Limitations on SuperH™ Family E10A-USB Emulator

Thank you for purchasing the SuperH™ Family E10A-USB Emulator. Note that there are limitations listed below.

1. Note on Downloading of Programs

Verification cannot be enabled by selecting [Perform memory verify during download] checkbox in the [Download Module] dialog box in which download modules can be specified. To perform verification after downloading, specify verification in the [Verify Memory] dialog box opened by selecting [Verify Memory] from the [Debug] menu.

2. Restriction on Use of the Emulator with the New_SH-Mobile Device Group

When a break occurs while the New_SH-Mobile device group is used in user DSP mode, use of R0_BANK-R7_BANK may not be available. At this time, the values are 0. If the value of SR is changed in the [Register] window during the break in user DSP mode, this change will be reflected when the program execution resumes. Before modifying the values of R0-R7 or R0_BANK-R7_BANK, perform stepping of the program after changing the SR value so that the new mode state will be reflected.

3. Restriction on Use of the Emulator with the SH7370

If the SH7370 is in use and you have used Event Condition Ch8 or Ch9 to acquire trace information, the [Trace] window shows the written data as '0' when the conditions listed below are satisfied.

Little endian:
(a) The target is CPU, BSC, HPB, or RSRAM.
(b) Data transfer has been done in 1-, 2-, 4-, or 8-byte units and the lower four bits of the destination address are H'8 to H'F.

The written data is indicated as '0' when both (a) and (b) are satisfied.

Big endian:
(c) The target is CPU, BSC, HPB, or RSRAM.
(d) Data transfer has been done in 1-, 2-, 4-, or 8-byte units and the lower four bits of the destination address are H'0 to H'7.
(e) Data transfer has been done in 16- or 32-byte units.

The written data is indicated as '0' when (c) and (d), or (c) and (e) are satisfied.

4. Corrections

(1) SuperH™ Family E10A-USB Emulator Additional Document for User's Manual: Supplementary Information on Using the SH7318

Please note that there is an error in 3. Low-Power States of 2.1, Differences between the SH7318 and the Emulator, in Section 2, Software Specifications when Using the SH7318:

Only normal causes cancel the U standby or R standby state. Cancellation by use of the [STOP] button is not available.

(2) SuperH™ Family E10A-USB Emulator Additional Document for User's Manual: Supplementary Information on Using the SH7136 and SH7137

Although this document contains section 2.2.6, Performance Measurement Function, the SH7136 and SH7137 do not actually support the performance measurement function, including starting or ending the measurement by using Event Condition.

(3) SuperH™ Family E10A-USB Emulator Additional Document for User's Manual:
Supplementary Information on Using the SH7729, SH7729R, SH7727, and SH7706

Please note that the description under "12. [IO] window" of 2.1, Differences between the SH77xx (i.e. SH7729, SH7729R, SH7727, or SH7706) and the Emulator, in Section 2, Software Specifications when Using the SH77xx should be corrected as follows.

The watchdog timer operates while it is enabled. Do not cause the user program to break while the watchdog timer is operating, or enable the watchdog timer via the [IO] or [Memory] window.

(4) SuperH™ Family E10A-USB Emulator Additional Document for User's Manual: Supplementary Information on Using the SH-2A_C_1C3A

Item 9 of (4), Notes on AUD Trace (in section 2.2.2, Trace Functions) states that "when AUD tracing is in use, do not turn power to the target system off, and do not allow resetting due to input on the reset pin or to the WDT overflowing". However, turning power to the target system off is actually not possible whether AUD tracing is in use or not.

(5) Notes on AUD Trace

The note "For the result by software trace, a value in the [Data] item is not correct (that value is correct for window trace)." does not apply to the following additional documents.

• Supplementary Information on Using the SH-2A_C_1C3A

• Supplementary Information on Using the SH7214 and SH7216

• Supplementary Information on Using the SH7201 and SH7261

• Supplementary Information on Using the SH7203 and SH7263

5. Notes on Using the SH7263

(1) When you use the DMAC in the SH7263, do not select the non-realtime trace mode as the AUD trace acquisition mode.

(2) When you use 'Auto Refresh' of the SDRAM for the SH7263, do not select the non-realtime trace mode as the AUD trace acquisition mode.

6. MCU Operating Modes

Boot mode, user boot mode, and user programming mode are not supported in the systems listed below. For this reason, the on-chip flash memory cannot be programmed while the user program is running.

- SH7080 Series E10A-USB SYSTEM (CPU SH-2)
- SH7125 Series E10A-USB SYSTEM (CPU SH-2)
- SH7125 Series Debug MCU BOARD E10A-USB SYSTEM (CPU SH-2)
- SH7147 Series Debug MCU BOARD E10A-USB SYSTEM (CPU SH-2)
- SH7137 Series E10A-USB SYSTEM (CPU SH-2)
- SH-2A FLASH E10A-USB SYSTEM

7. Event Condition for the SH7080 Series E10A-USB SYSTEM (CPU SH-2)

(1) When matching of the program counter value is a condition of Event Condition for internal trace acquisition (i.e. [Only program fetched address] or [Only program fetched address after] is selected), do not specify addresses in the on-chip ROM or on-chip RAM as the address condition.

(2) If you specify a break (by selecting the [Acquire Break] checkbox) and trace acquisition (by selecting [Condition] from the [Acquire Trace] list box) on the [Action] page as the action to take when a condition of Event Condition is satisfied, setting of the trace acquisition will be ignored.

8. Help Information of the SH7080 Series E10A-USB SYSTEM (CPU SH-2)

The following description on the "full" parameter for the TRACE_MODE command should be added to the help information.

Parameter	Type	Description	L bus	I bus
full		The emulator takes the specified action when the internal trace buffer becomes full.	Enabled	Enabled

9. Break Cause for the SH7080 Series E10A-USB SYSTEM (CPU SH-2)

Under the following conditions, the emulator shows the cause of last break when the internal trace buffer becomes full.

- A break of the user program has been specified as the action to take when the internal trace buffer becomes full.
- The user program has started to run from the address where a condition of Event Condition had been set.

10. Profiling by the SH7080 Series E10A-USB SYSTEM

Do not set the types of breakpoint given below while profiling is enabled. If such a break occurs, the acquired profile data will be incorrect.

- Post-execution breakpoint at the address of a branch instruction
- Pre-execution or post-execution breakpoint set at the PC address before the execution of the user program starts from a branch instruction
- Data-access breakpoint

11. Note on Using the SH7211

Even if the 384-Kbyte on-chip flash memory is in use, the checksum in the [Writing Flash Memory] mode will be calculated as if the size of the memory data is 512 Kbytes. That is, H'FF is padded into each of the bytes added to the 384-Kbyte data.

12. AUD Trace when the SH-4A, SH4AL-DSP, New_SH-Mobile, or SH-Mobile G1 Device Group is in Use

Do not specify a window-address and system-bus conditions for tracing at the same time.

13. Performance Measurement when the SH-4A, SH4AL-DSP, New_SH-Mobile, or SH-Mobile G1 Device Group is in Use

If you wish to use event conditions to start and stop performance measurement, the address where the performance measurement will start or stop must not be within 9 instructions from a memory-access instruction.

14. Note on Using the SH7619, SH7670, SH7671, SH7672, and SH7673

When the emulator is activated in the HIF boot mode, complete the HIF boot processing within 30 seconds after the message "User register set" has been displayed in the [Connecting] dialog box.

To execute [Reset CPU] or [Reset Go] when the HIFMD pin is being high, complete the HIF boot processing within 30 seconds after a reset has been issued. If failed, a TIMEOUT error will occur.

15. Note on Using the SH7214 and SH7216

(1) In the [Clock] dialog box, enter the frequency of the crystal oscillator connected to the MCU or the external clock source being input. The value must be in the range from 10 to 12.5 MHz.

(2) While the SH7216G, SH7216H, SH7214G, or SH7214H is in use, select the corresponding device name given below in the [Select Emulator mode] dialog box.

Actual MCU in Use	Device Name in the [Select Emulator mode] Dialog Box
R5F72145HD	R5F72145BD
R5F72146HD	R5F72146BD
R5F72147HD	R5F72147BD
R5F72145GD	R5F72145AD
R5F72146GD	R5F72146AD
R5F72147GD	R5F72147AD
R5F72165HD	R5F72165BD
R5F72166HD	R5F72166BD
R5F72167HD	R5F72167BD
R5F72165GD	R5F72165AD
R5F72166GD	R5F72166AD
R5F72167GD	R5F72167AD

(3) If you select the [New ID Code] checkbox in the [ID Code] dialog box and click on [OK] during booting up of the emulator, the user MAT, user boot MAT, and FLD areas will be erased.

(4) While the SH7216G, SH7216H, SH7214G, or SH7214H is in use, 1/1 is not selectable as the division rate for Iϕ. Select 1/2, 1/4, or 1/8 instead.

16. Note on Clock Supply to the FPU while an SH7670-, SH7260-, SH7250-, or SH7231-Series MCU is in Use
Do not manipulate the standby control register to stop the clock supply to the FPU while any of the following MCUs is in use.

- SH7670 series (SH7670, SH7671, SH7672, and SH7673)
- SH7260 series (SH7261, SH7262, SH7263, SH7264, SH7266, SH7267, SH7268, and SH7269)
- SH7250 series (SH72531, SH72531FCC, SH72531RFCC, SH72533, SH72533FCC, SH72543R, SH72544R, SH72546R, and SH72546RFCC)
- SH7231 series (SH72315A, SH72315L, and SH72314L)

17. Restriction on AUD Trace while an SH7260-Series MCU is in Use
If you intend to use the AUD trace with an SH7260-series MCU (SH7262, SH7263, SH7264, SH7266, or SH7267; the only exception is the SH7261), do not change the initial values of the port control registers that correspond to the pins multiplexed with AUD. The names of the AUD-multiplexed pins and bits in the port control registers are given in the table below.

AUD Pin Function	SH7263 Group		SH7262 and SH7264 Group	
	Pin	Register.Bit	Pin	Register.Bit
AUDCK	PB12	PBCRL4.PB12MD	PF00	PFCR0.PF0MD
AUDSYNC	PC00	PCCRL1.PC0MD	PF01	PFCR0.PF1MD
AUDATA3	PF23	PFCRH2.PF23MD	PF05	PFCR1.PF5MD
AUDATA2	PF22	PFCRH2.PF22MD	PF04	PFCR1.PF4MD
AUDATA1	PC11	PCCRL3.PC11MD	PF03	PFCR0.PF3MD
AUDATA0	PC10	PCCRL3.PC10MD	PF02	PFCR0.PF2MD

18. Stepping around FPU Exceptions while the SH-2A FPU Core is in Use
When the SH-2A FPU core is in use and an FPU exception occurs during stepped execution, the message "The values of FPU registers being displayed are incorrect." appears and the values of the FPU registers being displayed are undefined. These values will return to normal as you continue stepped execution. To prevent this problem, execute [Go] instead of [Step] around FPU exceptions in the user program.

19. Entering an ID Code (Key Code) for an SH7250-Series MCU
If you enter a value other than the initial value (i.e. F in all digits; the number of digits varies with the MCU), in the [ID Code] dialog box during the process of booting up the emulator, connection is possible as long as the value set in the ID code area in the MCU is all F. Note, however, that the value in the on-chip ROM is retained. After that, connection to the emulator is only possible with the ID code that you entered during the first booting-up.

20. Emulation of Programming and Erasing of the On-Chip Flash Memory
Select [Flash memory to PC] or [PC to flash memory, Flash memory to PC] from the [Flash memory synchronization] drop-down list box on the [General] page of the [Configuration] dialog box. Data in the emulator is synchronized with that in memory.

21. Notes on Using the SH7256R
(1) When the current security setting is [Protected-locked (security level 1)], writing and setting of software breakpoints in the ROM are not possible. To enable these operations, select [Unprotected] or [Protected-unlocked (security level 1)].
(2) When the current security setting is [Protected-locked (security level 1)], selecting [Set key code], [Reset CPU], or [Reset Go] changes the setting to [Protected-unlocked (security level 1)].

22. Note on AUD Trace

The AUD branch trace function outputs the differences between newly output branch source addresses and previously output branch source addresses. The window trace function outputs the differences between newly output addresses and previously output addresses. If the previously output address is the same as the upper 16 bits, the lower 16 bits are output. If it matches the upper 24 bits, the lower 8 bits are output. If it matches the upper 28 bits, the lower 4 bits are output.

The emulator regenerates the 32-bit address from these differences and displays it in the [Trace] window. If the emulator cannot display the 32-bit address, it displays the difference from the previously displayed 32-bit address. If the 32-bit address cannot be displayed, the source line is not displayed.