

ENDL CONSULTING

X3T9.2/91-177

D.W. (BILL) SPENCE
P.O. BOX 752
ROUND ROCK, TX 78680
PH. & FX: 512-255-0339

MEMORANDUM -- 04 Nov 1991

TO: John Lohmeyer, Chairman, X3T9.2

FROM: Bill Spence

SUBJECT: Proposed Resistor Values for Low-end S/E Terminator

PROPOSAL

1. In the SCSI-3 Physical Interface Document, par. 6.1 (p 32), under Alternative 1:
 - Replace 220 ohms (+/- 5%) with 187 ohms (+/- 2%).
 - Replace 330 ohms (+/- 5%) with 267 ohms (+/- 2%).
 - Insert the following

IMPLEMENTORS NOTE: These resistance values provide improved performance compared to the values of 220 and 330 ohms of SCSI-1 and SCSI-2. They are applicable for TERMPWR voltage up to 4.9 volts.

JUSTIFICATION

In X3T9.2/90-123R1 (31 Aug 1990) and in many other presentations, it has been established that achieving noise margin in the negated signal depends on the product of line impedance and current in the asserted line. These resistor values are calculated to produce a Thevenin equivalent circuit the same as the well-established Boulay terminator for TERMPWR voltage up to the practical maximum, assuming the specified Schottky diode is in place. This provides the maximum safe current in the asserted line.

This version of Alternative 1 does not provide the advantage of regulation as in Alternative 2, of course, but it does preserve the simplicity and economy of the original Alternative 1 termination while providing the maximum permissible assertion current in the line.

In X3T9.2/90-185R1 (19 Dec 1990), it was implied that the 220/330 ohm terminator, with its impedance of 132 ohms, is ideally matched to AWG 28 .050 pitch PVC ribbon cable. But in most instances where the bus is primarily ribbon cable, it is also relatively short, and so it is not important that ideal termination be achieved. In the more difficult cases involving considerable length of round shielded cables, 187/267 ohms are much to be preferred.