[Notes]

RX Family

RYZ014A Cellular Module Control Module Using

Firmware Integration Technology

RX Driver Package:

Notes on Log Output Option

Outline

When using RYZ014A Cellular Module Control Module Using Firmware Integration Technology, note the following point.

1. Notes on Log Output Option

1.1 Applicable Products

1.1.1 RYZ014A Cellular Module Control Module Using Firmware Integration Technology

See Table 1.1 for the applicable revisions of RYZ014A Cellular Module Using Firmware Integration Technology (Cellular FIT Module).

Table 1.1: Applicable revisions of Cellular FIT Module

Cellular FIT Module revision	Document no.
1.10	R01AN6324xx0110
1.11	R01AN6324xx0111

1.1.2 RX Driver Package

Cellular FIT Module is included in RX Driver Package (RDP).

See Table 1.2 for the revisions of RDP that include the applicable Cellular FIT Module.

Table 1.2: Revisions of applicable RDP

RDP revision	RDP document no.	Cellular FIT Module revision
1.39	R01AN6905xx0139	1.10
1.40	R01AN6906xx0140	1.11
1.41	R01AN6907xx0141	1.11

1.2 Applicable Device Groups

RX65N/RX651

RX66N

RX72M

RX72N

1.3 Details

The log output option of Cellular FIT Module uses FreeRTOS Logging Library of the FreeRTOS common library. In addition, the option uses SCI FIT Module (SCI) for serial communication between RYZ014A Cellular Module.

When an SCI error occurs, the applicable products output an error log to the serial terminal by using the LogError() function of FreeRTOS Logging Library. LogError() is executed by the callback function called by the SCI reception error (ERI) interrupt.

During the process, LogError() executes the xQueueSend() function. However, xQueueSend() is prohibited during an interrupt service routine by the specifications of FreeRTOS. This means that the process of outputting an SCI error log violates the FreeRTOS specifications.

When xQueueSend() is executed during an interrupt service routine (callback functions called by the SCI reception error interrupt), the following problems might occur:

(1) A context switch occurs during xQueueSend(), causing a delay in the completion of the function.

(2) The Interrupt Priority Level for SCI reception errors becomes 0 (lowest priority) after the execution of xQueueSend() until the completion of the interrupt service routine. As a result, other process is prioritized during the SCI reception error interrupt, causing a delay in the completion of the interrupt.

FYI: [xQueueSend [Queue Management]](#) (FreeRTOS.org)

1.4 Conditions

The problems might occur when the following conditions are met.

(1) The error log output option of Cellular FIT Module is enabled.

- CELLULAR_CFG_DEBUGLOG (compile configuration option) is set to 1 or higher.

  (For details, see the application note for Cellular FIT Module, section 2.7.)

(2) Any of the following SCI reception errors has occurred in an SCI channel that Cellular FIT uses:

- Receive buffer overflow (SCI_EVT_RXBUF_OVFL)

- Overrun error (SCI_EVT_OVFL_ERR)

- Framing error (SCI_EVT_FRAMING_ERR)

- Parity error (SCI_EVT_PARITY_ERR)

1.5 Workarounds

Make either of the following changes to avoid the above processing.

(1) Disable the error log output option of Cellular FIT Module.

- Set CELLULAR_CFG_DEBUGLOG (compile configuration option) to 0.

(2) See the following source code (src/private/private_api/cellular_sci_ctrl.c) and comment out the shaded part.
Take this action if you want to continue to use the error log output option.

```
static void cellular_uart_callback(void * const p_Args)
{
(Omitted)
    if (SCI_EVT_RXBUF_OVFL <= gp_cellular_ctrl->sci_ctrl.sci_err_flg)
    {
        CELLULAR_LOG_ERROR(("sci error event %d¥n", gp_cellular_ctrl-
>sci_ctrl.sci_err_flg));  //Comment this out.
    }
}
```

1.6 Schedule for Fixing the Problem

The problems will be fixed in the next revision.

Revision History

Rev.	Date	Description	
		Page	Summary
1.00	Sep.01.23	-	First edition issued

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