
40GBASE-T

Link Segment Specifications

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Purpose

- **Comments to D0.8**
 - **98.7.2 Link segment transmission parameters**
 - **98.7.2.1 Insertion loss**
 - **98.7.3.2.1 Multiple disturber power sum alien attenuation to crosstalk, far end crosstalk (PSAACRF)**

Comments to D0.8

- **98.7.2 Link segment transmission parameters**
 - **Set frequency range of all link segment parameters to $1 \text{ MHz} \leq f \leq 2000 \text{ MHz}$**

- **98.7.3.2.1 Multiple disturber power sum alien attenuation to crosstalk, far end crosstalk (PSAACRF)**
 - **Remove coupling length correction**

Comments to D0.8

•98.7.2.1 Insertion loss

- The insertion loss of each duplex channel using Equation (98–11) to Equation (98–14) unnecessarily complex. Equation can be simplified by regression.
- Link segment insertion need not implicitly represent cable and connector insertion losses.

25.4.9.2.1 Insertion loss

The insertion loss of the link segment shall be less than,

$$\text{Insertion_Loss}(f) < 2.1f^{0.529} + 0.4/f \quad (\text{dB})$$

at all frequencies from 1 MHz to 100 MHz. This includes the attenuation of the balanced cabling pairs, including work area and equipment cables plus connector losses within the link segment.

The insertion loss specification shall be met when the link segment is terminated in 100 Ω .

NOTE—The above equation approximates the insertion loss specification at 20°C for discrete frequencies of Category 5 100-meter links specified in ANSI/TIA/EIA-568-A Annex E and in TIA/EIA TSB-67.

Comments to D0.8

- 98.7.2.1 Insertion loss proposal

- replace Equation (98–11) to Equation (98–14)

- 40GBT Link Segment IL

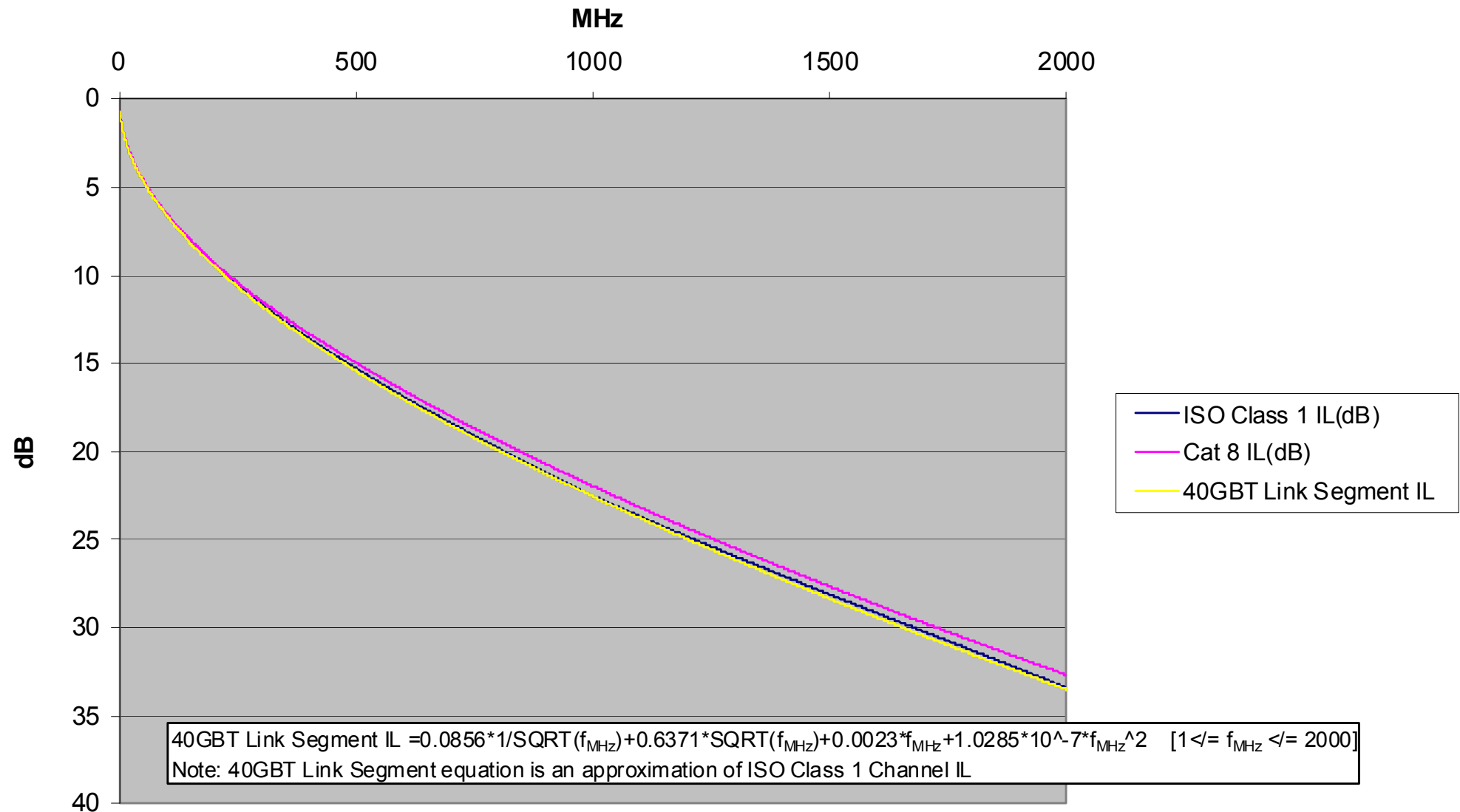
$$=0.0856*1/\text{SQRT}(f_{\text{MHz}})+0.6371*\text{SQRT}(f_{\text{MHz}})+0.0023*f_{\text{MHz}}+1.0285*10^{-7}*f_{\text{MHz}}^2$$

[1<= f_{MHz} <= 2000]

- Add Note: 40GBASE-T Link Segment equation is an approximation of ISO Class 1 Channel IL

40GBASE-T Link segment IL

40GBT Link Segment IL



40GBASE-T Link segment IL

f(MHz)	ISO Class 1	Cat 8	40GBT Link Segment IL
1.00	0.72	0.71	0.73
4.00	1.29	1.31	1.33
8.00	1.83	1.83	1.85
10.00	2.05	2.05	2.06
16.00	2.59	2.58	2.61
20.00	2.90	2.88	2.91
25.00	3.25	3.22	3.26
32.00	3.68	3.65	3.69
63.00	5.20	5.14	5.21
100.00	6.59	6.50	6.61
200.00	9.44	9.28	9.48
250.0	10.62	10.42	10.66
300.00	11.65	11.45	11.74
400.00	13.57	13.31	13.68
500.00	15.30	14.96	15.43
600.00	16.89	16.53	17.03
1000.00	22.53	21.97	22.55
1500.00	28.12	27.67	28.36
2000.00	33.41	32.69	33.51

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Calculations that result in category 8 channel insertion loss values less than 2 dB shall revert to a requirement of 2 dB maximum.