

To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
Date: 23 June 2003
Subject: T10/03-223r0 SAS Changes from sas-r04 to sas-r04a

Revision History

Revision 0 (23 June 2003) first revision

Related Documents

sas-r04 - Serial Attached SCSI revision 4

Overview

A few comments were received on sas-r04 during the SAS public review timeframe and are corrected in sas-r04a and the revision for ISO ballot.

Changes from sas-r04 to sas-r04a

Page 4, 2.3 References under development

Fill in ISO xxx with the numbers T10 plans to use: 413 for SAM-3, 453 for SPC-3, 322 for SBC-2

Page 4, 2.3 References under development, Note 1

Change "this document" to "these documents"

Page 4, 2.4 Other references

Update names of SFF documents:

SFF-8470 was "Multi Lane Copper Connector", now "Shielded High Speed Multilane Copper Connector"

SFF-8482 was "SAS Plug Connector", now "Internal Serial Attachment Connector"

Pages 88, 89, 5.3.5 Signal characteristics at IR, CR, and XR, Table 26

SAS currently specifies 1200mV pk-pk as the maximum voltage for 1,5 Gbps internal signals. SATA has adopted the SAS external level of 1600mV pk-pk maximum for both 1,5 and 3,0 Gbps applications for external and backplane applications (Gen1x, Gen2x). Talking with people from various companies involved with both SAS and SATA PHY work, it would be possible to increase the SAS 1,5 Gbps level to 1600mV maximum to have consistency in both SAS and SATA specifications without significant hardware impact. I am concerned that SATA and SAS will be different if a 1600mV pk-pk SATA product at 1,5 Gbps for backplane applications is made available (Gen1x) and the SAS specification is not changed.

Bottom line: Can we take action to increase the SAS 1,5 Gbps maximum signal level to 1600mV pk-pk at this stage of the specification? It doesn't appear to be an issue from a hardware standpoint since SAS products will primarily target the 3,0 Gbps which are allowed to transmit at this level. Comments are encouraged.

Page 111, Table 43 - SATA speed negotiation sequence timing specifications

Change "32 768 OOBIs" to "1 310 720 OOBIs".

The conversion from 880 usec to OOBIs was done incorrectly from r03 to r04 - it's supposed to be 32 768 dwords, not 32 768 bit periods (OOBIs).

Pages 121, 125, 129 (6.7.3, 6.7.4, 6.7.5)

Fix hanging paragraphs (move text into 6.7.x.1 overview subsections).

Page 122, Section 6.7.3.3.3 Transition SP2:OOB_NoCOMSATimeout to SP3:OOB_AwaitCOMINIT_Sent

This should be to SP4:COMSAS

Page 211, 7.15.9.1 XL6:Open_Response_Wait state description

Delete "containing a higher priority OPEN address frame (see 7.12.3)."

Items c) and e) describe OPENs crossing before AIP, where priority matters.

Items d) and f) describe an OPEN after AIP, where priority doesn't matter.

The phrase that was supposed to be deleted - "containing a higher priority OPEN address frame according to the arbitration fairness comparison (see 7.12.3)" was only partially deleted from f) although it was fully deleted from d).

Page 223, 7.16.7.5 SSP_D state machine

Change Transmitted DONE (NORMAL) to Transmitted DONE (Normal) twice.

Change Transmitted DONE (CREDIT TIMEOUT) to Transmitted DONE (Credit Timeout) twice.

Page 257, 8.2.3.3.5 PL_PL2:Req_Wait connection management

Delete "If this state receives a Connection Closed confirmation, then this state shall send a Connection Closed message to the PL_OC state machine." and remove Connection Closed from figure 107 (page 254). That confirmation never reaches this state (PL_PM3 handles it).

Page 257, 8.2.3.3.5 PL_PL2:Req_Wait connection management

Delete "If this state receives a DONE Timeout confirmation, then this state shall send a Connection Closed message to the PL_OC state machine." There is no corresponding confirmation in the figure, as this was already moved to PL_PM3.

Pages 258, 259, 8.2.3.4.1 PL_PM3:Connected state description

Add "to the link layer" after "shall send a Close Connection request" two times.

Page 259, 8.2.3.4.1 PL_PM3:Connected state description

Change "Cancel Open" to "Close Connection" to match the figure.

Page 297, 9.4.5.2.4.1 MT_IP3:Receive state description

Change "not equal to 40h" to "not equal to 41h".

The preceding sentence references 41h and is correct.