

# TMS320C6455 Chip Support Library (CSL)

Version 3.00.10.02

## Release Notes

06 September 2006

This release of CSL for TMS320C6455 contains peripheral programming (functional and register level) APIs for C6455 modules. The list of modules supported in this release is listed in later sections. This set of APIs provides peripheral abstraction that can be used by higher layers of software.

This release includes:

- Compiled library of supported CSL modules.
- Interrupt Controller (INTC) module
- API reference guides.
- Archived sources and build scripts.

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## TABLE OF CONTENTS

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|   |                              |    |
|---|------------------------------|----|
| 1 | System Requirements .....    | 3  |
| 2 | Purpose of this Release..... | 3  |
| 3 | Release Contents .....       | 4  |
| 4 | General information.....     | 6  |
| 5 | Fixed in this release.....   | 13 |
| 6 | Known Issues .....           | 20 |
| 7 | Open Issues .....            | 22 |

## Release notes for TMS320C6455 CSL Version 3.00.10.02

### 1 System Requirements

- ✓ This version of CSL has been compiled with TI Codegen tools in Code Composer Studio version 3.3.13.2, Codegen compiler version v6.0.5, and Spectrum Digital Emulation driver for CCS 3.3.
- ✓ Compiler options used:
  - -mv6400+ -al -k

### 2 Purpose of this Release

This release is bug fix patch release. This also contains fixes for the bugs migrated from C6486 and C6488.

### 3 Release Contents

This release of CSL for TMS320C6455 contains functional and registers level APIs for modules listed in the table below to program the peripherals. This set of APIs provides peripheral abstraction that can be used by higher layers of software.

| MODULE         | EXAMPLE PROVIDED | EXAMPLE TEST RESULTS ON EVM | REMARKS  |
|----------------|------------------|-----------------------------|--|
| <i>DAT</i>     | YES              | PASS                        | Only the register layer is provided.   |
| <i>DDR2</i>    | YES              | PASS                        |  |
| <i>DEV</i>     | NO               | NA                          |  |
| <i>EDMA</i>    | YES              | PASS                        |  |
| <i>EMAC</i>    | NO               | NA                          |  |
| <i>EMIFA</i>   | YES              | NA                          |  |
| <i>GPIO</i>    | YES              | PASS                        |  |
| <i>HPI</i>     | YES              | PASS                        |  |
| <i>I2C</i>     | YES              | PASS                        |  |
| <i>INTC</i>    | YES              | PASS                        |  |
|                |                  |                             | <ol style="list-style-type: none"> <li>1. Example for INTC module is available only in csl_c64xplus_intc package.</li> <li>2. INTC module is available as separate library, and should generally not be used with an embedded operating system with interrupt controller support, such as DSP/BIOS. Please refer to the API Reference Guide for more information on the INTC module.</li> <li>3. Modules using INTC should use "csl_c64xplus_intc.lib" (little endian) and "csl_c64xplus_intce.lib" (big endian).</li> </ol> |
| <i>McBSP</i>   | YES              | PASS                        | Only the register layer is provided.   |
| <i>MDIO</i>    | NO               | NA                          |  |
| <i>PCI</i>     | NO               | NA                          | Only the register layer is provided.   |
| <i>PLLC</i>    | YES              | PASS                        |  |
| <i>SRIO</i>    | YES              | PASS                        |  |
| <i>TCP2</i>    | YES              | PASS                        |  |
| <i>TIMER</i>   | YES              | PASS                        |  |
| <i>UTOPIA2</i> | YES              | NA                          |  |
| <i>VCP2</i>    | YES              | PASS                        |  |
| <i>BWMNGMT</i> | YES              | PASS                        |  |

|                |     |      |                                      |
|----------------|-----|------|--------------------------------------|
| <b>CACHE</b>   | YES | PASS | Only the register layer is provided. |
| <b>CFG</b>     | YES | PASS |                                      |
| <b>CHIP</b>    | YES | PASS |                                      |
| <b>ECTL</b>    | NO  | NA   |                                      |
| <b>IDMA</b>    | YES | PASS |                                      |
| <b>MEMPROT</b> | YES | PASS |                                      |
| <b>PWRDWN</b>  | YES | PASS |                                      |
| <b>TSC</b>     | YES | PASS |                                      |

## 4 General information

### Installation Information

This contains the API reference guide for the CSL and four directories:

|  | File name                  | Contents  |
|--|----------------------------|---|
| API reference guide                          | C6455_CSL_APIREFERENCE.pdf | C6455 API Reference document  |
| Product directory                            | csl_c6455                  | <ul style="list-style-type: none"> <li>✓ All header files.</li> <li>✓ CSL libraries in big endian and little endian mode.</li> <li>✓ Release example - Each device has its own example folders.</li> </ul>  |
| Interrupt Controller (INTC) module directory | csl_c64xplus_intc          | <ul style="list-style-type: none"> <li>✓ INTC module header files.</li> <li>✓ INTC module library file in big endian and little endian mode.</li> <li>✓ Release examples for INTC.</li> </ul> <p>This module should not be used with an embedded OS with interrupt controller support, such as DSP/BIOS. Please refer to the API Reference Guide for more information on the INTC module.</p> |
| C6455 Source directory                       | csl_c6455_src              | <ul style="list-style-type: none"> <li>✓ All C6455 CSL source files.</li> <li>✓ All header files.</li> <li>✓ Build scripts to build the little endian and big endian libraries</li> </ul>   |
| INTC Source directory                        | csl_c64xplus_intc_src      | <ul style="list-style-type: none"> <li>✓ INTC CSL source files.</li> <li>✓ INTC CSL header files.</li> <li>✓ Build scripts to build the little endian and</li> </ul>  |

|                        |                                    |                         |
|------------------------|------------------------------------|-------------------------|
|                        |                                    | big endian libraries    |
| Release Notes          | Releasenotes_C6455_v3_00_10_02.pdf | √ Releasenotes document |
| API Reference Document | TCI6455_CSL_APIREFERENCE.pdf       | √ API Reference Guide   |

## Installation guidelines

The steps to be followed for installation of the release package are as follows:

1. Download the release zip file.
2. Unzip the files with command "unzip <zip file name>" at the command prompt. Alternatively, use the WinZip wizard to extract the files.

## Build guidelines

### Environmental Variable Settings Required for Building

1. Go to the directory where CCS is installed - i.e. <CCS\_INSTALLATION\_PATH>\ and run the "DosRun.bat" at command prompt.
2. Make sure the path to the gmake executable is in the DOS PATH environment variable.

If gmake path is not set, then path for 'gmake' as below

set path=%path%; <CCS\_INSTALLATION\_PATH>\bios\_5\_30\xdctools\

The steps to be followed to build the C6455 CSL library from the release are as follows:

1. At the command prompt go to the csl\_c6455\_src directory
2. Compile the code with the batch file given. Set the environment variable "CSL3X\_ROOT\_DIR = <folder path>" in your system. Different batch files for creating libraries for the devices are listed below. It will be found in following path csl\_c6455\_src\.
3. To clean the built object files invoke the corresponding batch file with the argument cleanall.

.\build\_c6455.bat cleanall

| Library   | Batch file to be invoked    | Library name   |
|-----------|-----------------------------|----------------|
| C6455 CSL | build_c6455 (little endian) | csl_c6455.lib  |
|           | build_c6455e (big endian)   | csl_c6455e.lib |

The steps to be followed to build the INTC CSL library from the release are as follows:

1. At the command prompt go to the csl\_c64xplus\_intc\_src directory

2. Compile the code with the batch file given. Set the environment variable "CSL3X\_ROOT\_DIR = <folder path>" in your system. Different batch files for creating libraries for the devices are listed below. It will be found in following path csl\_c64xplus\_intc\_src\.
3. To clean the built object files invoke the corresponding batch file with the argument cleanall.

.\build\_c64xplus\_intc.bat cleanall

| Library  | Batch file to be invoked            | Library name           |
|----------|-------------------------------------|------------------------|
| INTC CSL | build_c64xplus_intc (little endian) | csl_c64xplus_intc.lib  |
|          | build_c64xplus_intce (big endian)   | csl_c64xplus_intce.lib |



## Directory structure

The directory structures of TCI6482 package is as shown below:

### Installation Package

```

|_____cs1_c6455
|_____cs1_c6455_src
|_____cs1_c64xplus_intc
|_____cs1_c64xplus_intc_src
|_____Releasenotes_TCI6455_v3_00_10_02.pdf
|_____TCI6455_CSL_APIREFERENCE.pdf

```

The directory structures of C6455 product directory package is as shown below:

### cs1\_c6455

```

|_____example à
|               |_____edma
|               |_____i2c
|               |_____mcbasp
|               |_____ddr2
|               |_____emifa
|               |_____vcp2
|               |_____
|               |_____
|               |_____tcp2
|_____inc      CSL module Header files
|_____lib
|               |_____cs1_c6455.lib (little endian CSL library)
|               |_____cs1_c6455e.lib (big endian CSL library)
|               |_____cs1_c6454.lib (little endian CSL library)
|               |_____cs1_c6454e.lib (big endian CSL library)

```

The directory structure of INTC library release is as shown below:

```
cs1_C64xplus_intc
|
|_____ example          Example for INTC module
|
|_____ inc              INTC module Header files
|
|_____ lib
|           |_____ cs1_c64xplus_intc.lib (little endian INTC CSL library)
|           |_____ cs1_c64xplus_intce.lib (big endian INTC CSL library)
```

The directory structure of C6455 CSL source directory is as shown below:

```
cs1_c6455_src
|
|_____ inc ALL Header files
|
|_____ src
|           |_____ chip
|           |_____ common
|           |_____ edma
|           |_____ .
|           |_____ .
|           |_____ .
|           |_____ mcbasp
|
|_____ build_c6455_bc.bat (to build little endian library)
|_____ build_c6455e_bc.bat (to build big endian library)
|_____ Makefile
|_____ Makefile.inc
|_____ cs1_c6455.lib (little endian CSL library)
|_____ cs1_c6455e.lib (big endian CSL library)
|_____ cs1_c6454.lib (little endian CSL library)
|_____ cs1_c6454e.lib (big endian CSL library)
```

The directory structure of INTC CSL source directory is as shown below:

```
cs1_c64xplus_intc_src
|
|____inc INTC Header files
|
|____src
|       |____intc
|       |____common
|
|____build_c64xplus_intc.bat (to build little endian library)
|
|____build_c64xplus_intce.bat (to build big endian library)
|
|____Makefile
|
|____Makefile.inc
|
|____cs1_c64xplus_intc.lib (little endian INTC CSL library)
|
|____cs1_c64xplus_intce.lib (big endian INTC CSL library)
```

Label in clearcase

C6455\_CSL\_BASE\_REL\_03\_00\_10\_02

## Examples

The peripheral examples are designed to run on the TMS320C6455 EVM. Examples may have hardware dependencies that prevent them from running to completion on the CCS Simulator.

The example for EMIFA can be run by connecting the external memory device. The peripherals EMIFA and UTOPIA examples can be run using the VDB.

## 5 Fixed in this release

|                      |   |
|----------------------|---|
| PSG00000810          | Add support for C6454 device in C6455 CSL |
| Release Note         |   |
| This has been fixed. |   |

|                      |  |
|----------------------|--|
| PSG00000873          | Documentation Errors And Missing Data in Release Notes |
| Release Note         |  |
| This has been fixed. |  |

|                      |                           |
|----------------------|---------------------------|
| PSG00000956          | EDMA3 symbol name changes |
| Release Note         |                           |
| This has been fixed. |                           |

|                      |  |
|----------------------|--|
| PSG00000975          | General: GetBaseAddress API for some of the modules not handling invalid pointer for base address. |
| Release Note         |  |
| This has been fixed. |  |

|                      |   |
|----------------------|---|
| PSG00001009          | SRIO: When the API srioHwSetupRaw() is called with valid arguments, the system hangs. |
| Release Note         |   |
| This has been fixed. |   |

|                      |  |
|----------------------|--|
| PSG00001011          | SRIO: When the API srioHwSetup() is called with default arguments, the system hangs. |
| Release Note         |  |
| This has been fixed. |  |

|                      |   |
|----------------------|---|
| PSG00001387          | DDR: No Need to Unlock PERLOCK to access PERCFG1 in Example |
| Release Note         |   |
| This has been fixed. |   |

|                                      |  |
|--------------------------------------|--|
| PSG00001390                          | SRIO External Loopback example should be tested on EVM |
| Release Note<br>This has been fixed. |  |

|                                      |                            |
|--------------------------------------|----------------------------|
| PSG00001472                          | SRIO: Documentation Errors |
| Release Note<br>This has been fixed. |                            |

|                                      |                             |
|--------------------------------------|-----------------------------|
| PSG00001473                          | CACHE: Documentation Errors |
| Release Note<br>This has been fixed. |                             |

|                                      |   |
|--------------------------------------|---|
| PSG00001475                          | PLL: CSL_pllControl() API for PLL instance 2 is failing |
| Release Note<br>This has been fixed. |   |

|                                      |   |
|--------------------------------------|---|
| PSG00001480                          | Chip register enums incorrectly defined |
| Release Note<br>This has been fixed. |   |

|                                      |   |
|--------------------------------------|---|
| PSG00001483                          | PWRDWN: The pwrdownOpen() API checks for invalid object pointer but does not return correct status. |
| Release Note<br>This has been fixed. |   |

|                                      |  |
|--------------------------------------|--|
| PSG00001488                          | EMAC - MDIO: EMAC and MDIO Documentation Issue |
| Release Note<br>This has been fixed. |  |

|                      |  |
|----------------------|--|
| PSG00001489          | PWRDWN: Documentation error in the API reference Guide |
| Release Note         |  |
| This has been fixed. |  |

|                      |   |
|----------------------|---|
| PSG00001493          | MEMPROT: Reset values given wrongly in the register layer header files. |
| Release Note         |   |
| This has been fixed. |   |

|                      |                      |
|----------------------|----------------------|
| PSG00001495          | Release Notes Issues |
| Release Note         |                      |
| This has been fixed. |                      |

|                      |   |
|----------------------|---|
| PSG00001496          | Himalaya EDMA3 not up to date with changes made for Faraday CSL |
| Release Note         |   |
| This has been fixed. |   |

|                      |  |
|----------------------|--|
| PSG00001507          | VCP2 example and usage issues with c6455 simulator |
| Release Note         |  |
| This has been fixed. |  |

|                      |   |
|----------------------|---|
| PSG00001513          | CHIP: TSR read value is different from the expected value |
| Release Note         |   |
| This has been fixed. |   |

|                      |                       |
|----------------------|-----------------------|
| PSG00001518          | CSL 03_00_10_01 Issue |
| Release Note         |                       |
| This has been fixed. |                       |

|                      |   |
|----------------------|---|
| PSG00001540          | timer lo and hi are not simulataneously enabled |
| Release Note         |   |
| This has been fixed. |   |

|                                      |  |
|--------------------------------------|--|
| PSG00001543                          | EDMA3 References to Queue Entry Registers                        |
| Release Note<br>This has been fixed. |  |
| PSG00001578                          | Add McBSP-EDMA Example   |
| Release Note<br>This has been fixed. |  |
| PSG00001692                          | API Reference Guide Missing Functional Layer API Summary         |
| Release Note<br>This has been fixed. |  |
| PSG00001695                          | TCP2 can't supports CDMA2000 frame length more than 10000        |
| Release Note<br>This has been fixed. |  |
| PSG00001707                          | Add specialized INTC APIs to API Reference Guide                 |
| Release Note<br>This has been fixed. |  |
| PSG00001708                          | Chapter 1 of API Reference Guide Needs Enhancement               |
| Release Note<br>This has been fixed. |  |
| PSG00001741                          | Documentation: Clarify INTC module usage for DSP/BIOS & OS users |
| Release Note<br>This has been fixed. |  |



|                                      |  |
|--------------------------------------|--|
| PSG00001747                          | CHIP: Documentation Issue in API Reference Guide |
| Release Note<br>This has been fixed. |  |

|                                      |  |
|--------------------------------------|--|
| PSG00001787                          | CSL_SrioAddrSelect typedef enum is incorrect in csl_srio.h |
| Release Note<br>This has been fixed. |  |

|                                      |  |
|--------------------------------------|--|
| PSG00001823                          | PDC: The pdcHwControl() API fails to return a valid error when invalid parameters are passed to it |
| Release Note<br>This has been fixed. |  |

|                                      |   |
|--------------------------------------|---|
| PSG00001829                          | PDC: The API pdcGetBaseAddress() API does not return valid errors with invalid instance or invalid parameters |
| Release Note<br>This has been fixed. |   |

|                                      |  |
|--------------------------------------|--|
| PSG00001835                          | BWMNGMT: Discrepancies in the API reference guide for Tomahawk |
| Release Note<br>This has been fixed. |  |

|                                      |  |
|--------------------------------------|--|
| PSG00001837                          | Memprot: Discrepancies in the API reference guide for Memprot module |
| Release Note<br>This has been fixed. |  |

|                                      |                           |
|--------------------------------------|---------------------------|
| PSG00001838                          | EDMA: Documentation Issue |
| Release Note<br>This has been fixed. |                           |

|                                      |   |
|--------------------------------------|---|
| PSG00001839                          | SRIO: The srioOpen() API fails when passed with invalid parameters  |
| Release Note<br>This has been fixed. |   |
| PSG00001840                          | SRIO: GetHwSetup() API does not return valid error with invalid parameters passed to it   |
| Release Note<br>This has been fixed. |   |
| PSG00001841                          | SRIO: GetHwStatus() API does not return valid error with invalid parameters passed to it.   |
| Release Note<br>This has been fixed. |   |
| PSG00001842                          | INTC: CSL_intcExcepAllDisable(), CSL_intcExcepAllRestore(), CSL_intcExcepAllStatus() and CSL_intcExcepAllEnable() return CSL_SOK for invalid inputs |
| Release Note<br>This has been fixed. |   |
| PSG00001846                          | Incomplete build procedure for library in release notes   |
| Release Note<br>This has been fixed. |   |
| PSG00001847                          | Known issues in CSL releases recorded in the Release Notes MUST include the MR numbers  |
| Release Note<br>This has been fixed. |   |
| PSG00001848                          | INTC: API Reference Guide Issues  |
| Release Note<br>This has been fixed. |   |

|                                      |  |
|--------------------------------------|--|
| PSG00001849                          | EDMA: CSL_edma3ccGetModuleBaseAddr() API does not return error with invalid parameters passed to it. |
| Release Note<br>This has been fixed. |  |

|                                      |   |
|--------------------------------------|---|
| PSG00001850                          | EDMA: Documentation Issues in API Reference Guide |
| Release Note<br>This has been fixed. |   |

|                                      |   |
|--------------------------------------|---|
| PSG00001855                          | DDR2: Inconsistencies in the API reference guide for DDR2 |
| Release Note<br>This has been fixed. |   |

## 6 Known Issues

|                            |  |
|----------------------------|--|
| PSG00001309                | EMAC: 100Mbps Full Duplex in Phy loopback mode, this is not working. |
| Release Note               |  |
| None                       |  |
| Workaround (If one exists) |  |
| None                       |  |

|                            |   |
|----------------------------|---|
| PSG00001358                | VCP2: Offset of VCP decisions read FIFO register(VCPRDECS) is mentioned wrong in the User guide |
| Release Note               |   |
| None                       |   |
| Workaround (If one exists) |   |
| None                       |   |

|                            |   |
|----------------------------|---|
| PSG00001359                | SRIO:The default values of the certain SRIO registers mentioned in the SRIO datasheet are "undefined" |
| Release Note               |   |
| None                       |   |
| Workaround (If one exists) |   |
| None                       |   |

|                            |   |
|----------------------------|---|
| PSG00001361                | TIMER: Timer user guide mention timer internal clock frequency as SYSCLK2 |
| Release Note               |   |
| None                       |   |
| Workaround (If one exists) |   |
| None                       |   |

|                            |  |
|----------------------------|--|
| PSG00000835                | TCP2_getMaxMinErr() does not return error status |
| Release Note               |  |
| None                       |  |
| Workaround (If one exists) |  |
| None                       |  |

## 7 Open Issues

|                                    |   |
|------------------------------------|---|
| PSG00000914                        | CRCLLEN field of TCPIIC4 register in TCP Module can be set to value greater than 32 |
| Release Note<br>None               |   |
| Workaround (If one exists)<br>None |   |

|                                    |  |
|------------------------------------|--|
| PSG00000924                        | For PLLDIV4 and PLLDIV5 the divider configuration is failing |
| Release Note<br>None               |  |
| Workaround (If one exists)<br>None |  |

|                                    |                                    |
|------------------------------------|------------------------------------|
| PSG00000934                        | VCP2_emuEnable() API does not work |
| Release Note<br>None               |                                    |
| Workaround (If one exists)<br>None |                                    |

|                                    |  |
|------------------------------------|--|
| PSG00001184                        | GPIO: More example required to explain the usage of a pin configured as an input for generating interrupts or EDMA events. |
| Release Note<br>None               |  |
| Workaround (If one exists)<br>None |  |

|                            |   |
|----------------------------|---|
| PSG00001479                | C6455 CSL write to PLL1 PREDIV and DDR2 BPRI O register |
| Release Note               |   |
| None                       |   |
| Workaround (If one exists) |   |
| None                       |   |

|                            |   |
|----------------------------|---|
| PSG00001484                | PLL C:No enum for selecting PREDIV like<br>CSL_PLLC_DIVSEL_PREDIV |
| Release Note               |   |
| None                       |   |
| Workaround (If one exists) |   |
| None                       |   |

|                            |  |
|----------------------------|--|
| PSG00001536                | Add examples for all modules, even register-layer-only |
| Release Note               |  |
| None                       |  |
| Workaround (If one exists) |  |
| None                       |  |