ÅAC Sirius Product Family Errata

Rev. I

Introduction

Purpose of document

This document details the errata in the ÅAC Sirius Breadboard and its manual, [RD1].

Revision log

Rev	Date	Change description	Prepared
A	2016-10-07	First issue	E. Zachrisson
B	2016-11-03	Update for release 0.7.0	M. Werner
C	2017-01-03	Update for release 0.8.0	M. Werner
D	2017-02-01	Update for release 0.9.0	M. Werner
E	2017-03-07	Update for release 0.10.0	M. Werner
F	2017-04-18	Update for release 0.11.0	M. Werner
G	2017-10-31	Update for release 1.0.0 Update for release 1.1.0	M. Werner
H	2018-03-06	Removed #1452, #1619, #1743, #1824, #1890, #1897, #1898, #1954, #1960, #2131, #2238 and #2493.	J. Viketoft
I	2018-04-16	Removed #1743, #1954 and #2488. Added #2577 and #2596.	M. Werner

Reference documents

Rev	Document Ref	Document name
RD1	205065, rev I	Sirius Product User Manual

List of errata

Table 1 specifies which devices and what revisions that are affected by the errata described in this document.

Table 1 Affected units

Errata description	OBC-S	TCM-S w. o. Software	TCM-S w. software
System			
#1061 Error injection mechanisms missing	**All**	**All**	**All**
TCM-S Core Application			
#1576 RMAP data checksums are not checked nor generated			**All**
#2291 COP-1, Setting V(R) to a fixed value does not work			**All**
#2431 TC reconfiguration affects ongoing download			**All**
#2495 Mass memory uncorrectable read errors are not reported			**All**
#2577 Mass memory downloads beyond range end may cause download failure**Error! Reference source not found.**			**All**
#2596 Mass memory partitions with 48k segments are not recommended			**All**
GDB			
#1207 Writing and reading to non-32-bit-aligned addresses does not work	**All**	**All**	**All**
#1332 Breakpoints may change subsequent program behaviour	**All**	**All**	**All**
RTEMS			
#1879 UART driver allows multiple opens for same device	**All**	**All**	
#1896 CCSDS driver allows multiple opens for same device	**All**	**All**	

System

#1061 Error injection mechanisms missing

Description	Error detection and recovery mechanisms are currently unverifiable outside of radiation testing for RAM, CPU and system flash, due to the lack of mechanisms for injecting errors.
Impact	Hard to verify customer error detection and recovery algorithms and error counting registers
Suggested Workaround	None

TCM-S Core Application

#1576 RMAP data checksums are not checked nor generated

Description	Due to performance reasons the incoming data CRC on RMAP commands is not checked nor is any CRC generated on outgoing RMAP commands.
Impact	Corrupt data packets may enter / leave the system
Suggested Workaround	Do not check data CRC on messages from the TCM Core Application.

#2291 COP-1, Setting V(R) to a fixed value does not work

Description	Trying to manually set a known V(R) value of the FARM-1 does not work.
Impact	Setting a known V(R) does not work
Suggested Workaround	None available

#2431 TC reconfiguration affects ongoing download

Description	Doing a reconfiguration of the telecommand path or telemetry path while a download is in progress affects the ongoing download.
Impact	Error will occur in download which will be aborted.
Suggested Workaround	Before doing a configuration of telecommand path or telemetry path, stop any ongoing downloads.

#2495 Mass memory uncorrectable read errors are not reported

Description	The TCM core application mass memory handler does not propagate uncorrectable read errors.
Impact	The RMAP read reply status of mass memory read commands does not provide information if the read contained uncorrectable errors.
Suggested Workaround	Do not rely on mass memory RMAP read reply status for data consistency verification.

#2577 Mass memory downloads beyond range end may cause download failure

Description	The TCM core application mass memory handler does not properly handle downloads with sizes beyond the end of a range of available data, if this download was started from a point which is not the beginning of that range.
Impact	The TCM core application download may fail and render further downloads impossible until restarted.
Suggested Workaround	If starting a download from an offset within a range, ensure that the end point does not exceed the end of that range.

#2596 Mass memory partitions with 48k segments are not recommended

Description	TCM core application configurations with mass memory partitions of segment size 48k are not recommended and will likely be removed in a future release.
Impact	Partitions with segment size 48k demands special attention when downloading and writing at logical address space wrap and when freeing due to neither the logical address space maximum nor the block size being an even multiple of the segment size.
Suggested Workaround	Avoid using partitions with 48k segments.

GDB

#1207 Writing and reading to non-32-bit-aligned addresses does not work

Description	The debugger interface to the OpenRISC CPU does not support byte writing and reading on non-32-bit-aligned addresses
Impact	When using gdb single bytes cannot be manipulated nor observed.
Suggested Workaround	Align all writes and read on a 32 bit data word basis, i.e. step the address by 4 and write 32 bits at a time.

#1332 Breakpoints may change subsequent program behaviour

Description	When using breakpoints, the execution of code may show unreliable results around the location of the breakpoint, which is not representative of execution without breakpoints.
Impact	Breakpoints cannot in general be reliably used as a pause point for subsequent stepping or execution.
Suggested Workaround	Try using other debug methods, such as printouts.

RTEMS

#1879 UART driver allows multiple opens for same device

Description	The RTEMS driver does not block multiple opens of the same device.
Impact	Multiple opens of the same device may lead to conflicts in data handling.
Suggested Workaround	Enforce single opens per device on application layer.

#1896 CCSDS driver allows multiple opens for same device

Description	The RTEMS driver does not block multiple opens of the same device.
Impact	Multiple opens of the same device may lead to conflicts in data handling.
Suggested Workaround	Enforce single opens per device on application layer.