CubeSuite+ Simulator for RL78/G10 V1.01.00

Release Note

R20UT2911EJ0100
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Contents

Chapter 1. Target Devices

Below is a list of devices supported by the RL78/G10 simulator.

Nickname	Device name
RL78/G10	R5F10Y14(10pin), R5F10Y16(10pin) , R5F10Y17(10pin), R5F10Y44(16pin), R5F10Y46(16pin), R5F10Y47(16pin)

Chapter 2. User's Manuals

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

Manual Name	Document Number
CubeSuite+ V2.02.00 RL78 Debug	R20UT2867EJ0100
CubeSuite+ V2.02.00 Message	R20UT2871EJ0100

Chapter 3. Key Word for Uninstallation

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

Chapter 4. Cautions

This section describes cautions for using RL78/G10 simulator. The following two types of caution are described:

•Differences between target devices and simulator : Differences from behavior of target devices due to simulator specifications

•Cautions for using simulator GUI : Cautions for using the simulator GUI window

4.1 Differences between target devices and simulator

4.1.1 Unsupported peripheral functions

The simulator does not support the following peripheral functions of the target device (the following functions cannot be debugged on the simulator).

* Regulator
* Selectable power-on-reset circuit
* Simplified I2C of Serial array unit
* CSI receive operation of Serial array unit
* Serial Interface IICA

4.1.2 Peripheral I/O redirection register (PIOR)

If using Peripheral I/O redirection register (PIOR), simulator's alternate function are switched same as target device. Therefore please refer to following table to select the pin name of "select pin dialog" on simulator GUI.

Pin name	PIOR register value	Using pin name of select Pin dialog on Simulator GUI
INTP3	PIOR4 : 0	P06/ANI5/SCLA0/INTP3/SI01
	PIOR4 : 1	P121/X1
INTP2	PIOR3 : 0	P41/TI03/INTP2
	PIOR3 : 1	P122/X2/EXCLK
INTP1	PIOR2 : 0	P00/SO00/TXD0/INTP1
	PIOR2 : 1	P03/ANI2/TO00/KR4/IVCMP0
TI01	PIOR1: 0	P04/ANI3/TI01/TO01/KR5
	PIOR1: 1	P40/KR0/TOOL0
TO01	PIOR1: 0	P04/ANI3/TI01/TO01/KR5
	PIOR1: 1	P40/KR0/TOOL0
PCLBUZ0	PIOR0: 0	P02/ANI1/_SCK00/SCL00/PCLBUZ0/KR3
	PIOR0: 1	P40/KR0/TOOL0

4.1.3 Oscillation stabilization time of Clock Generator

The simulator does not simulate the clock oscillator oscillation stabilization time.

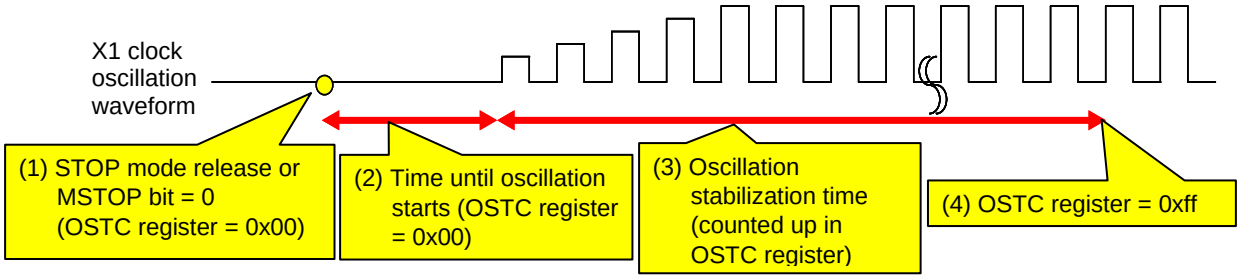
The oscillation stabilization time is always 0 seconds. When the oscillation is started, the OSTC register is set to the following values without count up operation.

OSTS Setting Value	OSTC Value
0x0 : $(2^8+16)/fx$	0x80
0x1 : $(2^9+16)/fx$	0xc0
0x2 : $(2^{10}+16)/fx$	0xe0
0x3 : $(2^{11}+16)/fx$	0xf0
0x4 : $(2^{13}+16)/fx$	0xf8
0x5 : $(2^{15}+16)/fx$	0xfc
0x6 : $(2^{17}+16)/fx$	0xfe
0x7 : $(2^{18}+16)/fx$	0xff

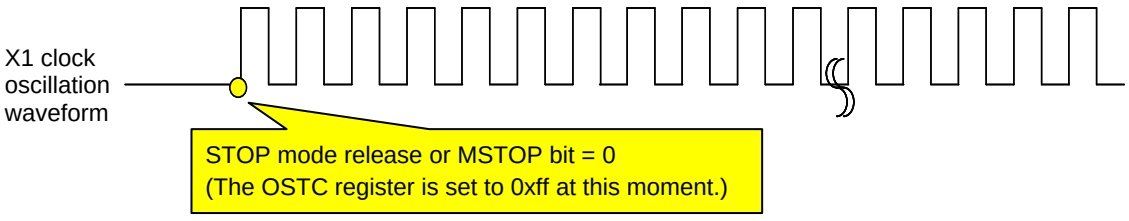
The following figure illustrates this operation.

In the target device, the X1 clock oscillation starts after the states (1) to (4) have passed. In the simulator, states (1) to (4) end instantly and the X1 clock oscillation starts.

[In target device (an example of when OSTS is set to 0x07)]



[In simulator (an example of when OSTS is set to 0x07)]



Therefore, pay attention to the code that waits for oscillation stabilization.

There is no problem if a program is created with the condition that the execution exits the oscillation stabilization wait period when the OSTC register value becomes the maximum value, or when the OSTC register value exceeds the specified value, but if a program is created with the condition that the execution exits the oscillation stabilization wait period when the OSTC register value becomes a value other than the maximum value, the execution enters an infinite loop.

The following shows examples of code that causes/does not cause problems.

(This is an example of when OSTS is set to 0x07)

Correct program example (1)

```
while(OSTC != 0xff)
{
NOP();/* wait */
}
```

Correct program example (2)

```
while(OSTC <= 0xf0)
{
NOP();/* wait */
}
```

Example of program that may cause problems

```
while(OSTC != 0xf0)
{
NOP();/* wait */
}
```

4.1.4 AMPH bit of Clock operation mode control register (CMC)

The simulator does not simulate AMPH bit of Clock operation mode control register (CMC).

Although it is possible to read / write the value of this bit, the operation is not changed if changing it.

4.1.5 Operation clock of timer array unit

Do not specify an operation clock that is 233 Hz or lower. If the operation clock of the timer array unit is 233 Hz or lower, then the timer array unit will not operate correctly (it will behave as if operating via a clock that is faster than the one selected).

4.1.6 Noise filter of timer array unit

Although the target device's timer array unit has a function to turn the noise filter on and off in order to reduce noise on the timer input pin, the simulator does not simulate this. (There is no difference in behavior whether filtering is on or off.) Since there is no noise in the simulator's signal, it would be meaningless to simulate this function.

4.1.7 Operation clock of serial array unit

Do not specify an operation clock that is 233 Hz or lower. If the operation clock of the serial array unit is 233 Hz or lower, then the serial array unit will not operate correctly (it will behave as if operating via a clock that is faster than the one selected).

4.1.8 Noise filter of serial array unit

Although the target device's serial array unit has a function to turn the noise filter on and off in order to reduce noise on the input pin, the simulator does not simulate this. (There is no difference in behavior whether filtering is on or off.) Since there is no noise in the simulator's signal, it would be meaningless to simulate this function.

4.1.9 SDR0nH register of serial array unit

The following differences occur between the target device and simulator when the serial data register (SDR0nH) is read during serial operation.

[Target device]

The value is 0.

[Simulator]

The value is immediately before start of serial operation.

4.1.10 Reset

The behavior differs as follows if a reset is generated by the RESET pin.

[Target device]

MCU goes into reset status when the RESET pin goes to low level. Reset status is released when it goes to high level.

[Simulator]

MCU does not go into reset status when the RESET pin goes to low level. When it goes to high level, the simulator momentarily goes into reset status, and then the reset status is released immediately.

4.1.11 Reset control flag register (RESF)

The simulator only simulate WDTRF bit of Reset control flag register (RESF).

The operation of TRAP bit and SPORF bit are not supported.

4.1.12 Reference voltage of A/D converter

When VDD signal has no input, the default reference voltage of A/D converter is 5.0V.

For changing the reference voltage, input it to VDD signal by using signal data editor and so on.

4.1.13 Digital filter of Comparator

The simulator does not simulate the digital filter function of Comparator.

So bit 0 and bit 1 of COMPFIR register are not operated.

4.1.14 Response delay time of Comparator

The simulator does not simulate the response delay time of Comparator.

So the operation of high-speed mode and low-speed mode is same.

4.1.15 Clock output/buzzer output controller

When selecting f_{MAIN} as an output clock, timing chart window cannot display the clock waveform of PCLBUZn signal.

When selecting $f_{MAIN}/2$ or slower as an output clock, timing chart window can display the clock waveform.

4.1.16 Execution of illegal instructions

If an illegal instruction (instruction code: 0xFF) is executed, the target device will be reset, but the simulator will go into an infinite loop (the illegal instruction will be executed repeatedly).

4.2 Cautions for using simulator GUI

4.2.1 Cautions for controlling each windows

The following keyboard operations are not available in the simulator windows (signal-data editor window, I/O panel window, and serial window).

* Navigation via tab or arrow keys (←, ↑, →, ↓)
* Deletion via the Del or Backspace keys
* Copy & paste and other operations via the Ctrl + C, V, X, A, or Z keys.

Perform the above operations as follows.

* Navigation: Navigate using the mouse.
* Deletion: Right click and perform the action via the context menu.
* Copy & paste, etc.: Right click and perform the action via the context menu.

4.2.2 Cautions for closing simulator GUI window

The simulator GUI window can only be closed by disconnecting from the debugging tool, or by closing CubeSuite+ proper. (The [X] button cannot be clicked.)
Additionally, although it appears that the [X] button can be pressed if Aero is enabled in Windows Vista, pressing this button will not close the GUI window.

4.2.3 Cautions for showing help for the simulator GUI window

When the simulator GUI window is active, it is not possible to open help file by selecting “Help” menu or using F1 key. Please open it from CubeSuite+ main window.

4.2.4 Cautions for disconnecting the debug tool

CubeSuite+ may exit if the debugging tool is disconnected while any of the following dialog boxes is open from the simulator GUI window. Make sure that the following dialog boxes are closed before disconnecting the debugging tool.

- Save As
- Open
- New
- Color
- Font
- Customize
- Loop
- Select Pin
- Search Data
- Format (UART)
- Format (CSI)
- Message (e.g. Error)
- Parts Button Properties
- Analog Button Properties
- Parts Key Properties
- Parts Level Gauge Properties
- Parts Led Properties
- Parts Segment LED Properties
- Parts Matrix Led Properties
- Parts Buzzer Properties
- Pull up / Pull down
- Entry Bitmap
- Object Properties

4.2.5 Cautions for setting the Host Machine's language and region

If a Japanese OS is installed on your Host Machine, then if the language or region is set to other than Japanese/Japan, the menus and dialog-box names of the simulator GUI window will be shown in English. Similarly, if a non-Japanese OS is installed on your Host Machine, then if the language or region is set to Japanese/Japan, the menus and dialog-box names of the simulator GUI window will be shown in Japanese.

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