

To: T10 working group
 From: SCSI cable performance study group
 Date: May 11, 1999
 Subject: Recommendations for content in SPI-3 relating to cable performance

Following are the recommendations of the SCSI cable performance working group for specification limits for all the requirements on the cable media. Specific test procedures for measuring these parameters are specified in an informative annex under development.

1. Local transmission line impedance

	Local SE transmission line impedance ***		Local DIFF transmission line impedance ***	
	Min	Max	Min	Max
Flat*, Twisted Flat, Round jacketed unshielded cables	84	96	115	140
Round Shielded cables	78**	96	110	135
All values are measured by time domain reflectometry * Flat - For LVD applications, special-engineering considerations are required to accommodate potential cross talk issues. ** If SCSI loads attached to round shielded cables, are separated by less than 1.0 m, this value is 84 Ohms. *** Ideally one design will meet both SE and DIFF criteria				

2. Extended distance transmission line impedance

Swept frequency (extended distance) differential impedance limits: max peak to peak variation of 30 ohms over the frequency range 1 MHz to 1 GHz.

3. Capacitance

Capacitance limits: SE 20 pF/ft max at 100 kHz and 1 MHz

SE variation between 100 kHz and 1 GHz 1% max peak to peak

Differential max 14 pF/ft max at 100 kHz and 1 MHz

4. Propagation time and propagation time skew

Differential propagation time: 5.4 ns/m max within the cable plant and 135 ns max terminator to terminator

Differential propagation time skew (pair to pair): 25 ps/ft max (82 ps/m) within the cable plant and 2.0 ns max terminator to terminator

5. Attenuation

Differential attenuation: 10 dB max terminator to terminator at 200 MHz
(consistent with 28 AWG stranded at 25 meters)

6. Cross talk

Cross talk: Aggressor signals on each of the DATA, PARITY, and REQ or ACK pair induces noise on the ACK or REQ pair respectively. Each DATA, PARITY, and REQ or ACK pair shall be separately excited, the induced absolute peak noise (deviation from zero differential) on the ACK or REQ pair measured at a time position not associated with the test fixture and the results added to yield the total cross talk. The allowed limits for the total cross talk are: 96 mV max at 1600 mV pp aggressor signal amplitude and 0.5 ns rise time or 6% of aggressor signal amplitude at 0.5 ns rise time. Note that software filtering is not allowed for this test - hardware filters are required to produce the rise time required.