CubeSuite+ Simulator for V850E2 supporting OS Timer V3.02.00

Release Note

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Chapter 1. Target Devices

"CubeSuite+ Simulator for V850E2 supporting OS Timer" supports both simulation of V850E2 CPU core and simulation of timer for real time operating system (OS Timer).

Below is a list of devices supported by this simulator.

Nickname	Device name
V850E2/Mx4	μPD70F3510, μPD70F3512
V850E2/Dx4	μPD70F3524, μPD70F3525, μPD70F3526, μPD70F3532, μPD70F3535, μPD70F3536, μPD70F3537
V850E2/Fx4	μPD70F3548, μPD70F3549, μPD70F3550, μPD70F3551, μPD70F3552, μPD70F3553, μPD70F3554, μPD70F3555, μPD70F3556, μPD70F3557, μPD70F3558, μPD70F3559, μPD70F3560, μPD70F4000, μPD70F4001, μPD70F4002, μPD70F4003, μPD70F4004, μPD70F4005, μPD70F4006, μPD70F4007, μPD70F4008, μPD70F4009, μPD70F4010, μPD70F4011, μPD70F4012
V850E2/Px4	μPD70F3502, μPD70F3503, μPD70F3504, μPD70F3505, μPD70F3506, μPD70F3507, μPD70F3508, μPD70F3509

Chapter 2. User's Manuals

Please read the following user's manuals together with this document.

Manual Name	Document Number
CubeSuite+ V2.00.00 V850 Debug	R20UT2446EJ0100
CubeSuite+ V2.02.00 Message	R20UT2871EJ0100

Chapter 3. Key Word for Uninstallation

To uninstall this product, use the integrated uninstaller (uninstall CubeSuite+).

Chapter 4. Cautions

This section describes cautions for using the V850E2 supporting OS Timer simulator. The following two types of caution are described.

•Cautions for CPU core function

•Cautions for OS Timer

4.1 Cautions for CPU core function

4.1.1 CPU function

The simulator supports as following functions. Other functions are not supported.

- CPU instruction
- Exceptions
- System register protection
- Memory protection
- Timing supervision function
- Floating-point operation function

4.1.2 External memory bus

The access to external memory area is not supported.

4.1.3 Floating-point unit

A simulation result of the floating-point unit [FPU] has a margin of errors compared to real devices. The simulator uses the floating-point library of Visual C++, and store a result calculated by 80bit in a register.

4.1.4 Exceptions

Following exception is not supported.

System error exception, Memory error exception

4.1.5 Cache memory

The simulation of cache memory is not supported.

4.1.6 Instructions

The instructions (SYNCE/SYNCM/SYNCP) are not supported. If these were executed, the operation is same as NOP execution.

4.1.7 Data flash

It is impossible to use data flash area. If CPU accesses this area, CPU breaks and error is happen.

4.1.8 Option byte storage register

The value of Option byte storage register "OPBT0" is always "0".

4.1.9 EH_RESET register function

EH_RESET register functions are not supported. In the case of a CPU reset, the reset address will always be "0x0".

4.1.10 CPU clock frequency

The CPU clock frequency is the value which is specified with the [Main clock frequency] property.

4.1.11 Execution clock

The number of execution clocks of each instruction will be the number of execution clocks when another instruction is executed immediately after that instruction is executed.

4.2 Cautions for OS Timer

4.2.1 P-bus peripheral I/O registers

The simulator supports following P-bus peripheral I/O registers for OS timer.

Nickname	P-bus peripheral I/O registers
V850E2/Mx4	ICOSTM0, IMR0, OSTM0CTL, OSTM0CMP, OSTM0CNT, OSTM0TE, OSTM0TS,OSTM0TT
V850E2/Dx4	ICOSTM0, IMR9, OSTM0CTL, OSTM0CMP, OSTM0CNT, OSTM0TE, OSTM0TS,OSTM0TT
V850E2/Fx4	ICOSTM0, IMR9, OSTM0CTL, OSTM0CMP, OSTM0CNT, OSTM0TE, OSTM0TS,OSTM0TT
V850E2/Px4	ICOSTM0, ICOSTM1, IMR2, OSTM0CTL, OSTM1CTL, OSTM0CMP, OSTM1CMP, OSTM0CNT, OSTM1CNT, OSTM0TE, OSTM1TE, OSTM0TS, OSTM1TS, OSTM0TT, OSTM1TT

4.2.2 The count clock of OS Timer

The count clock of OSTM is decided by the Option Byte value. It's possible to refer to the Option Byte value in CubeSuite+ property.

Please specify the value in bit4,bit3 as follows.

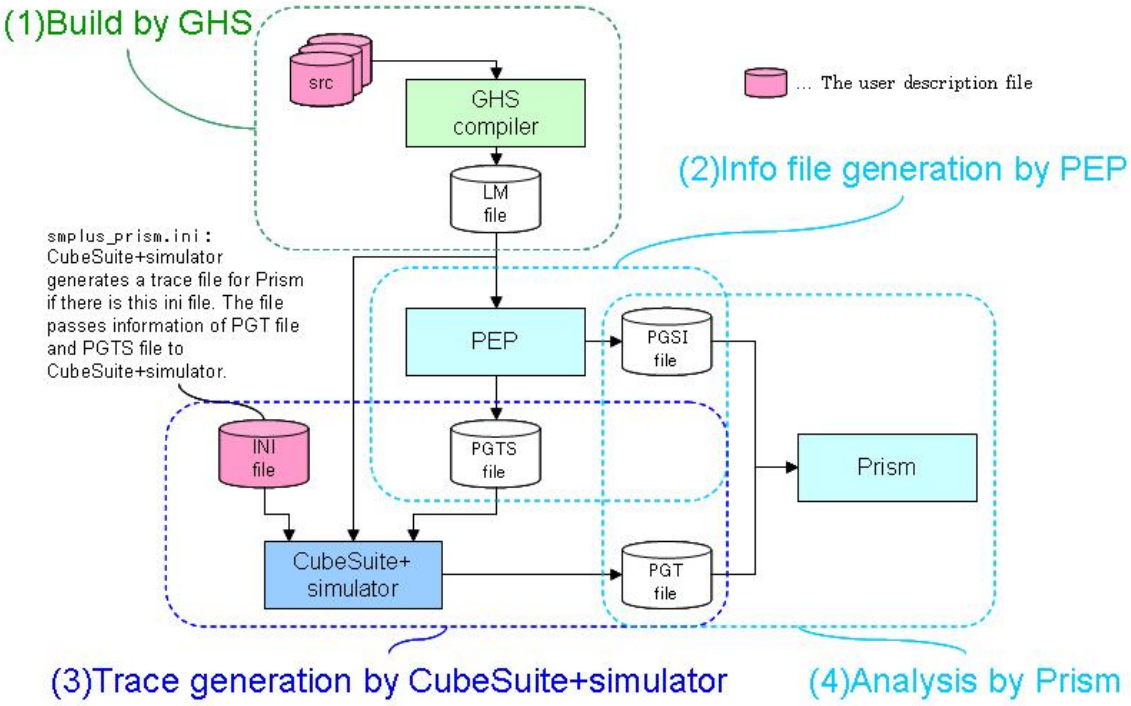
bit4	bit3	
0	0	equal to CPUCLK
0	1	CPUCLK/2
1	0	CPUCLK/4
1	1	Setting prohibited (By CubeSuite+ Simulator, CPUCLK/4)

Even if bit4,bit3 of Option Byte of the selected device have the different feature, these bits are used to decide the count clock of OSTM by CubeSuite+ Simulator for V850E2 supporting OS Timer.

4.3 Cautions for Prism of Critical Blue

4.3.1 Cooperation of CubeSuite+simulator and Prism

The PEP which is included on the Prism package generates Prism information files (PGTS file and PGTI file) from LM file. On the next step, prepare smplus_prism.ini which contains PGTS file and PGT file information. CubeSuite+simulator will generate the Prism trace file based on smplus_prism.ini description by executing a LM file. An analysis by the Prism is available on the above process.



4.3.2 Supported compiler

Only GHS compiler is supported. To analyze on Prism, please specify “-G –dual_debug” options for compiler.

4.3.3 Supported device

Only uPD70F3510 and 3512 are supported.

4.3.4 About .ini file

When the smplus_prism.ini exists in the same folder as CubeSuite+ project file or project subfolder, and description of the file is correct, the CubeSuite+simulator will generate a trace file for the Prism. If there are plural smplus_prism.ini files, the simulator reads the file from the most upper level sub folder.

Please write PGT file and PGTS file informations in the smplus_prism.ini. A maximum file name length is 255 characters including path. The smplus_prism.ini has to have full path information of files even if the files are on the project folder. In case of tracing program which uses RI850V4, smplus_prism.ini has to contain an address information for “__kernel_trace_data”. The following is an example of smplus_prism.ini.

```
[PRISM_PGTS_FILE]
__pgts_file_name=C: \workspace\PrismProject3\PrismTraceSpec.PGTS
[PRISM_PGT_FILE]
__pgt_file_name=C:\ workspace\PrismProject3\CubeSuiteSim.PGT
[PRISM_OS_DATA_ADDR]
__kernel_trace_data=0xFEDF0074
```

4.3.5 Reexecution after Reset

When executing one time and reexecuting after reset, CubeSuite+ ends. Please don't reexecute after a reset.

4.3.6 Cycle numbers after stopping at break point

If a program execution is stopped by a break point during Prism Trace File generating, the cycle number displayed on the prism will be increased by number of times which stopped at break point. But this behavior does not happen when at least one of the following functions are used.

Hardware break point by access event.

Timer-function.

Ttrace-function.

A coverage-function.

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Renesas Electronics America Inc.
2880 Scott Boulevard Santa Clara, CA 95050-2554, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-651-700, Fax: +44-1628-651-804

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-65030, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 LanGao Rd., Putuo District, Shanghai, China
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2886-9318, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
12F., 234 Teheran-ro, Gangnam-Gu, Seoul, 135-080, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

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