ÅAC Sirius Product Family Errata

Rev. B

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

Reference documents

Rev	Document Ref	Document name
RD1	204911, L	Sirius Breadboard 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 Breadboard	TCM-S w. o. Software	TCM-S w. software
System			
#1061 Error detection and recovery unverified	**All**	**All**	**All**
TCM-S Core Application			
#1537 PUS packet size limitation			**All**
#1558 Spurious warning generated when entering AD mode			**All**
#1576 RMAP data checksums are not checked nor generated			**All**
#1589 TCM-S Accepts TCs with bad MAPID			**Al**
#1619 Download fails when sweeping packet sizes			**All**
#1714 Mass memory status is not retained between power cycles			**All**
#1752 Downloading and receiving spacewire simultaneously			**All**
#1788 Unable to set TM bitrate divisor to 0xFF			**All**
#1816 TC_BUFFER_CNT field is always 0 upon RMAP TCStatus readout			**All**
#1817 TC errors and TM error notification			**All**
#1818 TM timestamping not implemented			**All**
#1824 Unable to read CPDU index			**All**
#1839 No PUS success report is generated when sending TC to TCM-S			**All**
#1909 data frames can not be sent when idle frames are switched off			**All**
#1911 Mass memory, block 0 – 3 are reserved			**All**
#1944 Reading from spacewire fails when updating read/write pointers			**All**
#1629 Cannot handle spacewire packets of maximum size			**All**
Spacewire			
#1155 Minimum pkt size limitation	**All**	**All**	**All**
GDB			
#1207 writing and reading to non-32-bit-aligned addresses does not work	**All**	**All**	**All**

System

#1061 Error detection and recovery unverified

Description	Many of the error detection and recovery mechanisms are currently unverified outside of radiation testing due to the lack of mechanisms of injecting errors..
Impact	Possible non-working error detection and recovery algorithms, non-working error counting registers
Suggested Workaround	None

TCM-S Core Application

#1537 PUS packet size limitation

Description	The current mass memory implementation only support 32 bit aligned reads. When unaligned packets are stacked on top of each other, packets will start on unaligned offsets which are forbidden.
Impact	If unaligned reads are performed the application may potentially crash. Data will not be successfully retrieved
Suggested Workaround	All PUS packet sizes must be 32 bit aligned, possibly extending the packet up to 3 bytes to reach an 32 bit aligned size.

#1558 Spurious warning generated when entering AD mode

Description	An invalid warning is generated when the TCM Core Application changes to AD mode.
Impact	None
Suggested Workaround	Disregard message on the debug UART.

#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.

#1589 TCM-S Accepts TCs with bad MAPID

Description	The TCM-S accepts telecommands with MAPID=1 but should only accept command with MAPID=0
Impact	TCs with wrong MAPID are accepted and routed in the system
Suggested Workaround	None.

#1619 Download fails when sweeping packet sizes

Description	When downloading packets of size 50k or larger from Mass Memory, the download fails and the TCM-S throws a bus-error

	and crashes.
Impact	Downloading PUS packets of size 50 k or larger will not work.
Suggested Workaround	Don't use PUS packet larger than 20k.

#1714 Mass memory status is not retained between power cycles

Description	Current driver implementation for mass memory use block 0 – 3 for tracking bad blocks.
Impact	Any data written to block 0 – 3 will be wiped out by the driver upon initialization
Suggested Workaround	Do not use block 0 - 3

#1752 Downloading and receiving spacewire simultaneously

Description	When doing a download of a couple of megabytes and RMAP commands are received over spacewire causes issues such as problems with buffer allocation, wrong packet content in download.
Impact	Commands not handled, downloaded data not correct
Suggested Workaround	Don't send RMAP-commands while doing a download. Divide a larger download into several, smaller downloads instead.

#1788 Unable to set TM bitrate divisor to 0xFF

Description	Setting different bitrates up to 0xFE by a RMAP command works, but setting a value of 0xFF has no effect
Impact	Setting a bitrate to 0xFF over RMAP is not working
Suggested Workaround	Don't use a TM divisor of 0xFF. If needed, do required configurations of the downlink of the Ground Station Equipment.

#1816 TC_BUFFER_CNT field is always 0 upon RMAP TCStatus readout

Description	When performing the RMAP TCStatus command via RMAP the TC_BUFFER_CNT aka Length of the last received TC frame field is always zero.
Impact	The reported length of the last received TC is not valid
Suggested Workaround	None.

#1817 TC errors and TM error notification

Description	Asynchronous error reporting of TC and TM errors are not implemented.
Impact	Notification messages when a TM or TC error occur will not be send over SpW.
Suggested Workaround	Use RMAP command TMStatus to get status of TM path. Use RMAP command TCStatus to get status of TC path.

#1818 TM timestamping not implemented

Description	The TM timestamping and TMTSControl RMAP command is currently not implemented
Impact	TM timestamping does not work
Suggested	None

Workaround	

#1824 Unable to read CPDU index

Description	The CPDU index is cleared upon CPDU-interrupt, so the TCM-S application cannot read the last activated CPDU-index.
Impact	Not possible to get CPDU index by RMAP-command.
Suggested Workaround	None.

#1839 No PUS success report is generated when sending TC to TCM-S

Description	When a TC with an APID addressed for the TCM-S application, no success report is generated.
Impact	When sending a TC to the TCM-S, no information if the command was received will be reported to the Ground Station
Suggested Workaround	None.

#1909 data frames can not be sent when idle frames are switched off

Description	If generation of Idle-frames is disabled, no TM frames will be generated.
Impact	No data can be send on the downlink.
Suggested Workaround	Don't disable generation of Idle-frames.

#1911 Mass memory, block 0 – 3 are reserved

Description	Current driver implementation uses block 0 – 3 for tracking bad blocks.
Impact	Any data written to block 0 – 3 will be wiped out by the driver upon initialization
Suggested Workaround	Do not use block 0 - 3

#1944 Reading from spacewire fails when updating read/write pointers

Description	If a read from spacewire occurs soon after a read/write pointer update, received spacewire data may be corrupt
Impact	Pointer update commands cannot be used together with continuous spacewire traffic
Suggested Workaround	Wait 0.5s after triggering a pointer update before sending further spacewire traffic

#1629 Cannot handle spacewire packets of maximum size

Description	Due to the TCM core app reading spacewire packets into a buffer of size SPWN_MAX_PACKET_SIZE at offset 128, a packet which is larger than SPWN_MAX_PACKET_SIZE - 128 will cause a buffer overflow.
Impact	Maximum spacewire packet size is less than specified
Suggested	Limit spacewire maximum packet size to

Workaround	SPWN_MAX_PACKET_SIZE - 128

Spacewire

#1155 Minimum pkt size limitation

Description	Packets smaller than 4 bytes are not received correctly.
Impact	Packets small than 4 bytes cannot be used.
Suggested Workaround	All spacewire packets must have size between 4 and 65535 octets

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.

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