

X3T9.2/87-28  
Mar. 10, 1987

To: X3T9.2 Committee (SCSI)

From: Gerry Houlder MPI/CDC

Subject: Implementors Notes for Differential Cables and Drivers

In the course of testing the differential driver version of our product, we have noted noise problems associated with using regular (not with signal pairs twisted together) flat cable or using differential drivers that only drive the active state and just release the signal instead of driving to the inactive state. One example of this is described in document X3T9.2-87/26. In view of the problems we have seen, I am proposing these implementors notes to strongly warn users that these conditions can swamp out the normal noise margins and cause unacceptably high error rates.

Add to section 4.2.1.1 (which should be called 4.2.2 instead):

"IMPLEMENTORS NOTE: The use of twisted pair cable (either flat or discrete wire type) is strongly recommended. Even at slow data rates and very short distances, cross talk between adjacent signals cause spurious pulses with differential drivers."

In section 4.6.1, replace the last sentence (it starts "The advantage to actively drive signals false ...") with the following:

"The advantage of actively driving signals false is that the transition from true to false occurs more quickly and the noise margin is much higher than if the signal is simply released; this is required to reliably transfer data at maximum rates, especially at the longer cable lengths used with differential drivers."

As a related issue, the SCSI Standard doesn't specify what the maximum asynchronous and synchronous data transfer rates are. Everybody seems to know that 1.5 Mbytes/sec and 4.0 Mbytes/sec are the recommended maximum rates, however. Why shouldn't we say so somewhere in the standard? This will take on more importance now that we are discussing faster transfer rates and will probably change several parameters defined in section 4.7 in order to allow faster rates. How about adding a new sentence in section 4.7 as follows:

"The timing requirements described here are designed to allow asynchronous data transfers of 1.5 Mbyte/sec and synchronous data transfers of 4.0 Mbyte/sec at maximum cable length with excellent reliability."