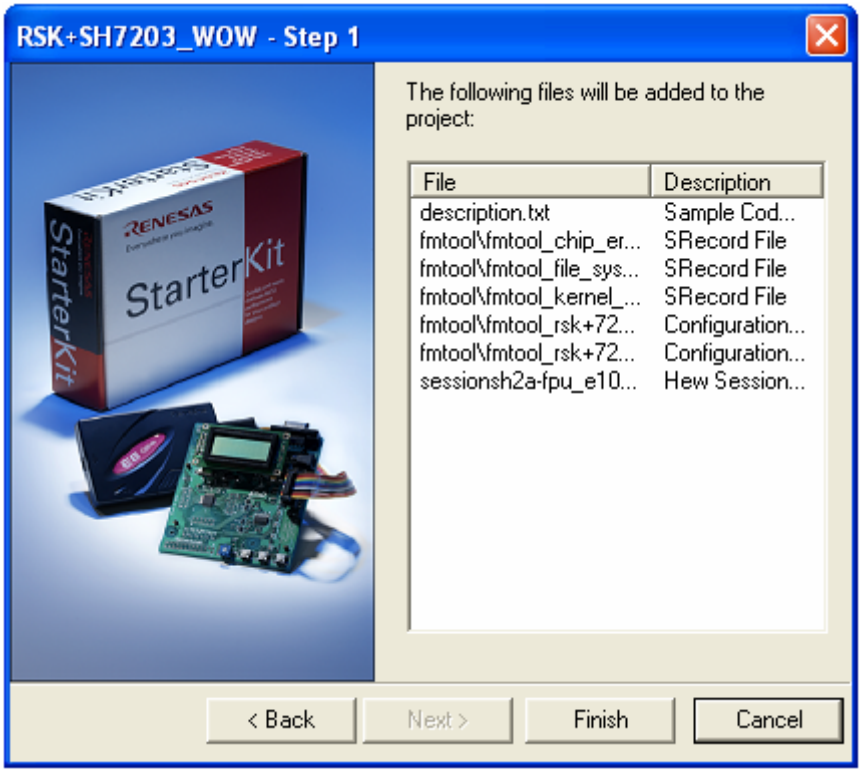
Starting HEW

Create a Workspace

1. Open HEW, and click on File -> New Workspace to get started and connect to the board.



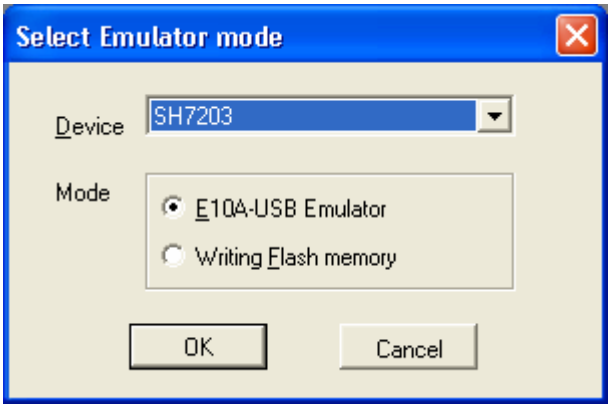
Select the RSK+SH7203_WOW option, and provide a Workspace name. Click OK, when you are ready to continue.



Press Finish to complete the process.

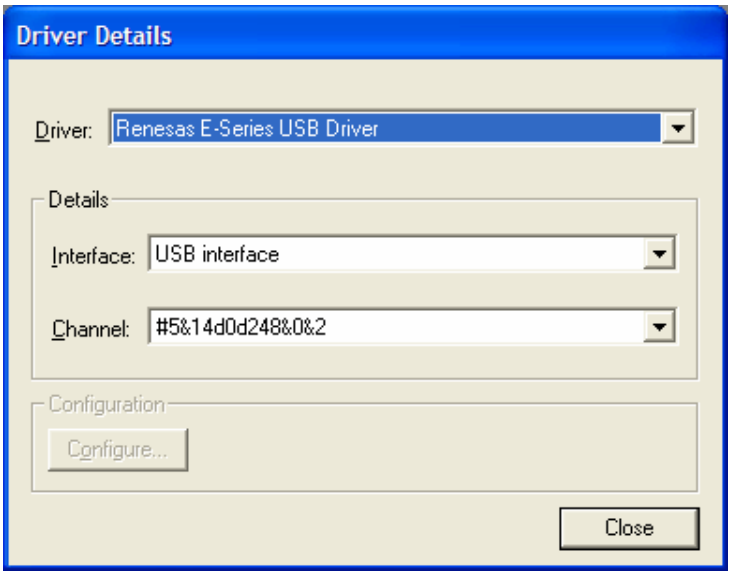
Connecting to the board

1. When a new workspace has been created, you will be presented with the option to connect to the board. Select the E10A-USB Emulator mode and continue

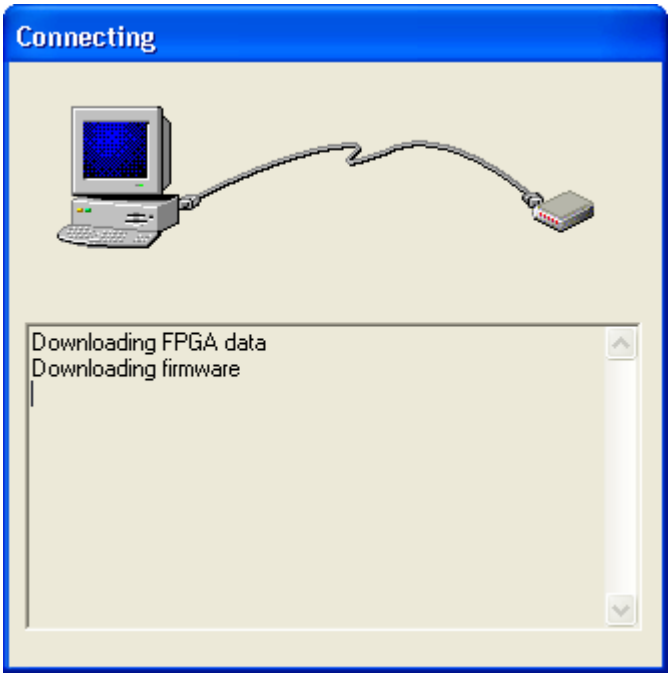


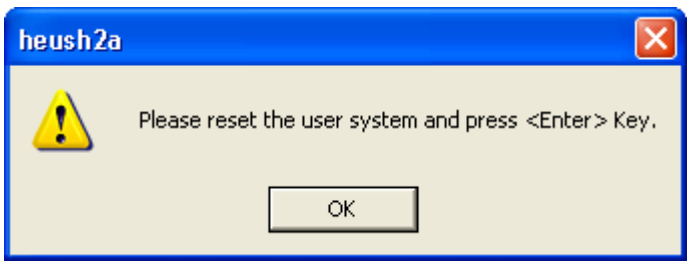
2. HEW may ask you to connect to the E10A Lite. If there are any problems, usually the best course of action is to disconnect the E10A Lite and then reconnect it.

Note: The Channel displayed may vary.



3. HEW will connect to the board. Again follow the on screen prompts, and reset the RSKSH7203 board when required.



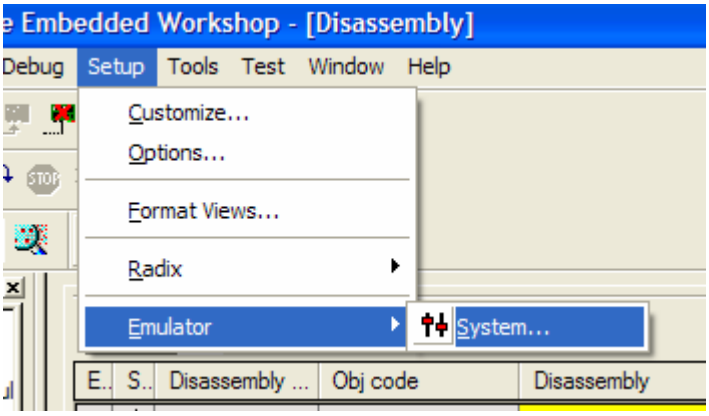


Setting up HEW for Flashing

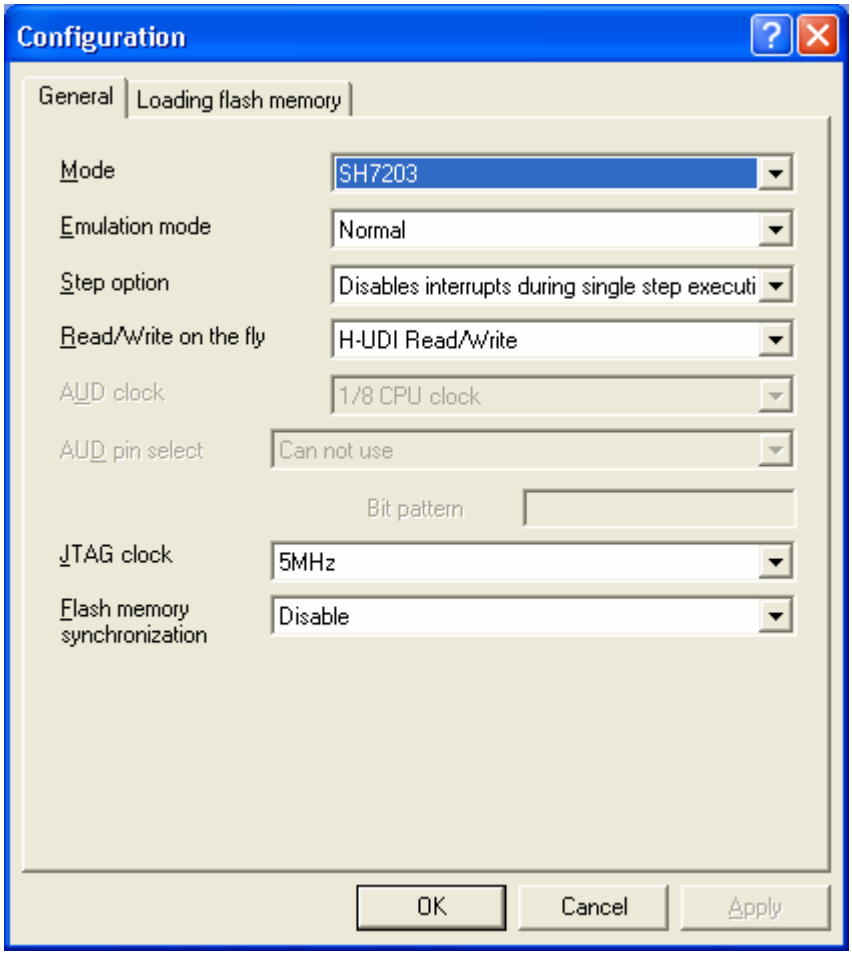
Once HEW has a workspace set up, it will be necessary to ensure that HEW has the appropriate settings for writing to the flash chips on the RSKSH7203 board.

Setting FMTool

Once connected, you will need to ensure HEW has some settings entered to communicate with the RSKSH7203.



1. Choose the "Emulator > System" configuration options from the Setup menu, and check the following settings.



2. On the "Loading Flash Memory" tab set "Loading flash memory" to enable. This will enable the configuration of the rest of the dialog control. Then set "Erasing flash memory" to enable. This will enable the erasing details to be configured.

- These settings are not retained through disconnects of the board, and you will need to check this page every time you reconnect to the RSKSH7203 board.
- "File name" should point to a relevant flash memory erasing tool from the distribution CD.

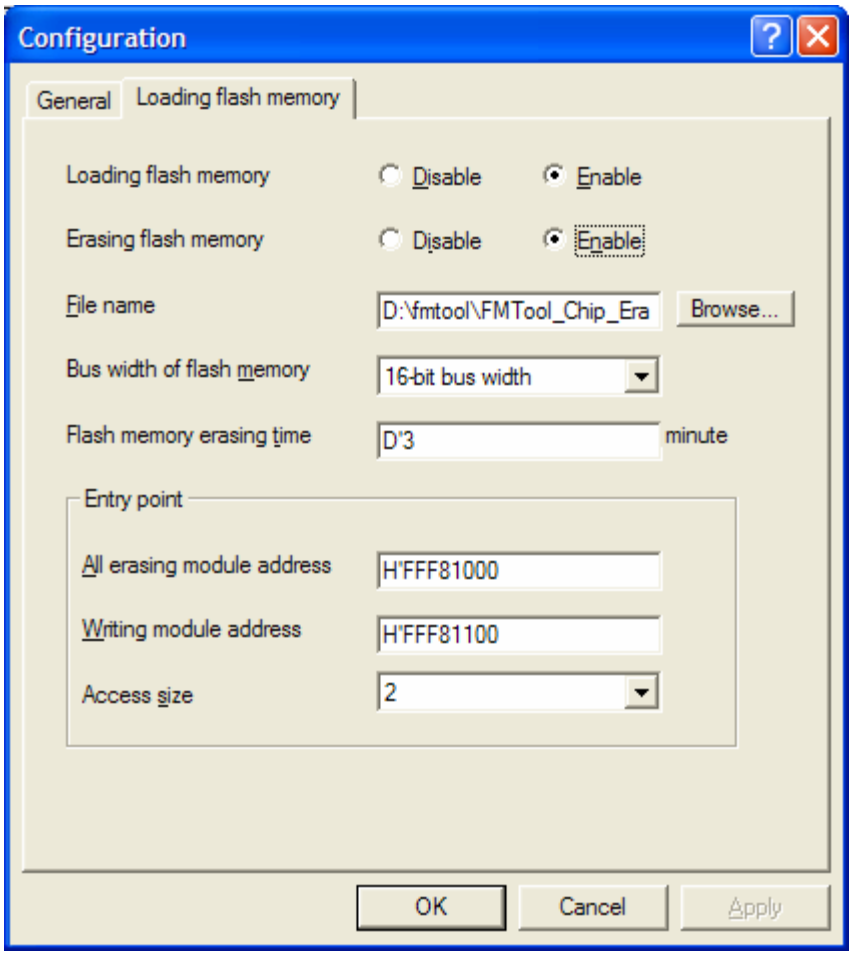
There are three variants of this tool dependant upon the flashing action you wish to take.

- To erase both the µClinux kernel and the file system, use *FMTool_Chip_Erase.mot*.
- To erase only the kernel, use *FMTool_Kernel_Erase.mot*.
- To erase only the file system, use *FMTool_File_System_Erase.mot*.

These files are located in the following directory:

```
$PROJECT_DIR\$PROJECT_NAME\FMTools\
```

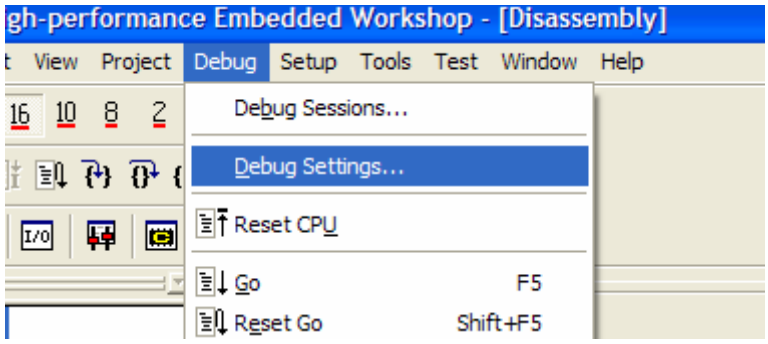
Finally ensure the Entry point addresses are correct.



3. Click "OK" to save the settings.

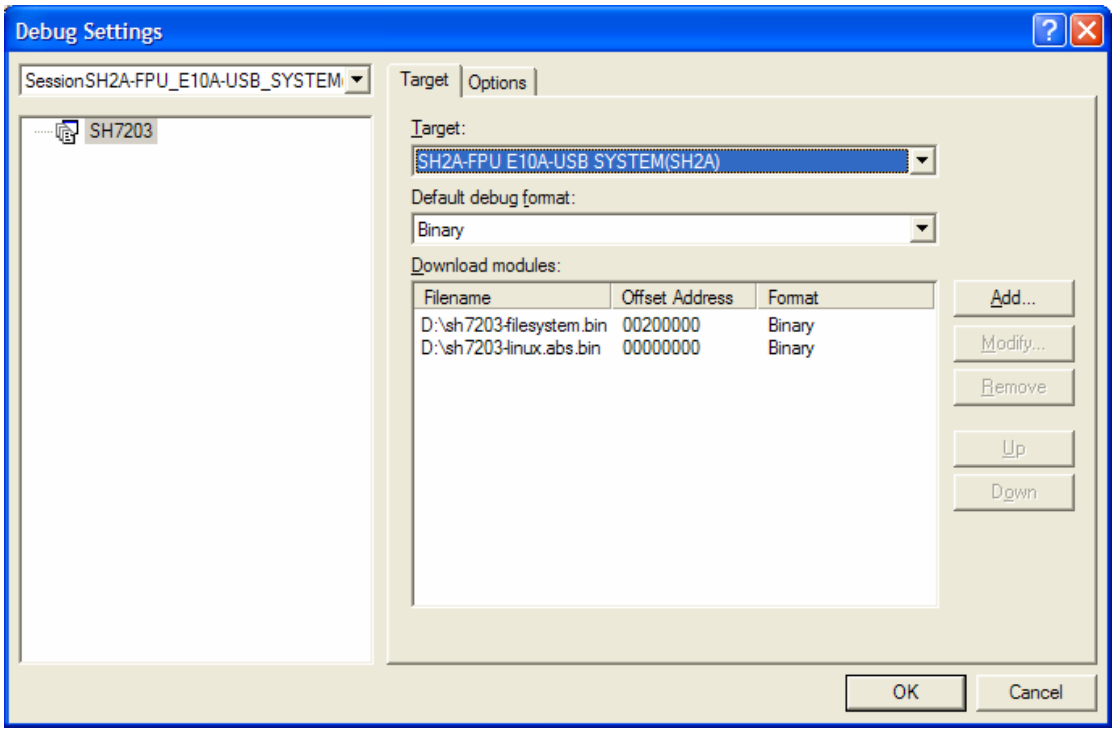
Setting the board initialisation script

1. Select the "Debug Settings" menu option from the "Debug" menu.

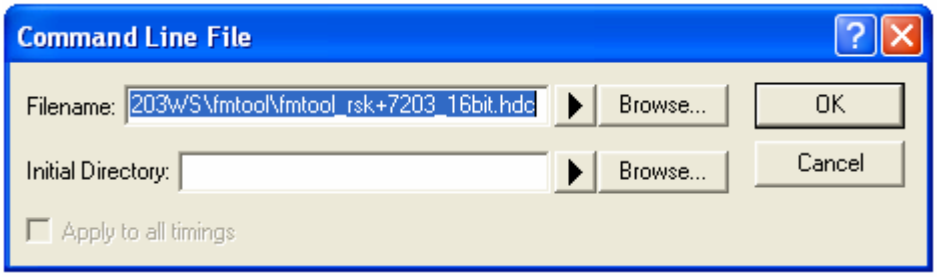


2. Add the binary files that are available for downloading to the board, to the target download section. In the Download Module Dialog, the Format should be set to "Binary" and the Access Size should be set to 2.

- The Linux binary should be written at address offset 0x00000000 – This is the base address of the flash memory.
- The File system binary should be written at address 0x00200000 (0+2MB) – This is the next MB boundary after the Linux kernel.



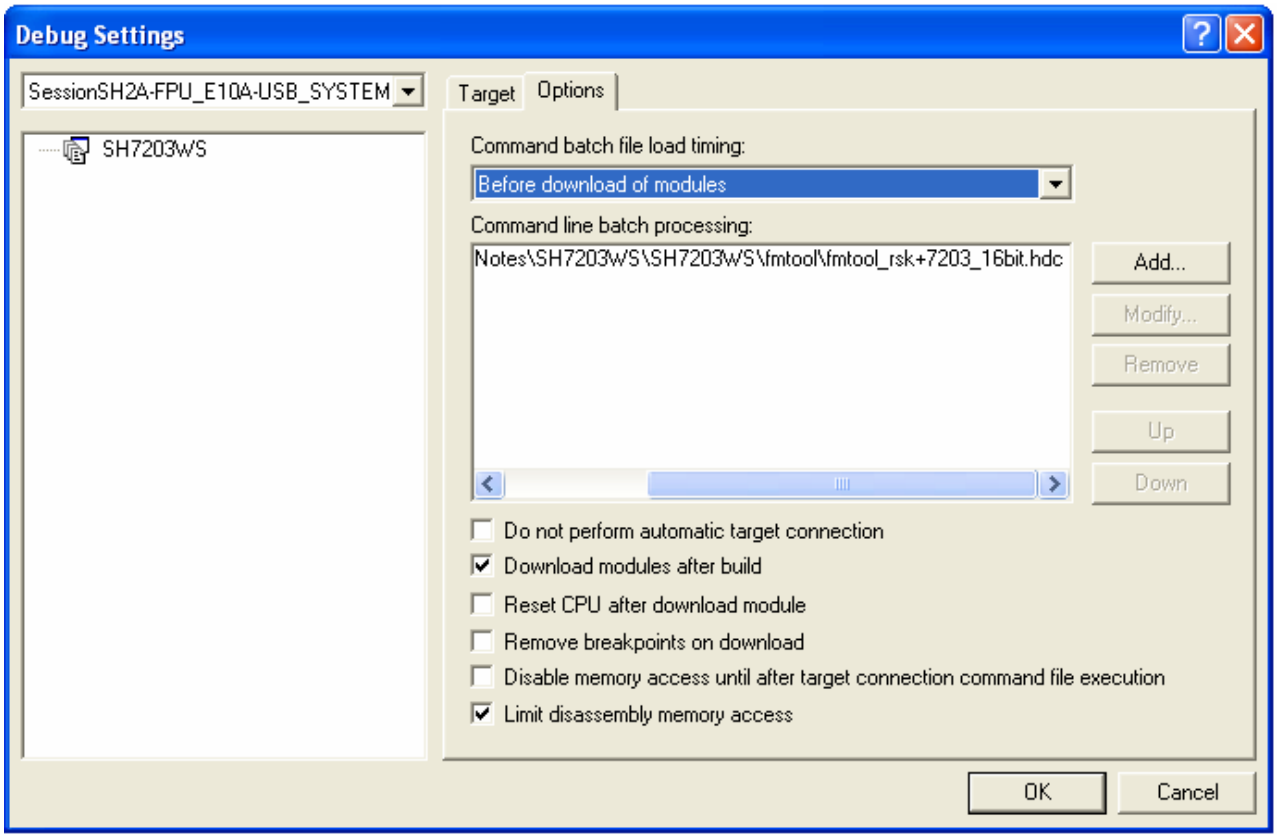
3. Finally under the options tab it is necessary to add a batch file operation to run before download of modules. This batch file is required to set up the board initially for access by the FMtool when flashing.



4. Add the fmtool_rsk+7203_16bit.hdc to run "Before download of modules" as shown in the following screenshot.

Note: fmtool_rsk+7203_16bit.hdc can be found in:

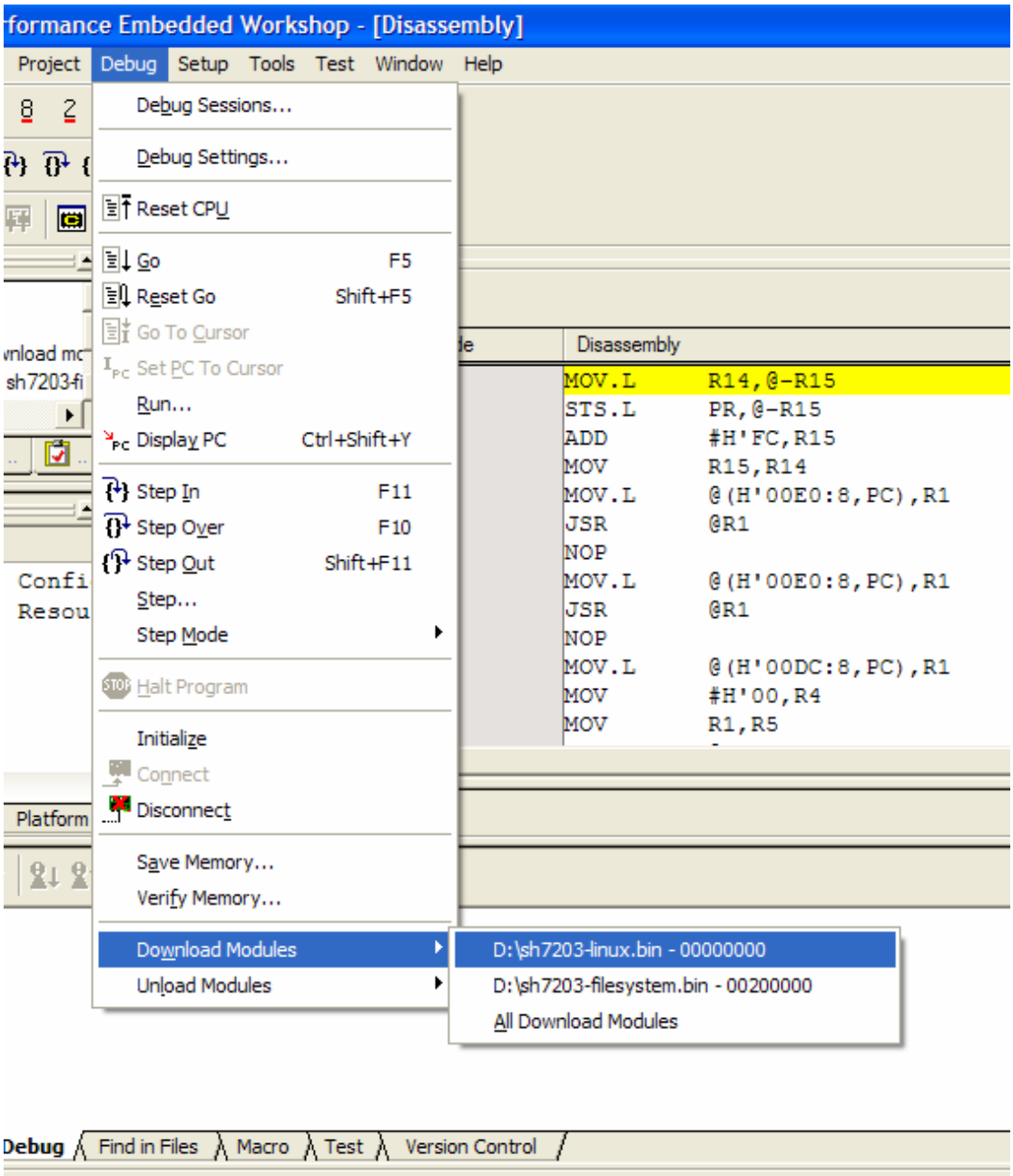
`$PROJECT_DIR\$PROJECT_NAME\FMTools\`



5. Click "OK" to save the settings.

Flashing the images to the board

Once connected, the images can be downloaded to the board through the debug menu



It is important to ensure that the correct FMTool Erase Application has been selected dependant on the location of the file you wish to download.

Notes

1: The files can be downloaded to the board in any order. However the "All Download Modules" option does not work, the two binary files have to be downloaded to the board separately.

2: The board will not boot with the E10A Lite connected. Please remember to disconnect HEW from the board (using the Disconnect button) then switch off the power supply to the board, before finally removing the programming cable between the E10A Lite and the RSKSH7203 using the 3M pull-tag device attached.

Image manipulation

The bmp2src tool has been provided to simplify image manipulation when using the RSKSH7203 board outside of the µClinux operating system.
With this tool one can convert Windows Bitmap (.BMP) files into a 16-bit RGB format that can be used in conjunction with the "TFT_LCD Display" RSK+SH7203 sample project. You can simply replace the Image.c file supplied in the sample program with the file generated by bmp2src to change the image.

Usage bmp2src File1[.bmp] [File2]

The tool takes up to 2 parameters:-

File1: Filename of the source Windows Bitmap (.BMP) file.

File2: Filename given to the output from the program. If omitted the default output filename would be File1.c.

Output Format

The output format is 16-bit (565) RGB where (reading left to right) 5 bits represent Red, 6 bits represent Green & 5 bits represent Blue.
Please remember that the required image size is 320 x 240 (QVGA).
The output can be viewed, once loaded onto the RSKSH7203 board, using the Graphics-Image View supplied as part of HEW.

Changing the IP address

The board's default IP address is 192.168.1.100. You can connect either by configuring an external machine to be on the same subnet or by changing the board's IP address using the serial console.

To change the IP address temporarily, use ifconfig:

```
ifconfig eth0 192.168.2.2
```

The IP address can be changed more permanently by modifying the 'rc' file using VI:

```
vi /etc/rc
```

Changes to the file system will persist through reboots of the board.