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To: T10 Committee (SCSI)

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Subject: PPR PCOMP\_EN description for fast-320 in SPI-5

## 1 Overview

On fast-160 transfers precompensation is optional but for fast-320 transfers precompensation is not defined. Therefore the description of the PCOMP\_EN bit needs to reflect this change. The text below makes this change.

### 1.1 Paced transfer on a SCSI bus

A SCSI bus that supports paced transfers has additional driver and receiver functions required over those used with synchronous transfers or asynchronous transfers.

For fast-160 these functions include driver precompensation, receiver skew compensation, receiver clock shifting, and an optional receiver signal adjustment (see figure 8). In addition the driver precompensation may be switched out of the data path at the request of the receiving SCSI device. See 7.2.2 for more information on precompensation.

For fast-320 these functions include receiver skew compensation, receiver clock shifting, and a receiver signal adjustment (see figure 9).

For fast-320 precompensation shall be disabled.

The receiver skew compensation and clock shifting adjust the timing relationship between the clocking signal (i.e., REQ or ACK) and the signals being clocked (e.g., the data bus signals). That adjustment causes the clock signal to align with the middle of the signals being clocked when those signals enter the receiver (see figure 10). The receiver is then able to use the clock signal to latch valid data.

During paced transfers the clock signal (i.e., REQ or ACK) transitions at the negotiated transfer period. Data is qualified by the clock signal and the phase of the P1 signal (see 10.7.4.3).

Receiver skew compensation is vendor specific and, therefore, not defined in this standard.

#### 1.1.0.0.1 PCOMP\_EN

The SCSI initiator port that is negotiating for a fast-160 transfer period shall set PCOMP\_EN to one to indicate that the SCSI target port shall enable precompensation on all signals transmitted during DT DATA phases (see 4.8, 7.2.2, and 10.7.4.1). The SCSI initiator port shall set PCOMP\_EN to zero to indicate that the SCSI target port shall disable precompensation.

The SCSI target port that is negotiating for a fast-160 transfer period shall set PCOMP\_EN to one to indicate that the SCSI initiator port shall enable precompensation on all signals transmitted during DT DATA phases (see 4.8, 7.2.2, and 10.7.4.1). The SCSI target port shall set PCOMP\_EN to zero to indicate that the SCSI initiator port shall disable precompensation.

Table 1 defines valid combinations of PCOMP\_EN and other fields. Ports that have been successfully negotiated to a fast-160 transfer period shall support enabling and disabling precompensation of their drivers. For negotiated transfer periods other than fast-160 the PCOMP\_EN bit shall be set to zero.

NOTE 1 - Unlike other fields and bits in the PPR message the PCOMP\_EN bit is not a negotiated value;

instead, it instructs the receiving SCSI device as to whether or not precompensation is to be disabled or enabled. Because of this, precompensation may be enabled on one of the SCSI devices and disabled on the other SCSI device at the completion of a successful PPR negotiation.

### **1.1.1 Negotiable field combinations**

Not all combinations of the negotiable fields are valid. Only the combinations defined in table 1 shall be allowed. All other combinations of the listed fields are reserved.

Table 1 - Valid negotiable field combinations

TRANSFER PERIOD FACTOR	REQ/ACK OFFSET	TRANSFER WIDTH EXPONENT	Protocol options								Description	
			PCOMP_EN	RTI	RD_STRM	WR_FLOW	HOLD_MCS	QAS_REQ	DT_REQ	IU_REQ		
ignore	00h	00h or 01h	0	0	0	0	0	0	0	0	0	Use ST DATA IN and ST DATA OUT phases to transfer data with asynchronous transfers
ignore	00h	00h or 01h	0	0	0	0	0	0	1	0	0	Use ST DATA IN and ST DATA OUT phases to transfer data with asynchronous transfers, and participate in QAS arbitrations
0Ah - FFh	01h - FFh	00h or 01h	0	0	0	0	0	0	0	0	0	Use ST DATA IN and ST DATA OUT phases to transfer data with synchronous transfers
09h - FFh	01h - FFh	01h	0	0	0	0	0	0	0	1	0	Use DT DATA IN and DT DATA OUT phases with data group transfers
09h - FFh	01h - FFh	01h	0	0	0	0	0	0	1	1	0	Use DT DATA IN and DT DATA OUT phases with data group transfers, and participate in QAS arbitrations
0Ah - FFh	01h - FFh	00h or 01h	0	0	0	0	0	0	1	0	0	Use ST DATA IN and ST DATA OUT phases to transfer data with synchronous transfers, and participate in QAS arbitrations
09h - FFh	01h - FFh	01h	0	0	0 or 1	0 or 1	0	0	0	1	1	Use DT DATA IN and DT DATA OUT phases with synchronous transfers and information unit transfers
08h	01h - FFh	01h	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0	0	1	1	Use DT DATA IN and DT DATA OUT phases with paced transfers and information unit transfers
07h	01h - FFh	01h	0	0 or 1	0 or 1	0 or 1	0 or 1	0	0	1	1	Use DT DATA IN and DT DATA OUT phases with paced transfers and information unit transfers
09h - FFh	01h - FFh	01h	0	0	0 or 1	0 or 1	0	0	1	1	1	Use DT DATA IN and DT DATA OUT phases with synchronous transfers and information unit transfers, participate in QAS arbitrations, and issue QAS_REQUEST messages to initiate QAS arbitrations
08h	01h - FFh	01h	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1	0	1	1	1	Use DT DATA IN and DT DATA OUT phases with paced transfers and information unit transfers, participate in QAS arbitrations, and issue QAS_REQUEST messages to initiate QAS arbitrations
07h	01h - FFh	01h	0	0 or 1	0 or 1	0 or 1	0 or 1	0	1	1	1	Use DT DATA IN and DT DATA OUT phases with paced transfers and information unit transfers, participate in QAS arbitrations, and issue QAS_REQUEST messages to initiate QAS arbitrations