To: T10 Technical Committee
From: Barry Olawsky, HP (barry.olawsky@hp.com)
Date: 8 November 2004
Subject: T10/04-378r0 SAS-1.1 Clarification of SATA Signaling Level Specification

Revision History
Revision 0 (8 November 2004) first revision

Related Documents
sas1r05 - Serial Attached SCSI 1.1 revision 5
03-240r1 - SAS-1.1 Merge IT and IR with XT and XR (Rob Elliott, Hewlett Packard)

Overview
Evaluate validity of SATA mode receiver sensitivity spec for XR and IR.

Proposed Changes
Add following note to table 30 referencing the 225mV cell in SATA column.

Worst case rise/fall time and jitter of SATA device may reduce amplitude at XR/IR point.
Supporting Information Only (NOT part of SAS-1.1 proposal):

To evaluate the existing SATA mode receive output level specification, a TCTF test load for IT/XT was constructed. The amplitude was measured at the far end of the TCTF test load with a variety of transmitter and data pattern configurations as detailed below with each scope capture.

S21 of TCTF test load:
Vpp at receiver end of TCTF test load with
- D3186 pattern generator transmitting D10.2
- Vpp at transmitter of 400mVpp
- Measured amplitude of 310mVpp at scope terminated load

Vpp at receiver end of TCTF test load with
- D3186 pattern generator transmitting K28.5+, K28.5- (Note, this pattern is invalid)
- Vpp at transmitter of 400mVpp
- Measured amplitude of 287mVpp at scope terminated load
Vpp at receiver end of TCTF test load with
- D3186 pattern generator transmitting D12.0-, D11.4+
- Vpp at transmitter of 400mVpp
- Measured amplitude of 292mVpp at scope terminated load

Vpp at receiver end of TCTF test load with
- D3186 pattern generator transmitting D11.7+, D20.7-
- Vpp at transmitter of 400mVpp
- Measured amplitude of 285mVpp at scope terminated load
Vpp at receiver end of TCTF test load with
- D3186 pattern generator transmitting PRBS7
- Vpp at transmitter of 400mVpp
- Measured amplitude of 281mVpp at scope terminated load

Vpp at receiver end of TCTF test load with
- 100ps edge rate reference phy transmitting D10.2
- Vpp at transmitter of 400mVpp (with scaling factor on scope)
- Measured amplitude of 303mVpp at scope terminated load
Vpp at receiver end of TCTF test load with
- 100ps edge rate reference phy transmitting K28.5+, K28.5- (Note, this pattern is invalid)
- Vpp at transmitter of 400mVpp
- Measured amplitude of 290mVpp at scope terminated load
Vpp at receiver end of TCTF test load with

- 100ps edge rate reference phy transmitting D11.7+, D20.7-
- Vpp at transmitter of 400mVpp
- Measured amplitude of 286mVpp at scope terminated load