1.1.1 Cable assembly specifications

Table 50 defines general characteristics of internal and external SAS-2 cable assemblies.

Table 50 –General characteristics for SAS-2, Internal and External cable assemblies.

Characteristics [a,b]		**Units**	
Bulk cable: [c,d]			
Differential characteristic impedance [h]		ohm	100
Mated connectors:			
Differential characteristic impedance [h]		ohm	100
Cable Assembly:			
Maximum Insertion Loss [f,g]	Internal Cable [e]	dB	6
	External Cable		**See 5.3.3.2**

[a] All measurements are made through mated connector pairs.

[b] The equivalent maximum TDR rise time from 20 % to 80 % shall be 70 ps. Filtering may be used to obtain the equivalent rise time. The filter consists of the two-way launch/return path of the test fixture, the two-way launch/return path of the test cable, and the software or hardware filtering of the TDR scope. The equivalent rise time is the rise time of the TDR scope output after application of all filter components. When configuring software or hardware filters of the TDR scope to obtain the equivalent rise time, filtering effects of test cables and test fixtures shall be included.

[c] The impedance measurement identifies the impedance mismatches present in the bulk cable when terminated in its characteristic impedance. This measurement excludes mated connectors at both ends of the bulk cable, when present, but includes any intermediate connectors or splices.

[d] Where the bulk cable has an electrical length of > 4 ns, the procedure detailed in SFF-8410, or an equivalent procedure, shall be used to determine the impedance.

[e] The internal cable assembly is part of a TxRx connection that complies with the requirements for intra-enclosure compliance points defined in 5.3.

[f] The range for this frequency domain measurement is 10 MHz to 6 000 MHz.

[g] Insertion loss variations (i.e., cable length) may change the measurement result.

[h] The Characteristic Impedance is a measurement reference impedance for the test environment.

Table 52 – Requirements for SAS-2 Internal and External cable assemblies.

Requirements [a, c]	Fig. #	L (dB)	N (dB)	H (dB)	S (dB/decade)	F_{Min} (MHz)	F_{Max} (GHz)
SCC22 common mode return loss	120	-6,0	-5,0	0	13,3	100	6,0
SDD22 differential return loss	120	-10	-7,9	0	13,3	100	6,0
SCD22 differential to common mode conversion	121	-26	-12,7	-10	13,3	100	6,0
SCD21 differential to common mode conversion	121	-24	-24	-24	0	100	6.0
Maximum near-end crosstalk for each receive signal pair [b]	120	-26	-26	-26	0	100	6.0

[a] All measurements are made through mated connector pairs.

[b] Determine all valid aggressor/victim near-end crosstalk transfer modes. Over the complete frequency range of this measurement, determine the sum of the crosstalk transfer ratios, measured in the frequency domain, of all crosstalk transfer modes. To remove unwanted bias due to test fixture noise, magnitudes less than -50 dB (e.g., -60 dB) at all frequencies may be ignored. The following equation details the summation process of the four valid near-end crosstalk sources. All NEXT values expressed in dB format in a passive transfer network shall have negative dB magnitude.

$$\text{TotalNEXT}\, f() = 10 \times \log f() \sum_{1}^{4} 10^{(\text{NEXT}\, (f)/10)}$$

[c] The range for this frequency domain measurement is 10 MHz to 6 000 MHz