To: T10 Membership SAS PHY Working Group

From: Ron Roberts Adaptec, Inc

Date: May 1, 2002

Subject: SAS PHY MARGIN CONTROL request modifications

Reason: To allow vendor unique controls for skew rates, power level, etc. on a PHY by PHY basis. Initiator and or management software would be responsible for understanding and controlling the device's PHY settings, and adjust accordingly.

This proposal recommends the new function PHY MARGIN Control request.

8.4.4.1 Function overview

The FUNCTION field in the SMP REQUEST frame is defined in Table 72.

Table 72. Management functions

FUNCTION CODE	FUNCTION	Description
00h	DISCOVER	Return the device names attached to a device
01h	REPORT GENERAL	Return general information about the device
02h	REPORT SATA CAPABILITIES	Return information about which SATA features an expander device supports
03h – 0Fh		Reserved for general input functions
10h	REPORT PHY	Return information about the specified phy
11h	REPORT PHY ERROR LOG	Return error logging information about the specified phy
12H	REPORT PHY SATA	Return information about a phy currently attached to a SATA target port.
13H	REPORT PHY DEVICE NAMES	Return all the device names routed to the specified phy.
14h – 1Fh		Reserved for phy input functions.
20h – 3Fh		Reserved for input functions
40h – 7Fh		Vendor-specific
80h – 8Fh		Reserved for general output functions
90h	PHY CONTROL	Request actions by the specified phy
91h	PHY MARGIN CONTROL	Request and reports phy margins settings
92h – 9Fh		Reserved for phy output functions
A0h – BFh		Reserved for output functions
C0h – FFh		Vendor-specific

7.4.4.9 PHY MARGIN CONTROL function

The PHY MARGIN CONTROL function may implemented by any type of device.

Table XX defines the request format.

Table XX. PHY MARGIN CONTROL request

Byte	7	6	5	4	3	2	1	0
0	FUNCTION (91h)							
1	Reserved							
2	Reserved							
3	PHY IDENTIFIER							
4	TERMINATION VALUES				PRE COMPENSATION			
5	EQUALIZATION VALUES				Reserved			
6	VENDOR SPECIFIC							
7	VENDOR SPECIFIC							

The PHY IDENTIFIER field indicates the phy to which the PHY CONTROL request applies.

Table XY defines the TERMINATION VALUES.

Table XY Termination Values

Code Value	Termination Value
0000b	50 ohm
0001b	75 ohm
0010b	100 ohm
0011b	120 ohm
All others	Reserved

Table XW defines the PRE COMPENSATION values

Table XW Pre Compensation Values

Code Value	Pre Compensation Value
0000b	TBD
0001b	TBD
0010b	TBD
0011b	TBD
All others	Reserved

Table XW defines the EQUALIZATION values

Table XW EQUALIZATION Values

Code Value	Equalization Value
0000b	TBD
0001b	TBD
0010b	TBD
0011b	TBD
All others	Reserved

The PHY MARGIN CONTROL response is defined in Table ZA.

Table ZA PHY MARGIN CONTRL response

Byte	7	6	5	4	3	2	1	0
0	FUNCTION RESULT							
1	Reserved							
2	Reserved							
3	PHY IDENTIFIER							
4	TERMINATION VALUES				PRE COMPENSATION			
5	EQUALIZATION VALUES				Reserved			
6	Vendor Specific							
7	Vendor Specific							