

MCU BOOT ROM - Differences between versions

Specification

CAL228

Ver.: 1.0

Department: European Wireless Terminal Chipset Business Unit.

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Date	12-Feb-02



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PAGE: 1/7

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HISTORY

Version	Date	Author	Approval manager	Approval date	Notes
Ver: 1.0	12-Feb-02	Francois AMAND	Alain BOYADJIAN	14-Feb-02	1
Ver: 2.0					2
Ver: 3.0					3
Ver: 4.0					4

NOTES :

1. Creation of the document
2.
3.
4.



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PAGE: 2/7

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SUMMARY

1.	Introduction	4
2.	Reference documents	4
3.	Glossary	4
4.	ROM Code correspondence	4
5.	Differences between F741979A and F741979B	4
5.1	<i>Enhancement and corrected bug</i>	4
5.2	<i>Open limitations</i>	5
5.3	<i>Internal SRAM memory mapping</i>	5
5.4	<i>Customer impacts</i>	5
5.4.1	FLASH programmer	5
6.	Differences between F741979B and F751619	6
6.1	<i>Enhancement and corrected bug</i>	6
6.2	<i>Internal SRAM memory mapping</i>	6
6.3	<i>Customer impacts</i>	7
6.3.1	FLASH programmer	7
6.3.2	Main application	7



1. Introduction

The goal of this document is to highlight the differences between the different MCU ROM code versions in order to facilitate the migration.

2. Reference documents

Reference number	Specification name	Version	Description
1	CAL208	1.1	CALYPSO MCU BOOT ROM application
2	CAL208	1.2	CALYPSO MCU BOOT ROM application
3	CAL208	1.3	CALYPSO MCU BOOT ROM application
4	Teamtrack		Bug tracking

3. Glossary

- FLASH Programmer: this is the application downloaded from UARTs in order to program the FLASH.
- Main application: this is the application programmed in FLASH.

4. ROM Code correspondence

Chip number	BOOT ROM code version	Identifier	Checksum	Checksum function address
F741979A	1.0.0	Not applicable	Not applicable	Not applicable
F741979B	2.0.0	0x0200	0xB2BA	0000:16B8
F751619	3.0.0	0x0300	0xF1E3	0000:1608

Note:

- F741979A ⇔ CALYPSO C05 Rev A
- F741979B ⇔ CALYPSO C05 Rev B
- F751619 ⇔ CALYPSO C035

5. Differences between F741979A and F741979B

5.1 Enhancement and corrected bug

- BUG01710 - Stack location is located at the end of the .bss section.
 - Impact: refer to section 5.3.
- REQ01711 - Internal SRAM memory mapping not optimized.
 - Impact: refer to section 5.3.
- REQ01713 - The BOOT ROM code does not contain a ROM code identifier.
 - Impact: There are no impacts on the customer side.
- REQ01714 - ROM code checksum computing function not available.
 - Impact: There are no impacts on the customer side.
- BUG01715 - Code size of ROM code is not 8KBytes.
 - Impact: There are no impacts on the customer side.
- REQ01717 - Address checking of reserved memory for FLASH programmer is static.
 - Impact: There are no impacts on the customer side.

5.2 Open limitations

The Open Limitations concern only the “Interrupt vector in BOOT ROM” feature.

- BUG01716 - BOOT ROM application switches from Supervisor to User mode.
 - Workaround: The entry point of the application must switch in the appropriate ARM mode thanks to SWI interrupt before to start first configuration (stack pointer of different mode for example).
- BUG01712 - Interrupt vector in BOOT ROM does not run.
 - Workaround: The interrupt function of the main application must recover R4 and LR from stack thanks to instruction *LDMFD SP!, {R4, LR}* before to perform any other task.

5.3 Internal SRAM memory mapping

F741979A			F741979B			Memory
Start	Length	Definition	Start	Length	Definition	
0000:0000	0x2000	Boot program	0000:0000	0x1FFE	Boot program	BOOT ROM
			0000:1FFE	0x02	Code identifier on 16 bits	
0000:2000	0x04	Boot ROM location status	0000:2000	0x04	Boot ROM location status	External FLASH
0000:2004	0x04	Entry point address of the application	0000:2004	0x04	Entry point address of the application	
0080:0000	0x20	Address of Application interrupt vector	0080:0000	0x20	Address of Application interrupt vector	Internal SRAM
0080:0020	0x588	Boot Data memory	0080:0020	0x71C	Boot Data and Stack memory	
0000:05A8	0x1EA58	Free	0080:073C	0x7F8C4	FLASH programmer application (downloaded thanks to RAM loader)	
0081:F000	0x190	Boot Stack memory				
0081:F190	0xE70	Free				
0082:0000	0x60000	FLASH programmer application (downloaded thanks to RAM loader)				

Note: the “length” field defines the number of byte in the specified memory range.

5.4 Customer impacts

5.4.1 FLASH programmer

- A FLASH programmer downloaded on CALYPSO C05 Rev A **CAN** be downloaded on CALYPSO C05 Rev B.
- A FLASH programmer downloaded on CALYPSO C05 Rev B **CAN NOT** be downloaded on CALYPSO C05 Rev A.

6. Differences between F741979B and F751619

6.1 Enhancement and corrected bug

- BUG01716 - BOOT ROM application switches from Supervisor to User mode.
 - Workaround: The entry point of the application must switch in the appropriate ARM mode thanks to SWI interrupt before to start first configuration (stack pointer of different mode for example).
- BUG01712 - Interrupt vector in BOOT ROM does not run.
 - Workaround: The interrupt function of the main application must recover R4 and LR from stack thanks to instruction *LDMFD SP!, {R4, LR}* before to perform any other task.

6.2 Internal SRAM memory mapping

F741979B			F751619			Memory
Start	Length	Definition	Start	Length	Definition	
0000:0000	0x1FFE	Boot program	0000:0000	0x1FFE	Boot program	BOOT ROM
0000:1FFE	0x02	Code identifier on 16 bits	0000:1FFE	0x02	Code identifier on 16 bits	
0000:2000	0x04	Boot ROM location status	0000:2000	0x04	Boot ROM location status	External FLASH
0000:2004	0x04	Entry point address of the application	0000:2004	0x04	Entry point address of the application	
0080:0000	0x20	Address of Application interrupt vector	0080:0000	0x1C	Address of Application interrupt vector	Internal SRAM
0080:001C	0x4	Free	0080:001C	0x1C	Interrupt indirect call	
0080:0020	0x71C	Boot Data and Stack memory	0080:0038	0x718	Boot Data and Stack memory	
0080:073C	0x7F8C4	FLASH programmer application (downloaded thanks to RAM loader)	0080:0750	0x7F8B0	FLASH programmer application (downloaded thanks to RAM loader)	

Note: the “length” field defines the number of byte in the specified memory range.

6.3 Customer impacts

6.3.1 FLASH programmer

- A FLASH programmer downloaded on CALYPSO C05 Rev B **CAN NOT** be downloaded on CALYPSO C035.
- A FLASH programmer downloaded on CALYPSO C035 **CAN** be downloaded on CALYPSO C05 Rev B.

6.3.2 Main application

- The main application must take into account the memory range reserved to perform the interrupt indirect call (0080:001C to 0080:0034). In consequence, the free Internal SRAM memory for the main application starts at the address 0080:0038 instead of 0080:0020.
- All software workaround implemented in the Main application in order to use “Interrupt vector in BOOT ROM” feature must/can be removed:
 - BUG01712: MUST be removed in order to avoid interrupt stack corruption.
 - BUG01716: CAN be removed.

