RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-V85-A003A/E	Rev.	1.00
Title	V850ES/Kx1, Kx1+ Restriction notification of Mask ROM products		Information Category	Technical Notification		
Applicable Product	V850ES/KF1 µPD703211 V850ES/KG1 µPD703215, πPD703215Y V850ES/KG1+ µPD703313, µPD703313Y	Lot No.	Reference Document	-V850ES/KF1 User's manual : Hardware (U16891E) -V850ES/KG1 User's manual: Hardware (U16890E) -V850ES/KG1+ User's manual: Hardware (U16894E) -V850ES User's manual For Architecture (U15943E)		
		All lot				

This document describes a new restriction of Mask ROM products as shown by "Applicable Product".

1. Restriction:

Applicable Usage:

 The usage which meets to (1) and (2) at the same timing is applicable to the restriction.

 (1) The instruction codes which addresses 001FFFCH to 0020000H are executed continuously.

 (2) Pipeline disorder (Note) is generated.

 Note: The pipeline becomes disordered caused by the following factors.

   1. Alignment hazard
   2. Referencing execution result of load instruction
   3. Referencing execution result of multiply instruction
   4. Referencing execution result of LDSR instruction for EIPC and FEPC
   5. Access of On-chip peripheral I/O register
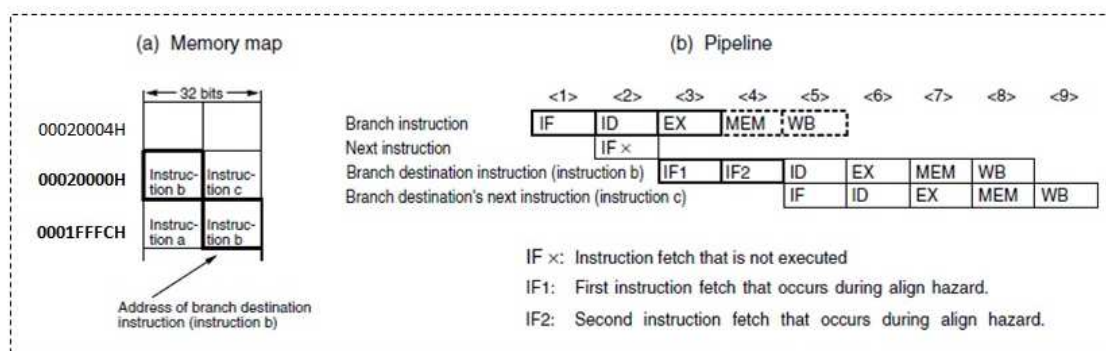
   For details of pipeline disordered, please see User's manual "V850ES 32-Bit Microprocessor Core

   Architecture" (U15943E).

Detail of Restriction:

 In the case of Applicable Usage, CPU executes the wrong instruction code.

(Example) The pipeline disordered is generated by Alignment hazard:

   In this case, the instruction b will not be executed correctly. And wrong instruction code is executed.

2. <u>Workaround:</u>

To avoid the continuous execution of Instruction codes which addresses from 001FFFCH to 0020000H, please allocate 16 bytes data of all "0" in the address of 001FFF0H to 001FFFFH.
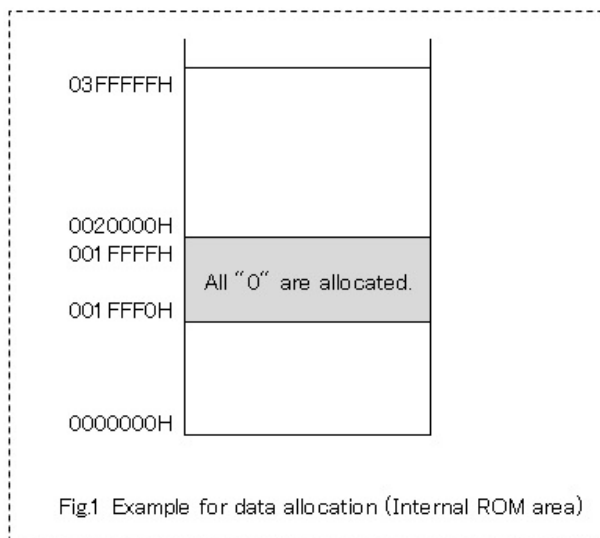

Fig.1 Example for data allocation (Internal ROM area)

(Example of settings for data allocation)

The following shows examples for data allocation by using Renesas IDE PM+ (CubeSuite+).

Constant array of "dummy" is defined as 16 bytes data of all "0", and it is allocated from 001FFF0H to 001FFFFH.

Please add the C source file and Link directive file as shown below.

C source) Add the following codes as constant array of "dummy".

```
#pragma section const "dummy" begin
const int ary[4]={0x00, 0x00, 0x00, 0x00};
#pragma section const "dummy" end
```

Link directive) Add the following codes of "DUMMY_CONST", "TEXT2" and "ROMP"

```
TEXT     : !LOAD ?RX {
        .pro_epi_runtime = $PROGBITS     ?AX .pro_epi_runtime;
        .text                  = $PROGBITS     ?AX .text;
};

DUMMY_CONST    : !LOAD ?R V0x1FFF0{
        dummy.const        = $PROGBITS     ?A dummy.const;
};


TEXT2 : !LOAD ?RX V0x20000{
        .text2            = $PROGBITS     ?AX .text {xxx.o,yyy.o};        (Note 1)
};

ROMP : !LOAD ?RX {
        .romp             = $PROGBITS     ?AX .text {rompcrt.o};
};
```

(Note 1) Regarding .text2 description, please assign user's object file name (xxx.o, yyy.o and so on).

These user's object files will be allocated upward to 0020000H.

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3. **List of usage restriction:**

No.	Contents	Kx1, Kx1+ series Mask ROM products		Kx1, Kx1+ series Flash memory products
		KF1: μPD703211 (Note) KG1: μPD703215, μPD703215Y KG1+: μPD703313, μPD703313Y	Other products (Except for the left column products.)	
1	Restriction of Mask ROM products	X	-	-

(Note) Including μPD703211Z.

Remark: The meaning of each symbol is as follows:

   X : Restriction applicable

   - : Restriction not applicable

4. **Revision history:**

Revision history of V850ES/Kx1 restriction notification

Document Number	Date Issued	Description
ZBG-CC-09-0049	November 9, 2009	Restriction on executing a mul or mulu instruction
TN-V85-A003A/E	March 10, 2014	Restriction of Mask ROM products (This document)

Revision history of V850ES/Kx1+ restriction notification

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ZBG-CC-09-0048	November 9, 2009	Restriction on executing a mul or mulu instruction
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