

To: T10 Membership
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Subject: Margin Control
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1. Margin Control Message

The margin control message provides a means to adjust the margin parameters during the domain validation sequence. It is recommended that all parameters be adjusted to their nominal setting when the nexus that the margin control message was issued in is completed.

Table x1 defines the message format.

Table x1 - Margin Control Message

Byte	Bit 7	6	5	4	3	2	1	Bit 0
0	Message Code (nnh)							
1	Reserved							
2	Margin Parameter							
3	Reserved			Reserved		Margin Parameter Offset		

Table x2 defines the parameters that may be margined.

Table x2 - Margin Parameter

Value	Margin Parameter
0000b	Reserved
0001b	Signal Ground Bias
0010b	Driver Pre-comp
0011b	Reserved
0100b	Driver Strength
0101b	Slew Rate
0110b	Terminator Impedance
0111b-1101b	Reserved
1110b	General Purpose
1111b	Experimental Test

The signal ground bias cancelation is disabled when the margin parameter offset is 001b and enabled when the margin parameter offset is 100b.

The terminator impedance parameter allows for adjusting the impedance of terminators to reduce reflections. The steps are recommended to be in 5 ohm increments.

The experimental test parameter is for use in developing margin tests. It shall not be used on a permanent basis; useful margin test parameters should be encoded into the reserved fields via a request to the T10 committee.

The general purpose parameter is used in lieu of the five specific parameters. It indicates that the receiving device should adjust its margin parameters on transmitters to according to its algorithm for margining.

The remaining margin parameters are self-explanatory based on their titles. The exact adjustment to the parameter is defined by the vendor since it is closely tied the implementation.

Table x3 defines the adjustment of the margin parameter

Table x3 - Margin Parameter Adjustment

Value	Bit 7	6	5	4	3	2	1	Bit 0
111b	Offset three steps in negative direction							
110b	Offset two steps in negative direction							
101b	Offset one step in negative direction							
100b	Nominal Setting							
000b	Not changed							
001b	Offset one step in positive direction							
010b	Offset two steps in positive direction							
011b	Offset three steps in positive direction							

The margin parameter adjustment is a 3-bit ~~two's complement~~ field allowing for three steps in each direction, a return to nominal and an unchanged option. This allows margin parameters to be tested in various combinations for maximum flexibility.

- [Expanders shall snoop the Margin Control Message while in-line to the IT Nexus and margin the drivers and receivers accordingly. This ensures that all segments in the path shall be margined.](#)
- [Any margin control not supported by the expander shall be ignored](#)
- [Any margin control not supported by the target shall cause a CHECK CONDITION with whatever sense key and code is appropriate.](#)
- [Multiple Margin Control Messages can be sent to margin more than one parameter \(this seems to be implied but should be clarified\).](#)
- [Margin control for AAF receivers should be added.](#)
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