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RENESAS TECHNICAL UPDATE

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Product Category	MPU/MCU		Document No.	TN-RA*-A0120A/E	Rev.	1.00
Title	DLM (Device Lifecycle Management) default value at shipment		Information Category	Technical Notification		
Applicable Product	Each Group of RA4E1, RA4M2, RA4M3, RA6E1, RA6M4, RA6M5, RA6T2, RA8D1, RA8M1, RA8T1	Lot No. All	Reference Document	Refer the table 1		

Table 1 Reference Document List

No	Reference Document Name	Rev	Document Control Number
1	RA4E1 Group User's Manual Hardware	1.10	R01UH0929EJ0110
2	RA4M2 Group User's Manual Hardware	1.30	R01UH0892EJ0130
3	RA4M3 Group User's Manual Hardware	1.40	R01UH0893EJ0140
4	RA6E1 Group User's Manual Hardware	1.10	R01UH0930EJ0110
5	RA6M4 Group User's Manual Hardware	1.30	R01UH0890EJ0130
6	RA6M5 Group User's Manual Hardware	1.30	R01UH0891EJ0130
7	RA6T2 Group User's Manual Hardware	1.40	R01UH0951EJ0140
8	RA8D1 Group User's Manual Hardware	1.10	R01UH0995EJ0110
9	RA8M1 Group User's Manual Hardware	1.10	R01UH0994EJ0110
10	RA8T1 Group User's Manual Hardware	1.10	R01UH1016EJ0110

1. The changes to the RA4E1 microcontroller group are as follows.

1.1 The current description and changed description of “Table 42.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)” are shown below.

＜Current description＞ page 1367

Table 42.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available

＜Changed description＞

Table 42.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	"Chip Manufacturing" ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available
SSD	"Secure Software Development" The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	"Non-SECure Software Development" The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	"DePLoyed" The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	"LoCKed DeBuG" The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	"LoCKed BOOT interface" The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	"Return Material Authorization REQuest" Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available

1.2 The current description and changed description of "Table 42.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)" are shown below.

＜Current description＞ page 1368

Table 42.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
RMA_ACK	"Return Material Authorization ACKnowledged" Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

＜Changed description＞

Table 42.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
RMA_ACK	"Return Material Authorization ACKnowledged" Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

1.3 The current description and changed description of "42.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 1368

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

＜Changed description＞

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

2. The changes to the RA4M2 microcontroller group are as follows.

2.1 The current description and changed description of “Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)” are shown below.

＜Current description＞ page 1596

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available

＜Changed description＞

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available

2.2 The current description and changed description of “Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)” are shown below.

＜Current description＞ page 1597

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

＜Changed description＞

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

2.3 The current description and changed description of "46.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 1598

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

＜Changed description＞

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

3. The changes to the RA4M3 microcontroller group are as follows.

3.1 The current description and changed description of “Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)” are shown below.

＜Current description＞ page 1625

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available

＜Changed description＞

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available

3.2 The current description and changed description of “Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)” are shown below.

＜Current description＞ page 1626

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

＜Changed description＞

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

3.3 The current description and changed description of "46.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 1627

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

＜Changed description＞

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

4. The changes to the RA6E1 microcontroller group are as follows.

4.1 The current description and changed description of “Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)” are shown below.

＜Current description＞ page 1612

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available

＜Changed description＞

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available

4.2 The current description and changed description of “Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)” are shown below.

＜Current description＞ page 1613

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

＜Changed description＞

Table 46.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
SSD	"Secure Software Development" The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	"Non-SECure Software Development" The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	"DePLoyed" The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	"LoCKed DeBuG" The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	"LoCKed BOOT interface" The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	"Return Material Authorization REQuest" Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	"Return Material Authorization ACKnowledged" Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

4.3 The current description and changed description of "46.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 1614

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

＜Changed description＞

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

5. The changes to the RA6M4 microcontroller group are as follows.

5.1 The current description and changed description of “Table 49.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)” are shown below.

＜Current description＞ page 1799

Table 49.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available

＜Changed description＞

Table 49.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available

5.2 The current description and changed description of “Table 49.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)” are shown below.

＜Current description＞ page 1800

Table 49.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

＜Changed description＞

Table 49.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
SSD	"Secure Software Development" The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	"Non-SECure Software Development" The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	"DePLoyed" The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	"LoCKed DeBuG" The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	"LoCKed BOOT interface" The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	"Return Material Authorization REQuest" Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	"Return Material Authorization ACKnowledged" Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

5.3 The current description and changed description of "49.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 1801

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

＜Changed description＞

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

6. The changes to the RA6M5 microcontroller group are as follows.

6.1 The current description and changed description of “Table 52.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)” are shown below.

＜Current description＞ page 2163

Table 52.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available

＜Changed description＞

Table 52.8 The lifecycle definition and the capability can be used in each lifecycle (1 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available

6.2 The current description and changed description of “Table 52.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)” are shown below.

＜Current description＞ page 2164

Table 52.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

<Changed description>

Table 52.8 The lifecycle definition and the capability can be used in each lifecycle (2 of 2)

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
SSD	"Secure Software Development" The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	"Non-SECure Software Development" The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	"DePLoyed" The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	"LoCKed DeBuG" The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	"LoCKed BOOT interface" The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	"Return Material Authorization REQuest" Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	"Return Material Authorization ACKnowledged" Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

6.3 The current description and changed description of "52.3.1 Changing the Lifecycle State" are shown below.

<Current description> page 2165

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

<Changed description>

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

7. The changes to the RA6T2 microcontroller group are as follows.

7.1 The current description and changed description of “Table 45.8 The lifecycle definition and the capability can be used in each lifecycle” are shown below.

＜Current description＞ page 1702

Table 45.8 The lifecycle definition and the capability can be used in each lifecycle

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is in Renesas factory. The state when the customer received the device.	DBG2	Available cannot access code/data flash area	Not available
SSD	“Secure Software Development” The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	“Non-SECure Software Development” The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	“DePLoyed” The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	“LoCKed DeBuG” The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

＜Changed description＞

Table 45.8 The lifecycle definition and the capability can be used in each lifecycle

Lifecycle	Definition	Debug level	Serial programming	Renesas test mode
CM	"Chip Manufacturing" ~~The device is in Renesas factory. The state when the customer received the device.~~	DBG2	Available cannot access code/data flash area	Not available
SSD	"Secure Software Development" The secure part of application is being developed.	DBG2	Available can program/erase/read all code/data flash area	Not available
NSECSD	"Non-SECure Software Development" The non-secure part of application is being developed.	DBG1	Available can program/erase/read only non-secure code/data flash area	Not available
DPL	"DePLoyed" The device is in-field.	DBG0	Available cannot access code/data flash area	Not available
LCK_DBG	"LoCKed DeBuG" The debug interface is permanently disabled.	DBG0	Available cannot access code/data flash area	Not available
LCK_BOOT	"LoCKed BOOT interface" The debug interface and the serial programming interface are permanently disabled.	DBG0	Not available	Not available
RMA_REQ	"Return Material Authorization REQuest" Request for RMA. The customer must send the device to Renesas in this state.	DBG0	Available cannot access code/data flash area	Not available
RMA_ACK	"Return Material Authorization ACKnowledged" Failure analysis in Renesas	DBG2	Available cannot access code/data flash area	Available

Note: The customer receives the device in either CM or SSD state.

7.2 The current description and changed description of "45.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ - page 1703

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

＜Changed description＞

The third one is all erase. This is done by an initialize command unless an initialize command itself is disabled. The lifecycle is back to SSD and the contents on the flash memory is erased. If there is permanently locked block or register, an initialize command does not execute. In case of the all bits of PBPS and PBPS_SEC register are 1 and FSPR bit is1, an initialize command is executable.

Note: The initialize command can be issued by everyone, so contents on the flash memory are easily erased. Developers who do not want this can invalidate the initialize command permanently by parameter setting command.

Note: MCU does not respond after executing the initialize command. If you continue to use the serial programming commands, need to re-enter the boot mode after a reset. See the boot firmware application note for the detail.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to SSD in case of receiving in CM state.

Note: Use the serial programming in boot mode (SCI interface) or boot mode (USB interface) to change the device lifecycle state. A serial programming connection is also required even if debugging using SWD or JTAG communication.

8. The changes to the RA8D1 microcontroller group are as follows.

8.1 The current description and changed description of “Table 43.6 Lifecycle state definition and capabilities in each state” are shown below.

＜Current description＞ page 2235

Table 43.6 Lifecycle state definition and capabilities in each state

Lifecycle	Definition	Protection level	Debug function	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is out of Renesas factory. The customer receives the device in this state.	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Not available
OEM	“Original Equipment Manufacturer” The device is owned by the customer.	PL2 or PL1 or PL0	Depend on the authentication level		Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	PL0	Not available	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	PL0	Not available	Available Cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Available
RMA_RET	“Return Material Authorization RETurn” The device is back to the customer. The device does not boot.	PL0	Not available	Not available	Not available

＜Changed description＞

Table 43.6 Lifecycle state definition and capabilities in each state

Lifecycle	Definition	Protection level	Debug function	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is out of Renesas factory. The customer receives the device in this state.~~	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Not available
OEM	“Original Equipment Manufacturer” The device is owned by the customer.	PL2 or PL1 or PL0	Depend on the authentication level		Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	PL0	Not available	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	PL0	Not available	Available Cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Available
RMA_RET	“Return Material Authorization RETurn” The device is back to the customer. The device does not boot.	PL0	Not available	Not available	Not available

Note: The customer receives the device in either CM or OEM state (Protection level: PL2).

8.2 The current description and changed description of "43.4.1 Changing the Lifecycle State" are shown below.

＜Current description＞ 2236

The contents of the flash memory except permanently locked blocks or registers are erased when transitioning to RMA_REQ. The contents of the permanently locked blocks or registers can be read by Renesas at failure analysis. A flash block can permanently locked by setting the PBPS/PBPS_SEC and BPS_SEL registers to permanently disable programming and erasure of the block. The SAS register can be permanently locked by the FSPR bit, permanently disabling programming and erasure of the register. Transition to RMA_REQ is not possible if the AL2_KEY is disabled. The MCU does not respond after changing the device lifecycle state to RMA_REQ. To continue to use boot firmware commands, you must enter boot mode again after a reset. See the boot firmware application note for details.

Transition from OEM to LCK_BOOT is possible unless that transition has been explicitly disabled. Use the parameter setting command in AL2 or AL1 to prohibit the transition to LCK_BOOT. The LCK_BOOT transition prohibition is a permanent setting and cannot be undone. The debug interface and serial programming interface are permanently disabled in LCK_BOOT.

＜Changed description＞

The contents of the flash memory except permanently locked blocks or registers are erased when transitioning to RMA_REQ. The contents of the permanently locked blocks or registers can be read by Renesas at failure analysis. A flash block can permanently locked by setting the PBPS/PBPS_SEC and BPS_SEL registers to permanently disable programming and erasure of the block. The SAS register can be permanently locked by the FSPR bit, permanently disabling programming and erasure of the register. Transition to RMA_REQ is not possible if the AL2_KEY is disabled. The MCU does not respond after changing the device lifecycle state to RMA_REQ. To continue to use boot firmware commands, you must enter boot mode again after a reset. See the boot firmware application note for details.

Transition from OEM to LCK_BOOT is possible unless that transition has been explicitly disabled. Use the parameter setting command in AL2 or AL1 to prohibit the transition to LCK_BOOT. The LCK_BOOT transition prohibition is a permanent setting and cannot be undone. The debug interface and serial programming interface are permanently disabled in LCK_BOOT.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to OEM in case of receiving in CM state.

9. The changes to the RA8M1 microcontroller group are as follows.

9.1 The current description and changed description of “Table 43.6 Lifecycle state definition and capabilities in each state” are shown below.

＜Current description＞ page 2206

Table 43.6 Lifecycle state definition and capabilities in each state

Lifecycle	Definition	Protection level	Debug function	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is out of Renesas factory. The customer receives the device in this state.	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Not available
OEM	“Original Equipment Manufacturer” The device is owned by the customer.	PL2 or PL1 or PL0	Depend on the authentication level		Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	PL0	Not available	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	PL0	Not available	Available Cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Available
RMA_RET	“Return Material Authorization RETurn” The device is back to the customer. The device does not boot.	PL0	Not available	Not available	Not available

＜Changed description＞

Table 43.6 Lifecycle state definition and capabilities in each state

Lifecycle	Definition	Protection level	Debug function	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is out of Renesas factory.~~ ~~The customer receives the device in this state.~~	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Not available
OEM	“Original Equipment Manufacturer” The device is owned by the customer.	PL2 or PL1 or PL0	Depend on the authentication level		Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	PL0	Not available	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	PL0	Not available	Available Cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Available
RMA_RET	“Return Material Authorization RETurn” The device is back to the customer. The device does not boot.	PL0	Not available	Not available	Not available

Note: The customer receives the device in either CM or OEM state (Protection level: PL2).

9.2 The current description and changed description of "43.4.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 2207

The contents of the flash memory except permanently locked blocks or registers are erased when transitioning to RMA_REQ. The contents of the permanently locked blocks or registers can be read by Renesas at failure analysis. A flash block can permanently locked by setting the PBPS/PBPS_SEC and BPS_SEL registers to permanently disable programming and erasure of the block. The SAS register can be permanently locked by the FSPR bit, permanently disabling programming and erasure of the register. Transition to RMA_REQ is not possible if the AL2_KEY is disabled. The MCU does not respond after changing the device lifecycle state to RMA_REQ. To continue to use boot firmware commands, you must enter boot mode again after a reset. See the boot firmware application note for details.

Transition from OEM to LCK_BOOT is possible unless that transition has been explicitly disabled. Use the parameter setting command in AL2 or AL1 to prohibit the transition to LCK_BOOT. The LCK_BOOT transition prohibition is a permanent setting and cannot be undone. The debug interface and serial programming interface are permanently disabled in LCK_BOOT.

＜Changed description＞

The contents of the flash memory except permanently locked blocks or registers are erased when transitioning to RMA_REQ. The contents of the permanently locked blocks or registers can be read by Renesas at failure analysis. A flash block can permanently locked by setting the PBPS/PBPS_SEC and BPS_SEL registers to permanently disable programming and erasure of the block. The SAS register can be permanently locked by the FSPR bit, permanently disabling programming and erasure of the register. Transition to RMA_REQ is not possible if the AL2_KEY is disabled. The MCU does not respond after changing the device lifecycle state to RMA_REQ. To continue to use boot firmware commands, you must enter boot mode again after a reset. See the boot firmware application note for details.

Transition from OEM to LCK_BOOT is possible unless that transition has been explicitly disabled. Use the parameter setting command in AL2 or AL1 to prohibit the transition to LCK_BOOT. The LCK_BOOT transition prohibition is a permanent setting and cannot be undone. The debug interface and serial programming interface are permanently disabled in LCK_BOOT.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to OEM in case of receiving in CM state.

10. The changes to the RA8T1 microcontroller group are as follows.

10.1 The current description and changed description of “Table 37.6 Lifecycle state definition and capabilities in each state” are shown below.

＜Current description＞ page 1887

Table 37.6 Lifecycle state definition and capabilities in each state

Lifecycle	Definition	Protection level	Debug function	Serial programming	Renesas test mode
CM	“Chip Manufacturing” The device is out of Renesas factory. The customer receives the device in this state.	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Not available
OEM	“Original Equipment Manufacturer” The device is owned by the customer.	PL2 or PL1 or PL0	Depend on the authentication level		Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	PL0	Not available	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	PL0	Not available	Available Cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Available
RMA_RET	“Return Material Authorization RETurn” The device is back to the customer. The device does not boot.	PL0	Not available	Not available	Not available

＜Changed description＞

Table 37.6 Lifecycle state definition and capabilities in each state

Lifecycle	Definition	Protection level	Debug function	Serial programming	Renesas test mode
CM	“Chip Manufacturing” ~~The device is out of Renesas factory. The customer receives the device in this state.~~	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Not available
OEM	“Original Equipment Manufacturer” The device is owned by the customer.	PL2 or PL1 or PL0	Depend on the authentication level		Not available
LCK_BOOT	“LoCKed BOOT interface” The debug interface and the serial programming interface are permanently disabled.	PL0	Not available	Not available	Not available
RMA_REQ	“Return Material Authorization REQuest” Request for RMA. The customer must send the device to Renesas in this state.	PL0	Not available	Available Cannot access code/data flash area	Not available
RMA_ACK	“Return Material Authorization ACKnowledged” Failure analysis in Renesas	PL2	Available in the secure and non-secure debug	Available Cannot access code/data flash area	Available
RMA_RET	“Return Material Authorization RETurn” The device is back to the customer. The device does not boot.	PL0	Not available	Not available	Not available

Note: The customer receives the device in either CM or OEM state (Protection level: PL2).

10.2 The current description and changed description of "37.3.1 Changing the Lifecycle State" are shown below.

＜Current description＞ page 1888

block can permanently locked by setting the PBPS/PBPS_SEC and BPS_SEL registers to permanently disable programming and erasure of the block. The SAS register can be permanently locked by the FSPR bit, permanently disabling programming and erasure of the register. Transition to RMA_REQ is not possible if the AL2_KEY is disabled. The MCU does not respond after changing the device lifecycle state to RMA_REQ. To continue to use boot firmware commands, you must enter boot mode again after a reset. See the boot firmware application note for details.

Transition from OEM to LCK_BOOT is possible unless that transition has been explicitly disabled. Use the parameter setting command in AL2 or AL1 to prohibit the transition to LCK_BOOT. The LCK_BOOT transition prohibition is a permanent setting and cannot be undone. The debug interface and serial programming interface are permanently disabled in LCK_BOOT.

＜Changed description＞

block can permanently locked by setting the PBPS/PBPS_SEC and BPS_SEL registers to permanently disable programming and erasure of the block. The SAS register can be permanently locked by the FSPR bit, permanently disabling programming and erasure of the register. Transition to RMA_REQ is not possible if the AL2_KEY is disabled. The MCU does not respond after changing the device lifecycle state to RMA_REQ. To continue to use boot firmware commands, you must enter boot mode again after a reset. See the boot firmware application note for details.

Transition from OEM to LCK_BOOT is possible unless that transition has been explicitly disabled. Use the parameter setting command in AL2 or AL1 to prohibit the transition to LCK_BOOT. The LCK_BOOT transition prohibition is a permanent setting and cannot be undone. The debug interface and serial programming interface are permanently disabled in LCK_BOOT.

Note: For proper DLM state management, it is required to issue an initial DLM state transition command to OEM in case of receiving in CM state.

11. Supplementary Note

This change does not affect any Renesas tools.

More details on how to determine and handle the MCU DLM state, please refer to the following application notes.

R01AN6787 “Implementing Production Programming Tools for RA Cortex-M33 with Device Lifecycle Management”

R11AN0785 “Device Lifecycle Management for RA8 MCUs”

- That's all -