

# 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.

## Contents

1	Introduction .....	1
2	New In This Release .....	1
3	System Requirements .....	1
4	Installing HALCoGen-CSP .....	2
5	Uninstall HALCoGen-CSP .....	2
6	Release Contents .....	2
7	Fixed In This Release .....	2
8	Known Issues and Limitations .....	3
9	User Notes .....	4
10	References .....	4

## Trademarks

Windows is a registered trademark of Microsoft Corporation in the United States and other countries. All other trademarks are the property of their respective owners.

## 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-halcodegen-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 adclnit 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 adclnit and adc1GetConfigValue.
2. Update ADC2\_UT.xlsx file with ADC2\_G0SAMP\_CONFIGVALUE for both adcREG2->EVSAMP and config\_reg2.CONFIG\_G0SAMP for adclnit 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***


---

<b>Issue Details</b>	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.
<b>Devices</b>	All Device platforms.
<b>Workaround</b>	In the Create_Make_file_HCG.pl file present in the path <i>CSP_Install_Directory\HALCoGen\HALCoGenTAU\Scripts</i> , at line 176 <code>if(\$CG_TOOL_ROOT=~\5\.)</code> change the value <b>5</b> to the compiler version being used.  For example, if user wants to use compiler version 18.x.x, modify the above mentioned line to <code>if(\$CG_TOOL_ROOT=~\18\.)</code>

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


---

<b>Issue Details</b>	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.
<b>Devices</b>	TMS570LC43x and RM57Lx
<b>Workaround</b>	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](#)

## IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale ([www.ti.com/legal/termsofsale.html](http://www.ti.com/legal/termsofsale.html)) or other applicable terms available either on [ti.com](http://ti.com) or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2020, Texas Instruments Incorporated