

# Renesas HEW Debugger

## 1 Abstract

This document describes the usage of the Renesas HEW debugger as target system.

**Please note:** The Renesas HEW debugger requires setting up a new workspace in order to execute test runs with TESSY. Follow the instructions below to create an appropriate workspace.

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## 2 Introduction

The communication between TESSY and the Renesas HEW debugger is based on the tcl interface of the debugger. For each test run, a script is generated within the TESSY test area directory that controls the test execution process. This script is generated from a template script that is specified within the attribute **Master Script Template** of the TESSY Environment Editor (TEE).

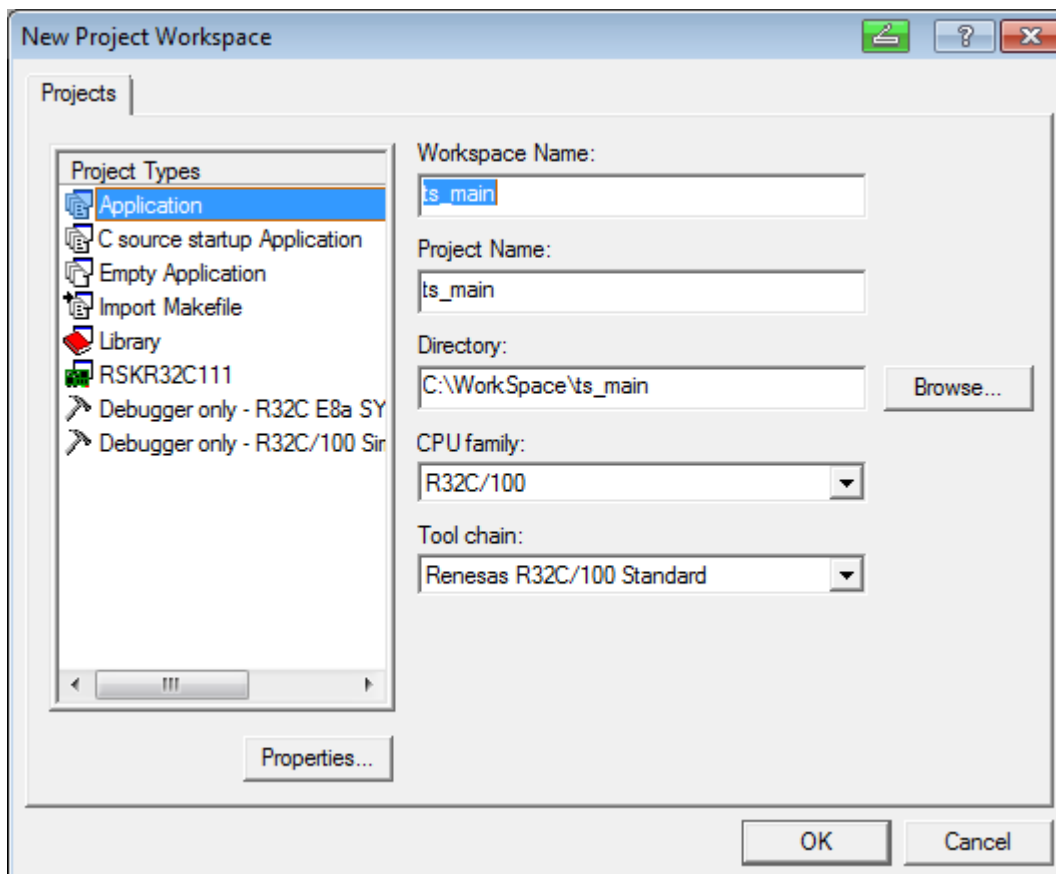
The template script may need to be adjusted for use with the emulator or for different CPU settings than those described below.

TESSY will connect to an already running instance of the Renesas HEW debugger. In order to prepare HEW for test execution, you need to start a predefined script (available within the TESSY installation; see *Setting the Workspace Batch Script*) which waits for the above mentioned test execution scripts to be created within the TESSY test area.

Refer to the *Troubleshooting* section below in case of problems.

## 3 HEW Workspace Setup

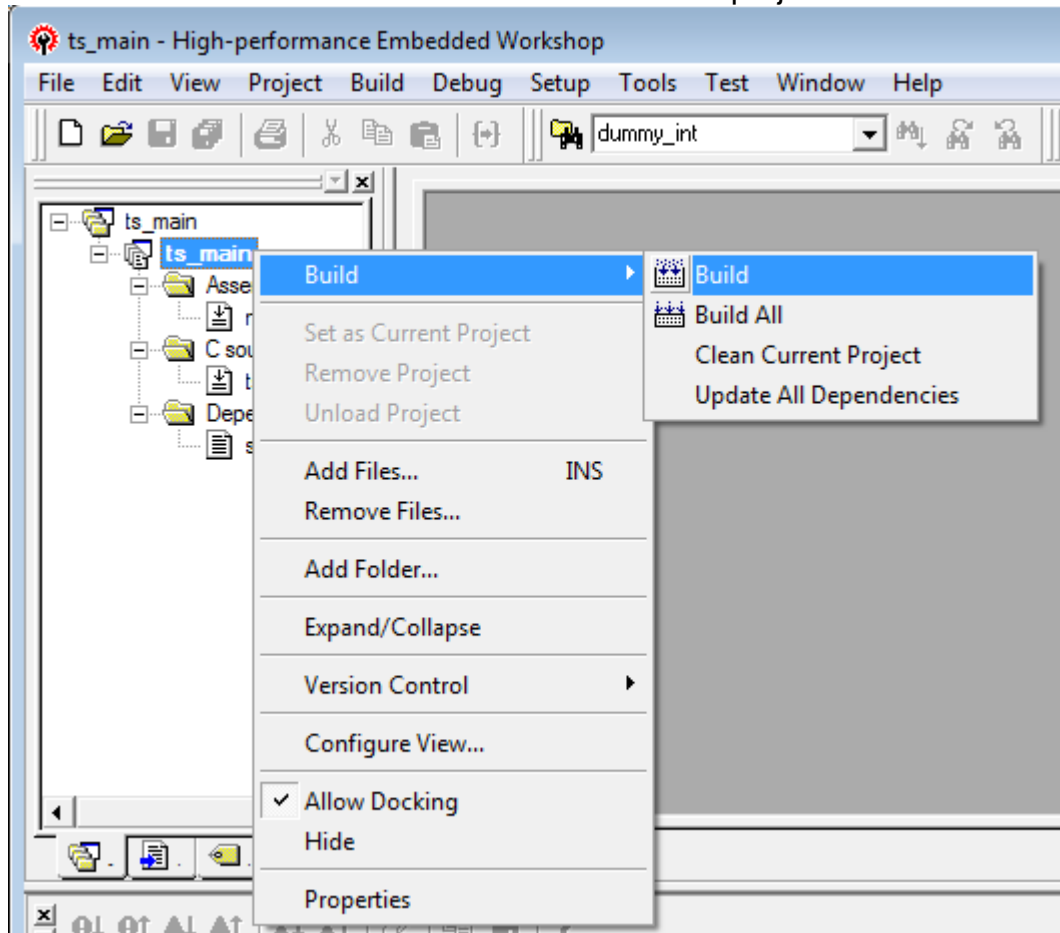
It is required to create a new HEW workspace with the name “ts\_main” in order to execute tests with TESSY. This is most important and cannot be altered! The workspace may be saved somewhere on your hard disk. Choose **New Workspace** from the **File** menu and enter the following data into the dialog:



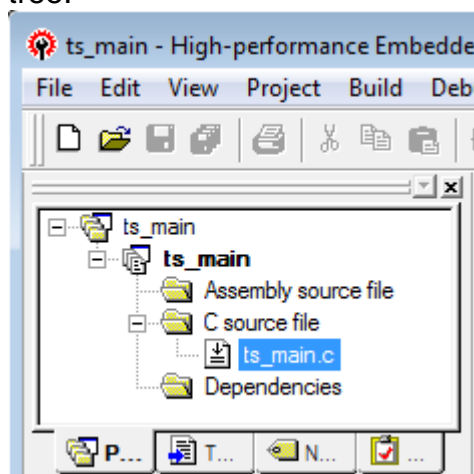
After pressing the OK button, you will be guided through the project creation wizard of HEW. Please refer to the HEW documentation for details about the necessary settings. Follow the instructions of the wizard until the project and workspace settings are complete.

The new workspace and project will be opened.

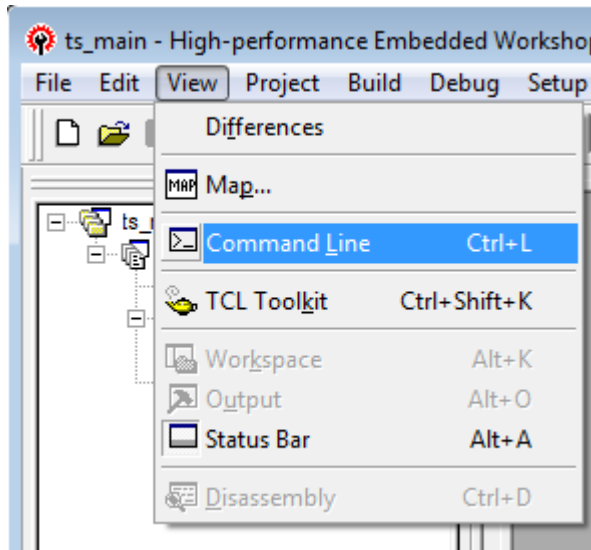
- Please choose **Build** from the context menu of the project.



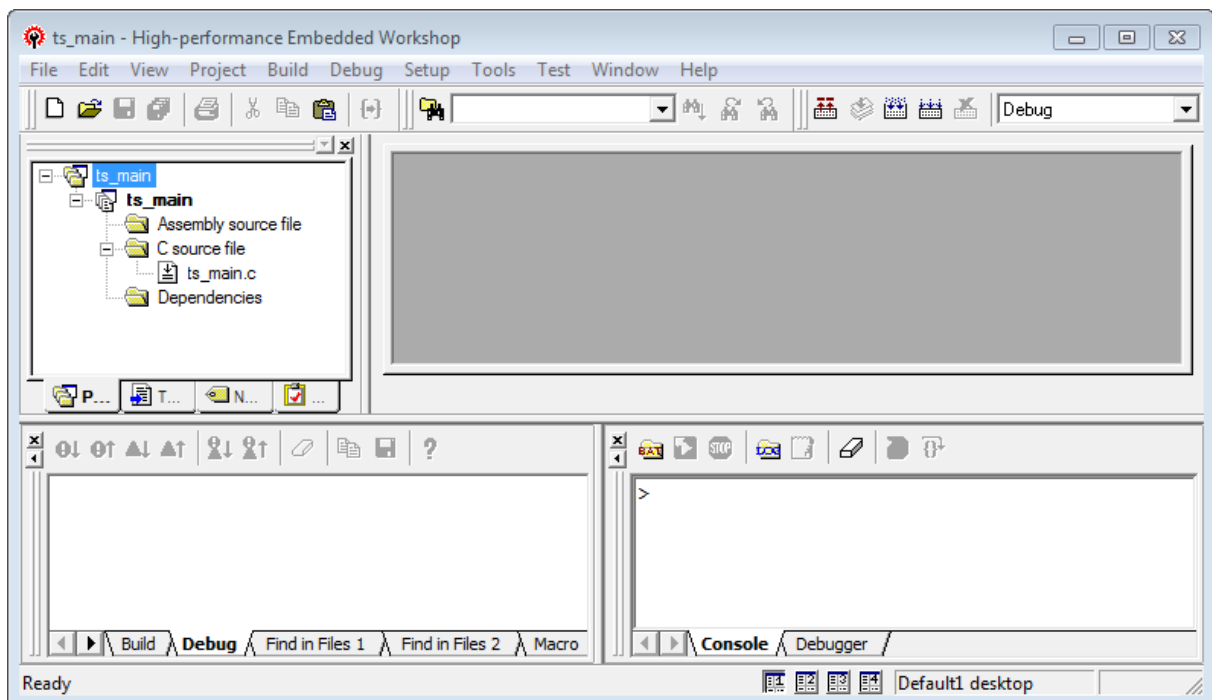
- After the build process has finished, remove all unnecessary files from the project: Leave only “**ts\_main.c**” and remove all other files from the project tree.



- Now open the **Command Line** view by selecting “Command Line” from the **View** menu.



After these actions the workspace and project should look similar to the following:



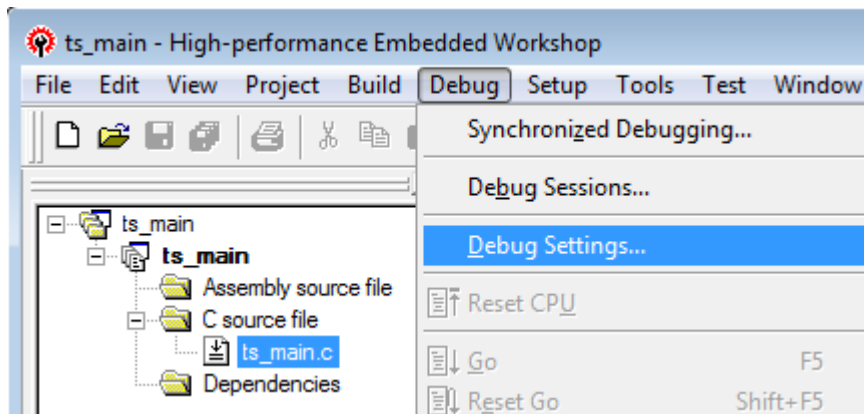
There are still a number of settings which have to be completed before starting the test runs with TESSY:

- debug settings
- memory mapping (for Renesas SH)
- setting the workspace batch script

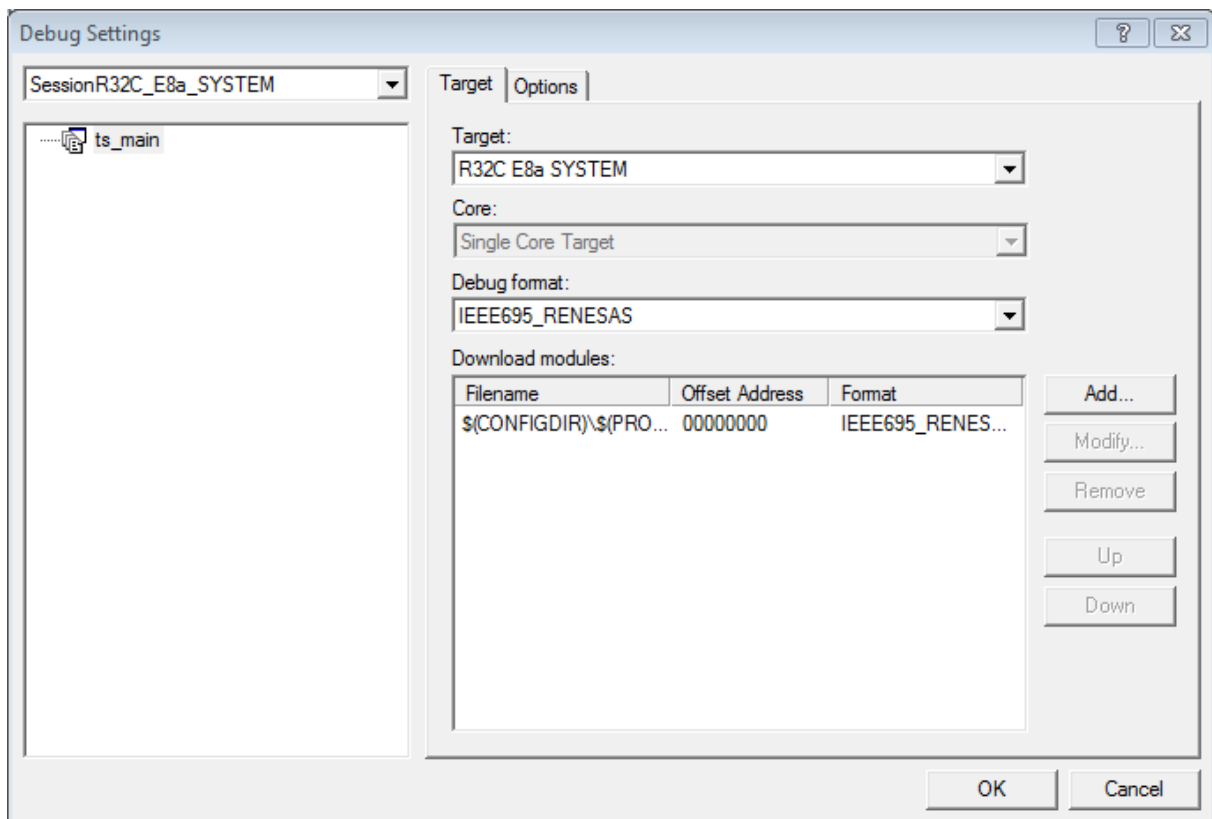
After completing these steps as described in the following chapters save the workspace. It is now ready for executing TESSY test runs.

### 3.1 Debug Settings

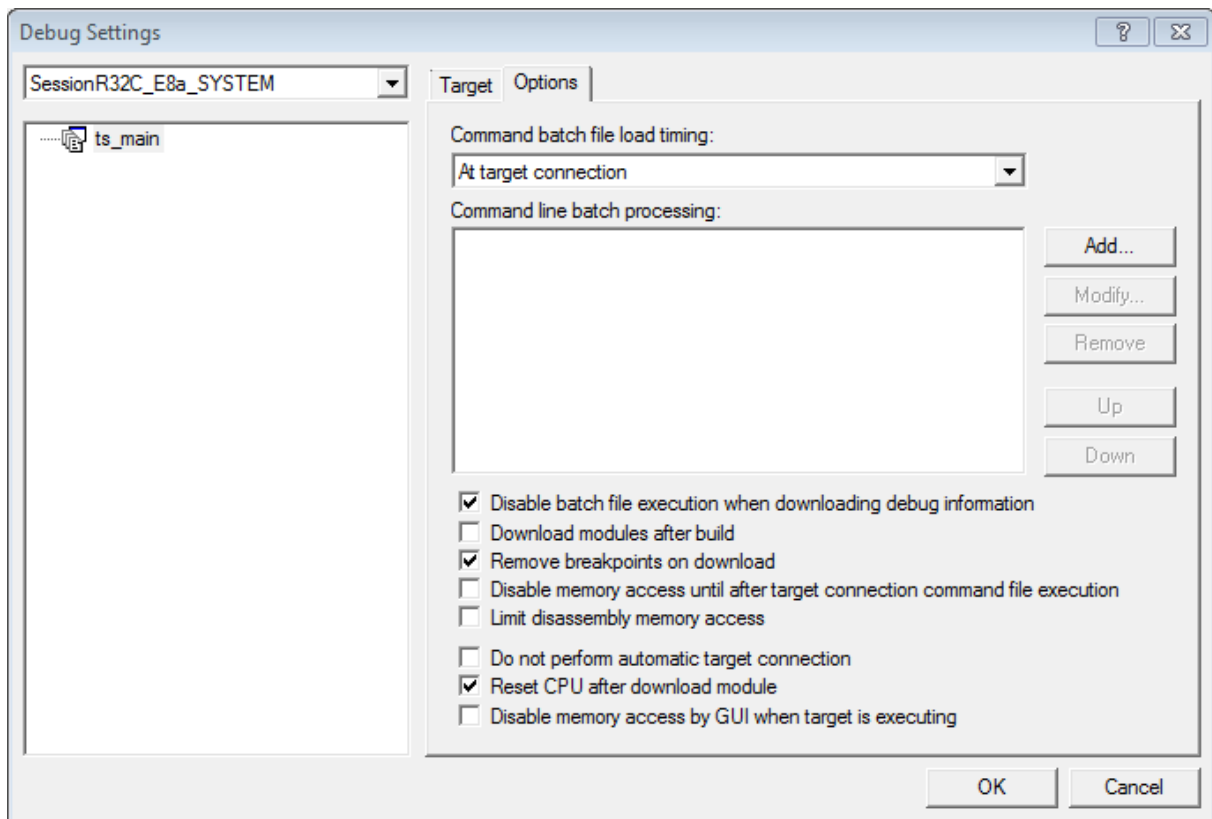
Choose **Debug Settings** from the **Debug** menu to open the Debug Settings dialog.



Fill in the debug settings as shown below (Use the **Add...** button to select the binary file `ts_main.abs` within the workspace directory):



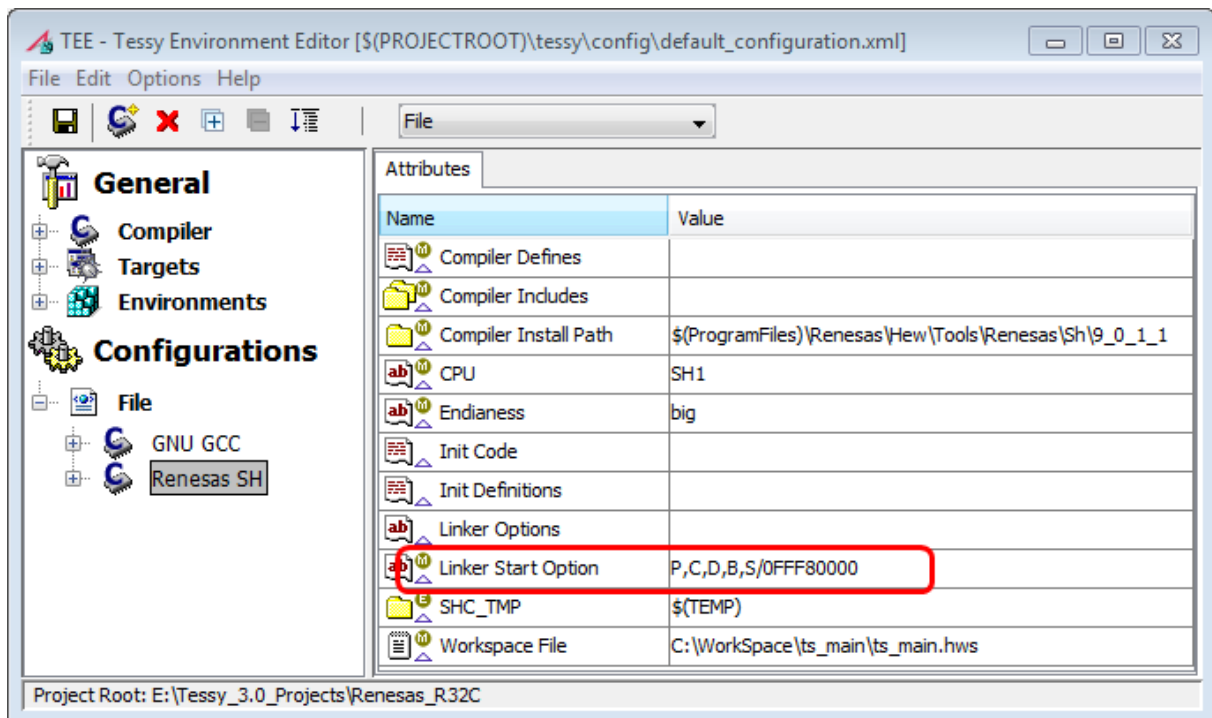
Make sure the toggle buttons from the options tab of the Debug Settings dialog look like this.



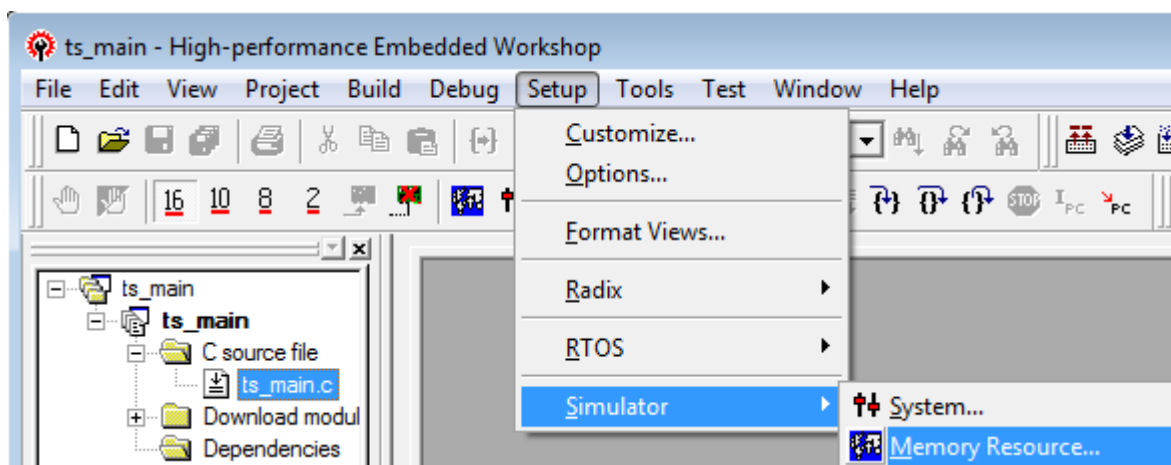
After pressing the OK button, a warning dialog and probably some more dialogs will appear. Just confirm these dialogs to proceed.

### 3.2 Memory Mapping for Renesas SH

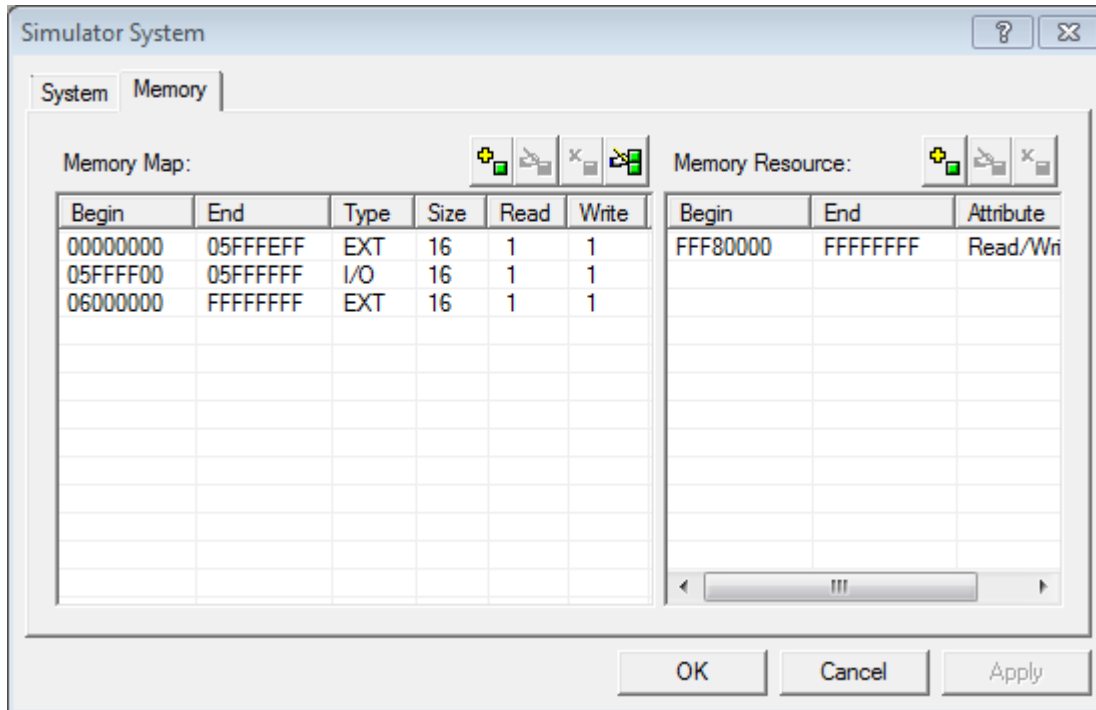
For the Renesas SH CPU you will have to perform the following setup. Choose the memory mapping within HEW according to the settings within the TESSY Environment Editor. The default TESSY settings are as follows (Start of RAM at 0xFFFF80000):



Choose **Simulator->Memory Resource...** from the **Setup** menu of HEW as shown below:



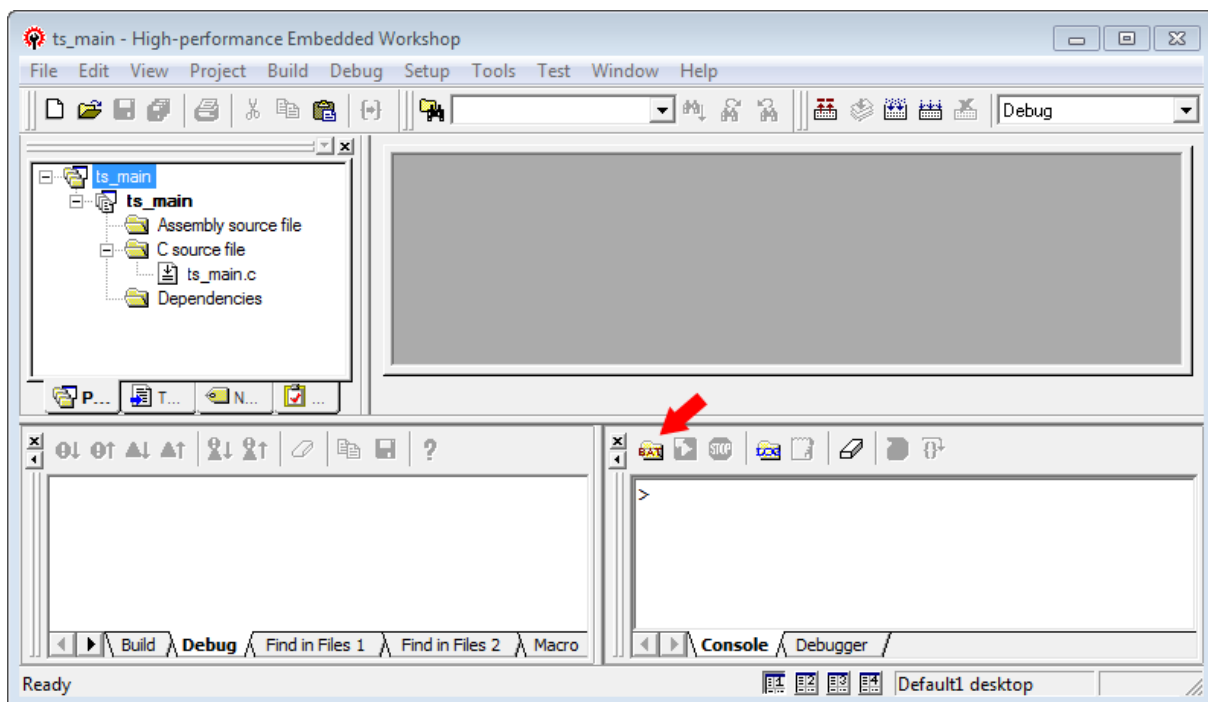
A valid memory map for HEW simulator would look like the following:



Adjust these memory settings according to your needs. Don't forget to change the memory settings within the Environment Editor of TESSY accordingly!

### 3.3 Setting the Workspace Batch Script

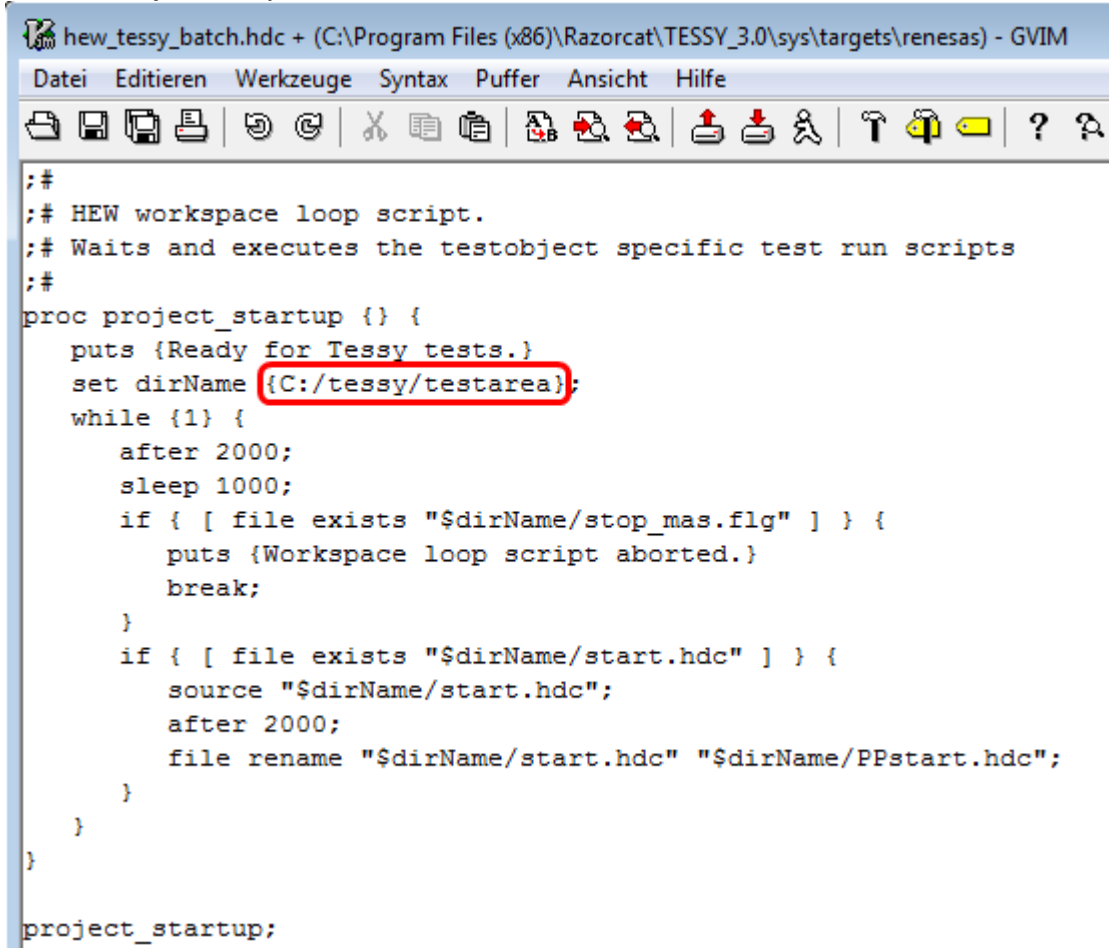
Click the **Batch File** icon within the HEW **Command Line** view:



Select the HEW batch script from your TESSY installation directory:

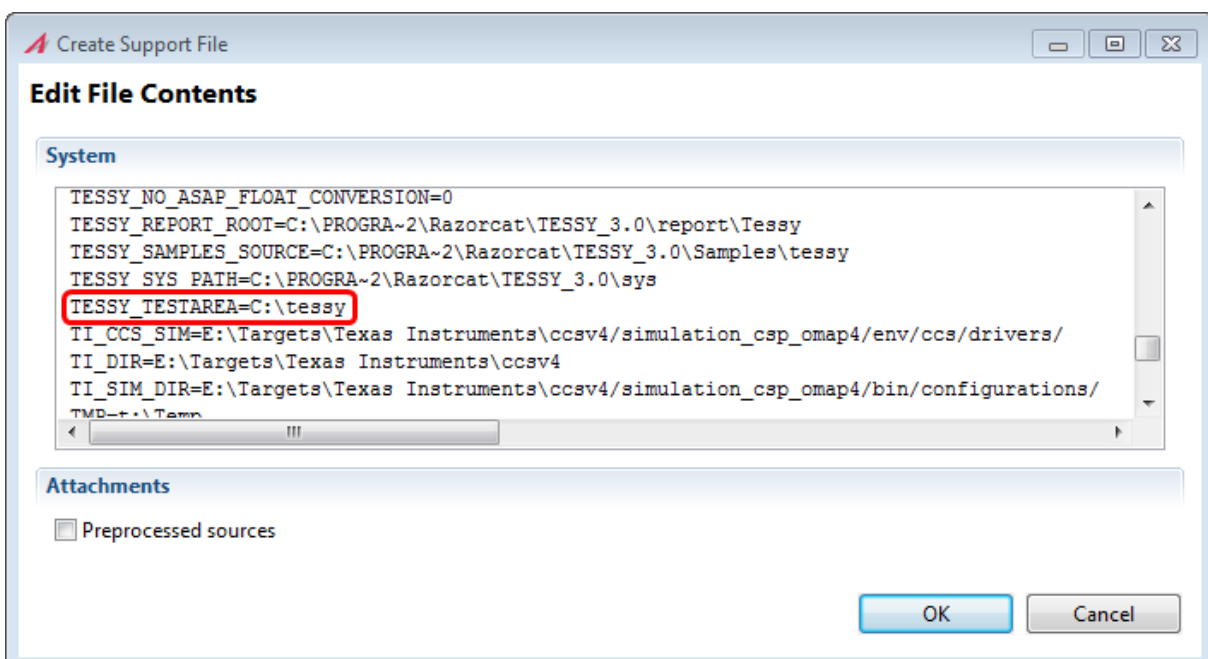
TESSY\_INSTALL\_PATH\sys\targets\renesas\hew\_tessy\_batch.hdc

Make sure the TESSY test area path contained in the script is correct. If not, you will have to adjust the path.

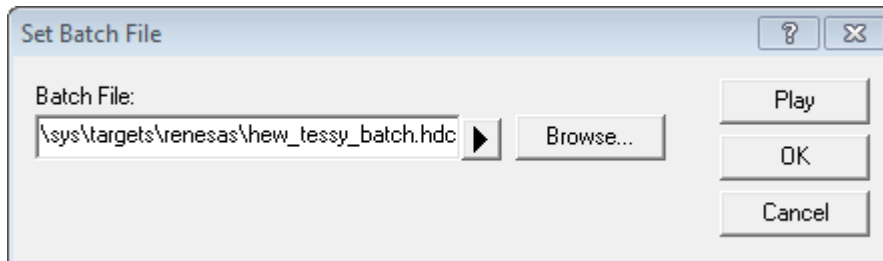


```

hew_tessy_batch.hdc + (C:\Program Files (x86)\Razorcat\TESSY_3.0\sys\targets\renesas) - GVIM
Datei Editieren Werkzeuge Syntax Puffer Ansicht Hilfe
;#
;# HEW workspace loop script.
;# Waits and executes the testobject specific test run scripts
;#
proc project_startup {} {
  puts {Ready for Tessy tests.}
  set dirName {C:/tessy/testarea};
  while {1} {
    after 2000;
    sleep 1000;
    if { [ file exists "$dirName/stop_mas.flg" ] } {
      puts {Workspace loop script aborted.}
      break;
    }
    if { [ file exists "$dirName/start.hdc" ] } {
      source "$dirName/start.hdc";
      after 2000;
      file rename "$dirName/start.hdc" "$dirName/PPstart.hdc";
    }
  }
}
project_startup;
  
```



The default value is C:/tessy/testarea. You can gain the current test area path from the **Create Support File** dialog (Help->Create Support File...). Add "/testarea" to the path given in variable TESSY\_TESTAREA as shown above.

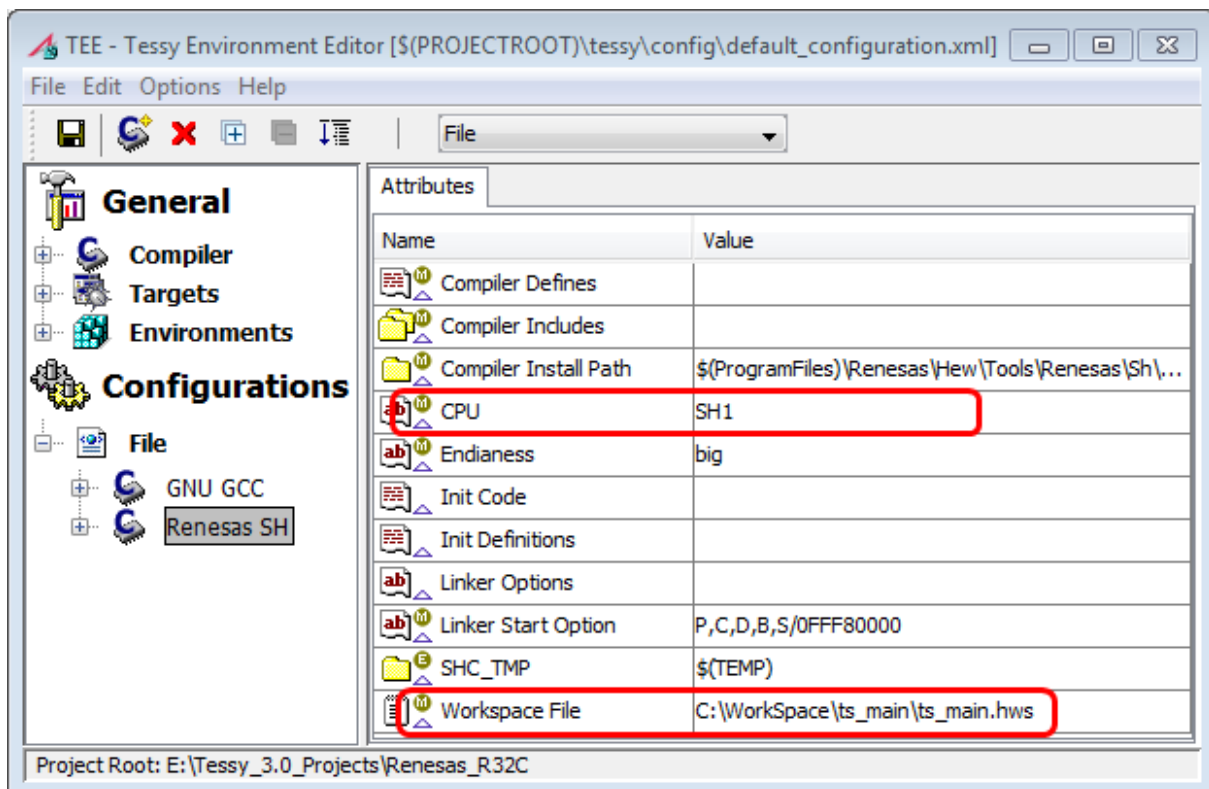


Click 'OK' to save the selection. Now, close and save the whole workspace to keep all settings. Start HEW again. You may now press the **Play** button within the **Command Line** view to prepare HEW for test execution with TESSY.

## 4 Specify the Workspace within the TEE

The TEE attribute **Workspace File** has to point to the HEW workspace file you have just set up.

*Please make sure, that for the Renesas SH the **CPU** attribute matches the CPU you selected during workspace creation.*



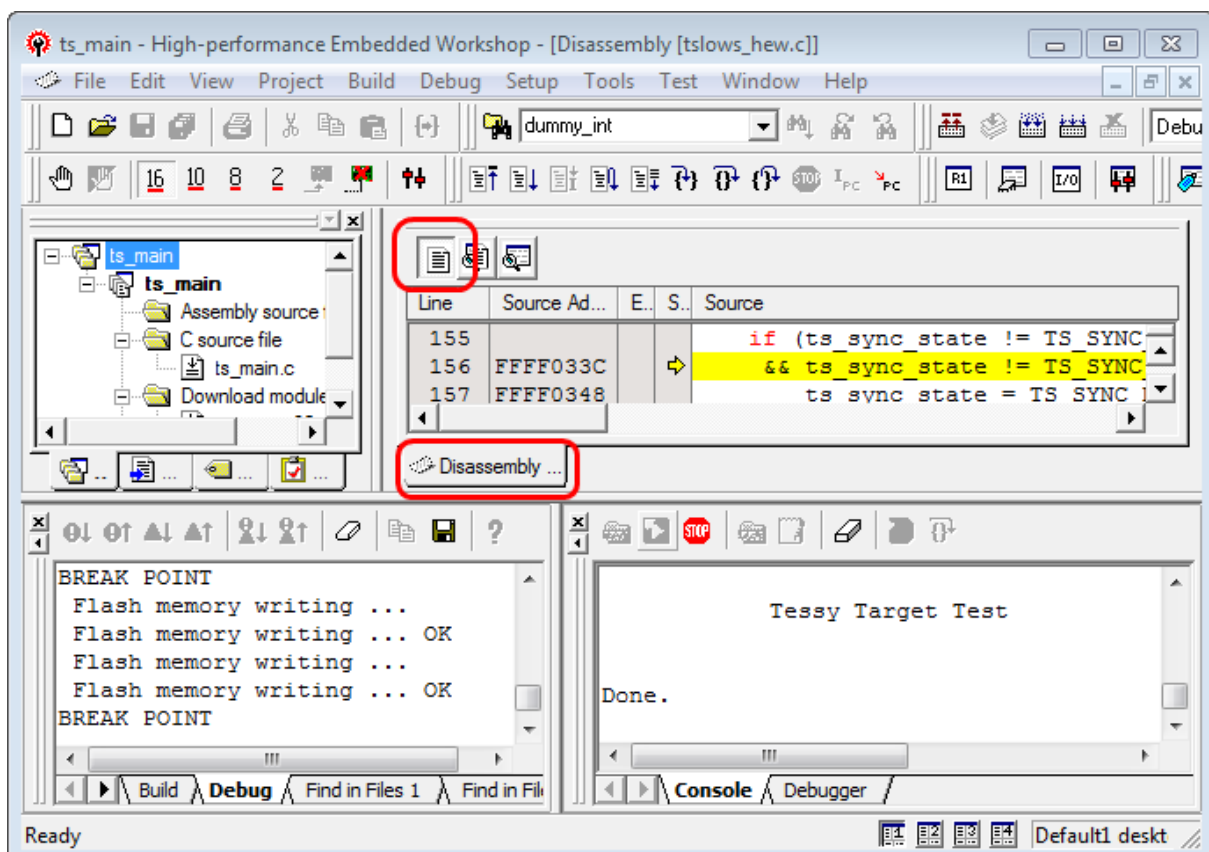
If you need to use different workspaces for different CPUs or different targets (i.e. simulator vs. emulator) copy the existing TEE file configuration and change it to your preferred settings within the TEE.

## 5 Preparing HEW for Test Execution

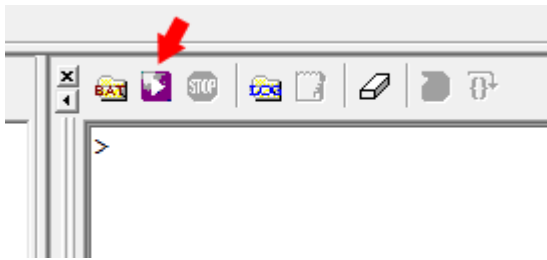
An instance of HEW need to be started and an appropriate workspace need to be loaded when working with TESSY. Refer to the above chapters for details about the required HEW workspace settings.

**Please note:** Some window layout settings are recommended to avoid problems when running tests with different test objects subsequently. This is also important when running batch tests in order to avoid HEW confirmation dialogs.

The screen below shows the recommended layout of the source windows: The **Disassembly** window should be the only open window and the display mode should be switched to **Source** (not Assembler).

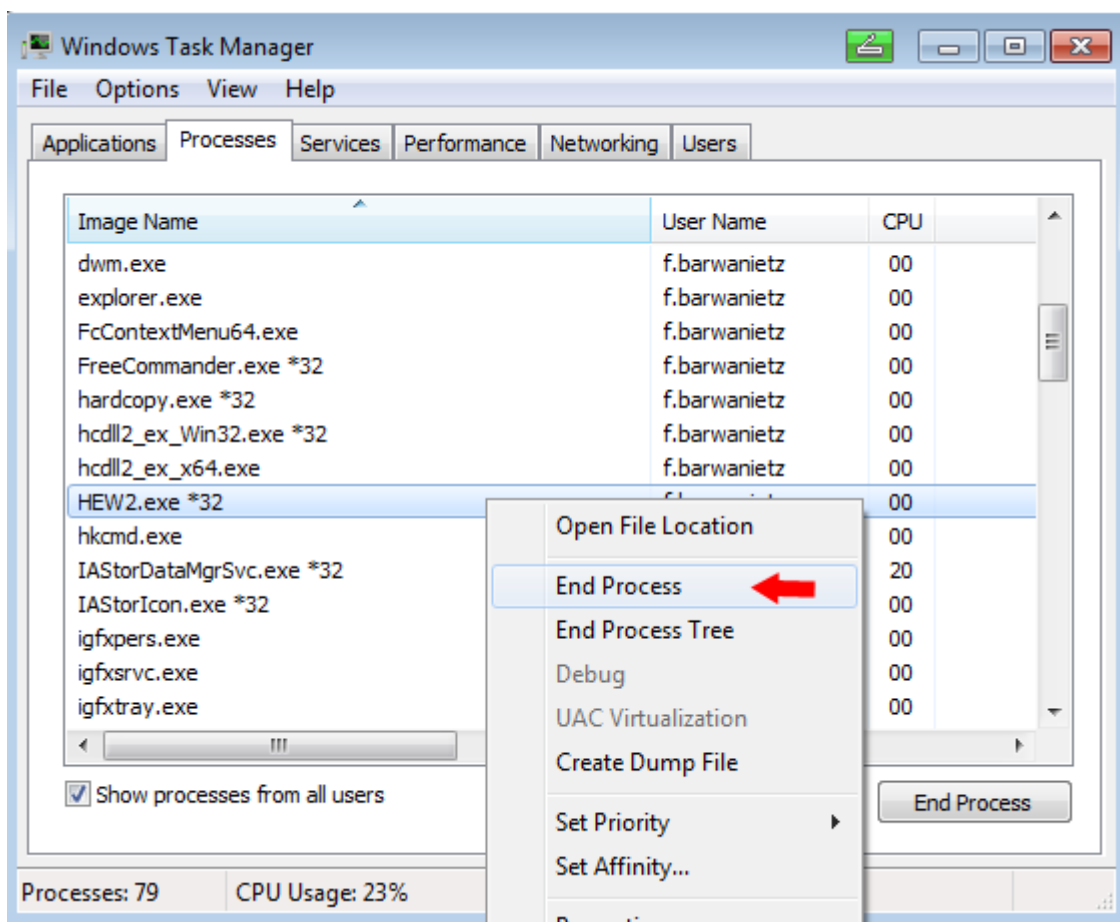


You need to start the HEW main loop script using the **Play** button within the **Command Line** view as shown below:



While the script is running, HEW will execute new test execution scripts when they become available within the TESSY test area. The main loop script will run endlessly until you stop the test execution from within TESSY or if you quit HEW.

**Please note:** Stopping the main loop script is sometimes not possible within HEW. Pressing the stop button may not work. You may try to disconnect the target or you may even need to shutdown HEW using the task manager.



In case of any error messages within the **Command Line** view of HEW, please refer to the Troubleshooting section below.

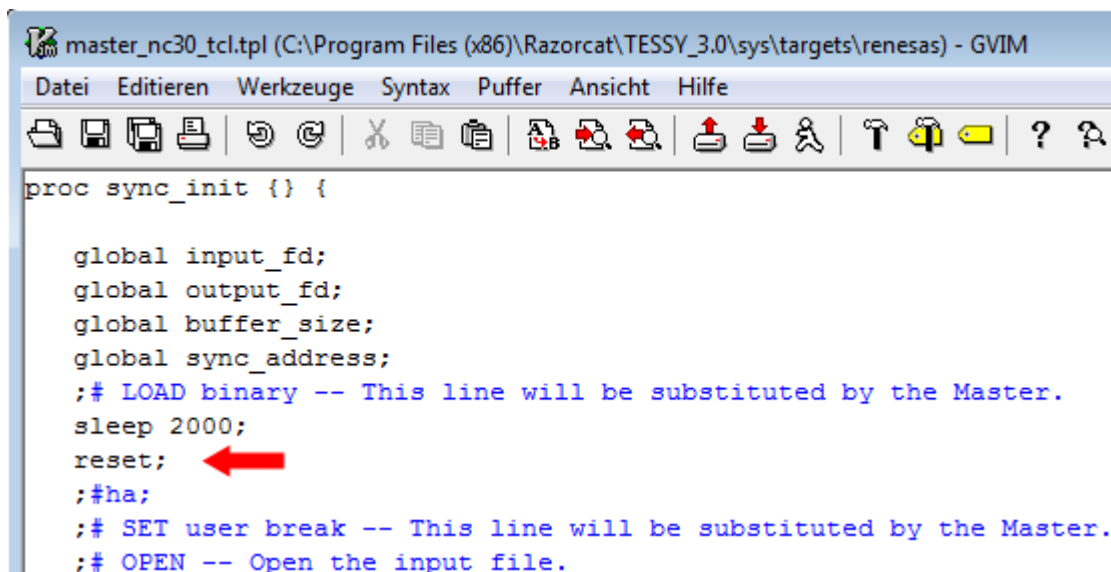
## 6 Troubleshooting

### 6.1 Master Script Template Adjustments

If the master script fails with error messages or the test execution stops at function `tslows_sync()`, this may require some adjustments to the master script template.

#### 6.1.1 Reset command failed

The following part of the master script template is the source where the reset or halt command may fail:



```

proc sync_init {} {

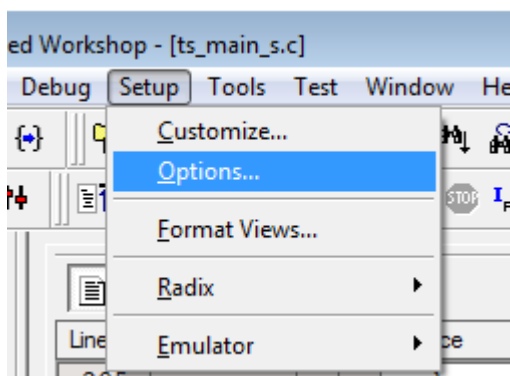
    global input_fd;
    global output_fd;
    global buffer_size;
    global sync_address;
    ;# LOAD binary -- This line will be substituted by the Master.
    sleep 2000;
    reset;
    ;#ha;
    ;# SET user break -- This line will be substituted by the Master.
    ;# OPEN -- Open the input file.
  }

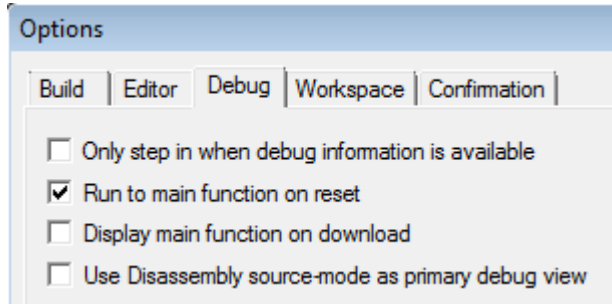
```

Either the reset may fail due to nothing possible to be reset or the halt may fail due to the fact that the processor is already in halt state. It depends on

- whether you are using the simulator or emulator with hardware connected
- the HEW options settings

If you are using the simulator only, you may probably just omit the reset. Please review the options from the **Setup** menu according to the following settings:

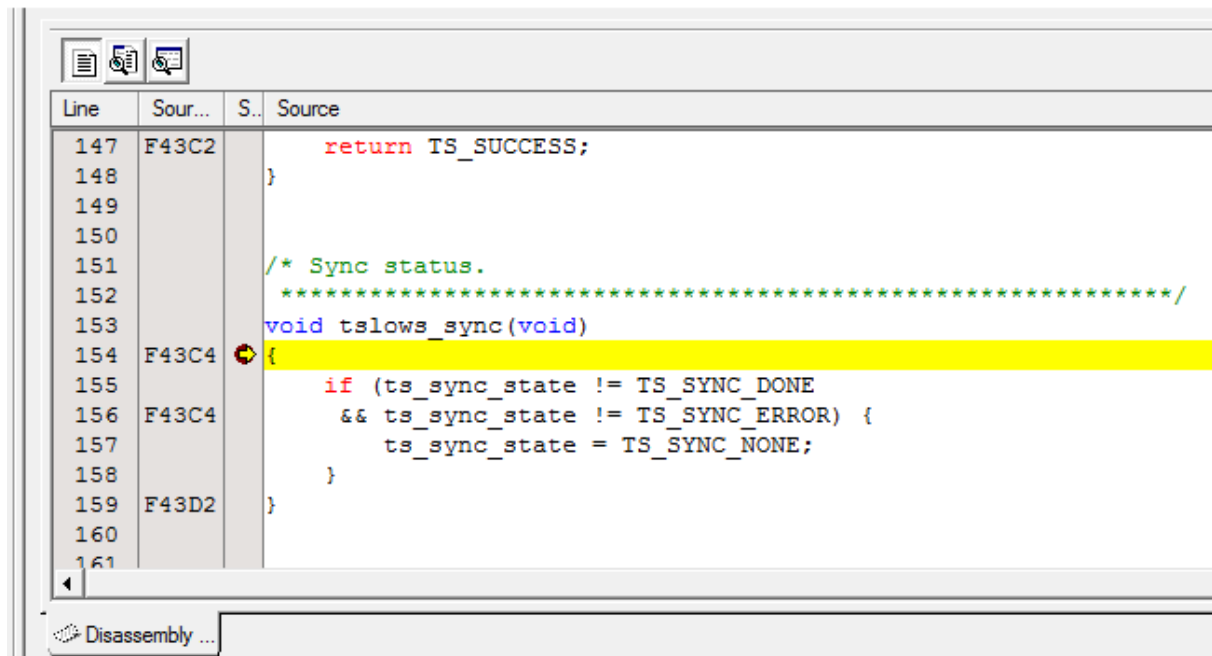




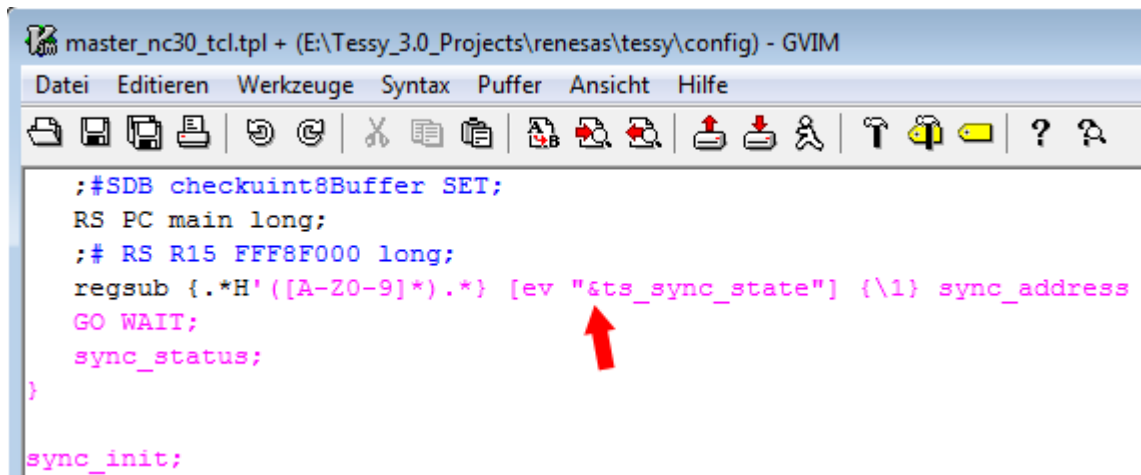
With these settings, the reset command should work correctly on the simulator.

### 6.1.2 Process stops at tslows\_sync()

If the process stops at function `tslows_sync()` as shown below, please try to include



or remove the ampersand before the `ts_sync_state` variable from the master script template as shown below.



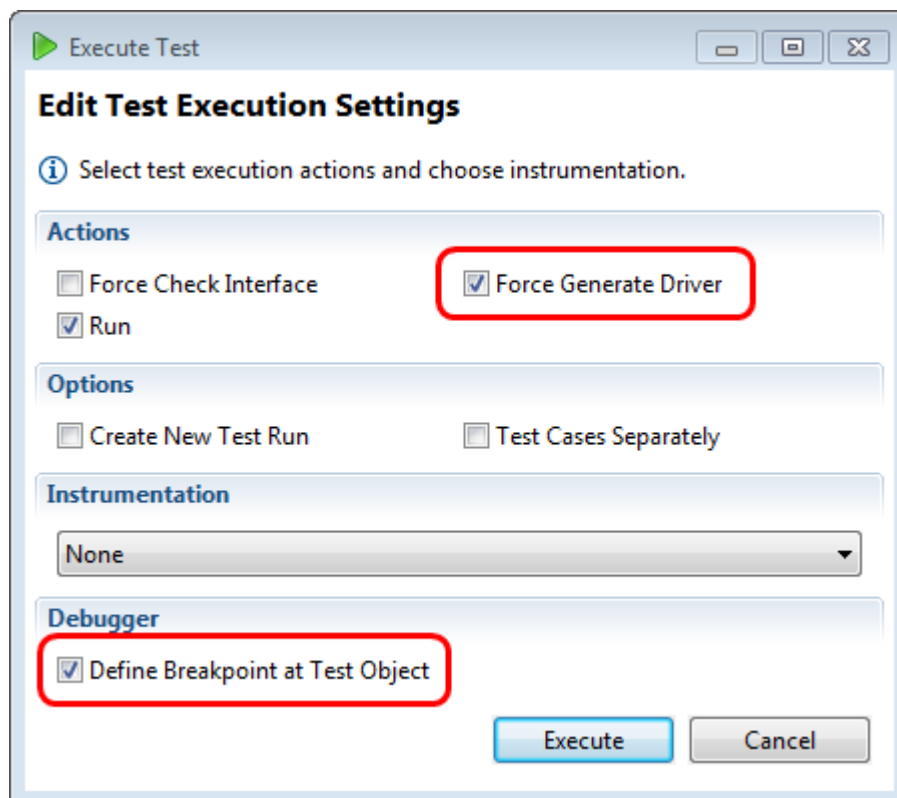
## 6.2 Static Test Objects

It is not possible to debug static test objects interactively, because HEW fails to set the breakpoint for static functions. This results to an error message within the HEW **Command Line** view.

## 6.3 Source File Display Problems

If you want to debug within HEW and HEW complains about source files that are out of date or prompts you for selection of the source file, you need to rebuild the test driver and start the test again.

When you start a test run within TESSY using the **Define Breakpoint at Test Object** option as shown below, make sure that the **Force Generate Driver** option is also selected.



## 6.4 Workspace Loop Script aborted

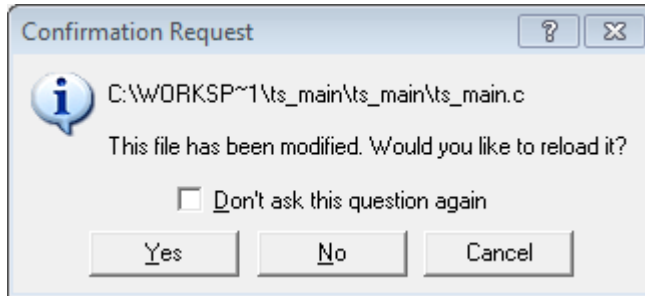
If the workspace loop script terminates right after starting it within HEW, there are probably some files left within the TESSY test area from previous test runs. In this case, remove the files within the "testarea" directory, e.g.

```
C:\TESSY\testarea
```

If this directory is empty, the workspace loop script should not terminate.

### 6.5 Reload Source File Dialog appears

If the source window within HEW shows the `ts_main.c` or some other source file, you may get a dialog asking for reload of the source file similar to the one shown below:



You may just confirm this dialog, if you run the tests interactively. The problem is that this dialog will block any further test execution which would block a running batch test script. If you want to run batch tests, please refer to the chapter **Preparing HEW for Test Execution** of this document.