



CEVA-ToolBox[™]

CEVA SystemC[®] TLM2.0 Library Interface Reference Guide

Rev 1.0

Aug 2015

Documentation Control

History Table:

Version	Date	Description	Remarks
V1.0	10/8/2015	Initial revision	

Disclaimer and Proprietary Information Notice

The information contained in this document is subject to change without notice and does not represent a commitment on any part of CEVA®, Inc. CEVA®, Inc. and its subsidiaries make no warranty of any kind with regard to this material, including, but not limited to implied warranties of merchantability and fitness for a particular purpose whether arising out of law, custom, conduct or otherwise.

While the information contained herein is assumed to be accurate, CEVA®, Inc. assumes no responsibility for any errors or omissions contained herein, and assumes no liability for special, direct, indirect or consequential damage, losses, costs, charges, claims, demands, fees or expenses, of any nature or kind, which are incurred in connection with the furnishing, performance or use of this material.

This document contains proprietary information, which is protected by U.S. and international copyright laws. All rights reserved. No part of this document may be reproduced, photocopied, or translated into another language without the prior written consent of CEVA®, Inc.

CEVA®, CEVA-XC™, CEVA-XC321™, CEVA-XC323™, CEVA-Xtend™, CEVA-XC4000™, CEVA-XC4100™, CEVA-XC4200™, CEVA-XC4210™, CEVA-XC4400™, CEVA-XC4410™, CEVA-XC4500™, CEVA-TeakLite™, CEVA-TeakLite-II™, CEVA-TeakLite-III™, CEVA-TL3210™, CEVA-TL3211™, CEVA-TeakLite-4™, CEVA-TL410™, CEVA-TL411™, CEVA-TL420™, CEVA-TL421™, CEVA-Quark™, CEVA-Teak™, CEVA-X™, CEVA-X1620™, CEVA-X1622™, CEVA-X1641™, CEVA-X1643™, Xpert-TeakLite-II™, Xpert-Teak™, CEVA-XS1100A™, CEVA-XS1200™, CEVA-XS1200A™, CEVA-TLS100™, Mobile-Media™, CEVA-MM1000™, CEVA-MM2000™, CEVA-SP™, CEVA-VP™, CEVA-MM3000™, CEVA-MM3100™, CEVA-MM3101™, CEVA-XM™, CEVA-XM4™, CEVA-X2™, CEVA-Audio™, CEVA-HD-Audio™, CEVA-VoP™, CEVA-Bluetooth™, CEVA-SATA™, CEVA-SAS™, CEVA-Toolbox™, SmartNcode™ are trademarks of CEVA, Inc.

All other product names are trademarks or registered trademarks of their respective owners

Support

CEVA® makes great efforts to provide a user-friendly software and hardware development environment. Along with this, CEVA® provides comprehensive documentation, enabling users to learn and develop applications on their own. Due to the complexities involved in the development of DSP applications that may be beyond the scope of the documentation, an on-line Technical Support Service (support@ceva-dsp.com) has been established. This service includes useful tips and provides fast and efficient help, assisting users to quickly resolve development problems.

How to Get Technical Support:

FAQs: Visit our web site <http://www.ceva-dsp.com> or your company's protected page on the CEVA® website for the latest answers to frequently asked questions.

Application Notes: Visit our website <http://www.ceva-dsp.com> or your company's protected page on the CEVA® website for the latest application notes.

Email: Use CEVA's central support email address support@ceva-dsp.com. Your email will be forwarded automatically to the relevant support engineers and tools developers who will provide you with the most professional support in order to help you resolve any problem.

License Keys: Please refer any license key requests or problems to sdtkeys@ceva-dsp.com. Refer to the *SDT Installation & Licensing Scheme Guide* for SDT license keys installation information.

Email: support@ceva-dsp.com

Visit us at: www.ceva-dsp.com

List of Sales and Support Centers (Verdana 14pt)

Israel	USA	Ireland	Sweden
2 Maskit Street P.O.Box 2068 Herzelia 46120 Israel Tel: +972 9 961 3700 Fax: +972 9 961 3800	1943 Landings Drive Mountain View, CA 94043 USA Tel: +1-650-417-7923 Fax: +1-650-417-7924	Segrave House 19/20 Earlsfort Terrace 3rd Floor Dublin 2 Ireland Tel: +353 1 237 3900 Fax: +353 1 237 3923	Klarabergsviadukten 70 Box 70396 107 24 Stockholm, Sweden Tel: +46(0)8 506 362 24 Fax: +46(0)8 506 362 20
China (Shanghai)	China (Beijing)	China Shenzhen	Hong Kong
Room 517, No. 1440 Yan An Road (C) Shanghai 200040 China Tel: +86-21-22236789 Fax: +86 21 22236800	Rm 503, Tower C, Raycom InfoTech Park No.2, Kexueyuan South Road, Haidian District Beijing 100190, China Tel: +86-10 5982 2285 Fax: +86-10 5982 2284	2702-09 Block C Tiley Central Plaza II Wenxin 4th Road, Nanshan District Shenzhen 518054 Tel: +86-755-86595012	Level 43, AIA Tower, 183 Electric Road, North Point Hong Kong Tel: +852-39751264 :
South Korea	Taiwan	Japan	France
#478, Hyundai Arion, 147, Gumgok-Dong, Bundang-Gu, Sungnam-Si, Kyunggi-Do, 463-853, Korea Tel: +82-31-704-4471 Fax: +82-31-704-4479	Room 621 No.1, Industry E, 2nd Rd Hsinchu, Science Park Hsinchu 300 Taiwan R.O.C Tel: +886 3 5798750 Fax: +886 3 5798750	3014 Shinoharacho Kasho Bldg. 4/F Kohoku-ku Yokohama, Kanagawa 222-0026 Japan Tel: +81 045-430-3901 Fax: +81 045-430-3904	RivieraWaves S.A.S 400, avenue Roumanille Les Bureaux Green Side 5, Bât 6 06410 Biot - Sophia Antipolis, France Tel: +33 4 83 76 06 00 Fax: +33 4 83 76 06 01

Table of Contents

1	INTRODUCTION.....	1
1.1	Scope	1
1.2	Overview.....	1
1.3	Applicable Documents	1
1.4	System Prerequisites.....	1
2	LIBRARY USAGE.....	1
2.1	CevaDbgSystemCMain.h.....	1
2.1.1	LOCAL DEBUG	1
2.1.2	REMOTE DEBUG.....	1
2.2	SystemCAPI.h.....	1
3	EXAMPLE	0

1 Introduction

1.1 Scope

This document describes the CEVA SystemC® library interface and usage.

1.2 Overview

CEVA SystemC® is a library intended to ease the connection of one or more CEVA DSP simulators to an existing SystemC® system simulation. The library provides TLM-2.0 sockets, which are bound to all available ports and signals of a CEVA DSP cores. For example, the user can obtain a socket that represents an AXI port or a core's interrupt.

CEVA SystemC® library uses the CEVA Debugger API in order to wrap a simulated CEVA cores with standard OSCI TLM-2.0 sockets which can be used to connect the simulator to an existing system simulation.

1.3 Applicable Documents

- *CEVA-Toolbox Debugger API Reference Guide*
- *OSCI TLM-2.0 Language Reference Manual*
- *IEEE Standard for Standard SystemC® Language Reference Manual*

1.4 System Prerequisites

- CEVA-XM4 Toolbox
- OSCI SystemC® 2.3.1
- Microsoft Visual C++ 2013
- gcc 4.8.2 or higher

2 Library Usage

The library is provided with two header files. All library classes/functions are placed inside the CevaDbgSystemC namespace.

2.1 CevaDbgSystemCMain.h

This header is the main entry point for the library. In order to obtain a SystemC wrapper for an already loaded core one should call createSystemCApi function providing a CoreAPI instance.

In the program end the user should call the deleteSystemCApi function to free all allocated resources.

This header also contains functions for creation/destruction of execution wrappers. There is a difference between the cases of local and remote debugging.

2.1.1 Local Debug

When performing local (regular) system debug, the user should create a SystemCExecutor instance by calling the function createSystemCExecutor with a loaded CoreAPI instance and the core's clock period.

Inside, the library creates a SystemC® thread which runs the core until the application exits.

The user should call deleteSystemCExecutor in the program end to free up resources.

2.1.2 Remote Debug

Due to the DBG API system execution behavior, a different approach should be taken when targeting remote debugging. The user should call createSystemCExecutionWrap function in order to provide the complete debug session (as opposed to a single core where the system execution call is not required) and the clock period (assumed to be the same for all the cores in the session).

Inside, the library creates a SystemC® thread which waits for the debugger to execute the system.

As before, the user should call deleteSystemCExecutionWrap in the program end to free up resources.

2.2 SystemCAPI.h

This header contains the SystemCAPI interface class. Each class instance represents a single core. The interface provides TLM-2.0 sockets bound to the core's MSS ports and core's signals. Initiator ports represent the MSS master ports (for example, APB port) and the core's output signals (for example, gp_out), while target ports represent the MSS slave ports (for example, EDAP port) and the core's input signal (for example, int0).

3 Example

A usage example resides at CEVA-XM4\CevaDbgApi\SystemC\Example\ folder under the installation directory. See readme.txt at that folder for more info.