HALCoGen-CSP Without LDRA

ABSTRACT

The HALCoGen Compliance Support Package (CSP) was developed to provide documentation, reports and unit test capability to assist customers using HALCoGen generated software to comply with functional safety standards such as IEC 61508 and ISO 26262. HALCoGen-CSP 04.07.01 is available in 10 variants supporting TMS570LC43x, TMS570LS31x_21x, TMS570LS12x_11x, TMS570LS09x_07x, TMS570LS04x_03x, TMS570LC43x, TMS570LS09x_07x, RM57x, RM48x, RM46x, RM44x and RM42x family of devices. Customers can choose and purchase the package for the device family used in their product development.

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Trademarks

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1 Introduction

The HALCoGen-CSP features unit level and functional test cases developed by TI and can be run using the included Test Automation Unit (TAU), which utilizes the LDRAUnit from LDRA. The HALCoGen-CSP also provides infrastructure for the customers to add their own test cases using Test XLS template and HALCoGen TAU. For more information, see the *HALCoGen-CSP User's Guide*.

2 New In This Release

The HALCoGen-CSP 04.07.01 is a Full version released to customers that contains necessary Documentation, Reports, Test cases and the HALCoGen Test Automation Unit tool. LDRA Unit is not provided as part of the CSP download. To re-run the unit tests using the included Test automation unit software, customers are required to purchase and install LDRA Unit software from LDRA. For more information, see the *HALCoGen-CSP User's Guide*.

3 System Requirements

The system requirements for HALCoGen CSP are as follows:

- Operating Systems – Windows® Windows OS version 7 or higher
- Memory – 1GB
- Disk Space – 750 MB

4   Installing HALCoGen-CSP

The latest HALCoGen-CSP version can be downloaded from the following URL:
http://www.ti.com/tool/safeti-halcogen-csp.

The package gets installed by default into the directory c:\ti\Hercules\SafeTI-HALCoGen-CSP\<Device_Family>vXX.YY.ZZ.

5   Uninstall HALCoGen-CSP

The HALCoGen-CSP can be uninstalled one version at a time.

All Programs → Texas Instruments → Hercules → SafeTI-HALCoGen-CSP → <Device_Family>vXX.YY.ZZ → uninstall.

6   Release Contents

HALCoGen-CSP version 04.07.01 contains following:

- Software Requirement Document
- Software Architecture Document
- Software Safety Manual
- Dynamic Coverage Analysis Report
  - Statement Coverage
  - Branch Coverage
  - MC/DC Coverage
- Test Manager report
  - Quality Review Report - HIS Metrics
  - Code Review Report - MISRA C
  - Regression Report
- Test results reports
- Traceability report
- Test Automation Unit (TAU)
  - Graphical User Interface (GUI) to choose and Run the Test in the user's environment on target hardware
  - User Guide
  - Unit level and Functional test cases

7   Fixed In This Release

None

8   Known Issues and Limitations

1.   **ADC_UT test case file contains incorrect read back values.**

Issue Details   In the ADC_UT test case file, for adcInit and adc1GetConfigValue, the read back values of registers adcREG1->EVSAMP and config_reg1.CONFIG_G0SAMP are compared to ADC1_G1SAMP_CONFIGVALUE and not to ADC1_G0SAMP_CONFIGVALUE, which causes these test cases to fail. This applies to ADC2 as well.

Devices   All device platforms.

Workaround

1. Update the ADC1_UT.xlsx file in the Testcases folder with ADC1_G0SAMP_CONFIGVALUE for both adcREG1->EVSAMP and config_reg1.CONFIG_G0SAMP for adcInit and adc1GetConfigValue.
2. Update ADC2_UT.xlsx file with ADC2_G0SAMP_CONFIGVALUE for both adcREG2->EVSAMP and config_reg2.CONFIG_G0SAMP for adcInit and adc2GetConfigValue.

Refer to the updated ADC1_UT.xlsx file from here http://www.ti.com/tool/safeti-halcogen-csp

2.   **ESM_UT test case file contains invalid register checks.**

Issue Details   The ESTATUS5EMU register was removed in HALCoGen v04.07.00 as per the latest TRM.

Devices   All device platforms.

Workaround   Refer to the updated ESM_UT.xlsx file from here : http://www.ti.com/tool/safeti-halcogen-csp

3.   **startup_test.c file is missing for EMIF Unit test which causes the test execution to halt.**

Issue Details   This file is not available in the initial release of the CSP package. In the older versions of HALCoGen, EMIF init was not a part of startup code and this file was not needed. This was then moved to the startup code as part of a bug fix in the later version and the test case was modified to have a separate startup code for EMIF Unit test only.

Devices   All device platforms.

Workaround   This file can be downloaded from here :http://www.ti.com/tool/safeti-halcogen-csp.

4.   **PMM_UT_02:2, PMM_UT_04:2 and PMM_UT_06:1 tests are to be removed.**

Issue Details   As per the errata DEVICE#B053, CPU code execution could be halted on a device warm reset if the core power domain #2 is disabled by software.

Devices   All device platforms.

Workaround   Please remove the following test cases by unchecking them from the GUI:
1. PMM_UT_02:2 - Unit test for pmmTurnOFFLogicPowerDomain to power down PD2
2. PMM_UT_04:2 - Unit test for pmmTurnONLogicPowerDomain to power down PD2
3. PMM_UT_06:2 - Unit test for pmmISLogicPowerDomainActive to check status of PD2

5.	***Update the compiler version in Create_Make_file_HCG.pl***

Issue Details   Currently, this script is set to detect compiler version 5.x.x. If higher compiler versions are used, the test execution gets terminated with a compile error.

Devices   All Device platforms.

Workaround   In the Create_Make_file_HCG.pl file present in the path *CSP_Install_Directory\HALCoGen\HALCoGenTAU\Scripts*, at line 176 if($CG_TOOL_ROOT=~/5\./) change the value **5** to the compiler version being used.

For example, if user wants to use compiler version 18.x.x, modify the above mentioned line to if($CG_TOOL_ROOT=~/18\./)

6.	***Uncovered APIs in HALCoGen CSP***

Issue Details   There are 6 APIs for which test cases are not added. These APIs do not have coverage in the consolidated code coverage report and are verified by inspection.

Devices   TMS570LC43x and RM57Lx

Workaround   None.

9   User Notes

HALCoGenTAU is compatible with HALCoGen version 4.02.00 or greater. Some of the test cases will not execute with HALCoGen versions prior to v4.02.00. Test cases must be unchecked that are not applicable with HALCoGen versions prior to v4.02.00 before executing.

10   References

- Texas Instruments: *HALCoGen-CSP User's Guide*

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