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TIA STANDARD

Commercial Building Telecommunications Cabling Standard

Part 1: General Requirements

Addendum 3 – Supportable Distances and Channel Attenuation for Optical Fiber Applications by Fiber Type

TIA-568-B.1-3

(Addendum No. 3 to TIA/EIA-568-B.1)

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Supportable Distances And Channel Attenuation For Optical Fiber Applications By Fiber Type, Addendum 3 To ANSI/TIA/EIA-568-B.1

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1 INTRODUCTION

At the request of the TR-42.1 Subcommittee on Commercial Building Cabling, the supportable distances and channel attenuation for optical fiber applications by fiber type within ANSI/TIA/EIA-568-B.1, table E-1 has been under review by the TR-42.8 Telecommunications Optical Fiber Cabling Systems Subcommittee. The purpose of this addendum, as a result of their research, is to supplement table E-1, supportable distances and channel attenuation for optical fiber applications by fiber type, of ANSI/TIA/EIA-568-B.1.

2 SCOPE

This addendum applies to the supportable distances and channel attenuation for optical fiber applications by fiber type. This addendum supplements the information contained in table E-1. Two new applications (10/100BASE-SX and 10G Ethernet) and one new fiber type (850-nm laser-optimized 50/125- μm multimode fiber) are addressed in table 1.

3 TABLE ADDENDUM

Table 1 – Supportable distances and channel attenuation for optical fiber applications by fiber type

Application	Wave Length (nm)	Maximum Supportable Distance ¹ (m)				Maximum Channel Attenuation ¹ (dB)			
		Multimode ²			Single-mode ⁹	Multimode ²			Single-mode
		62.5/125 μm	50/125 μm	850-nm Laser-Optimized 50/125 μm ³		62.5/125 μm	50/125 μm	850-nm Laser-Optimized 50/125 μm ³	
10/100BASE-SX	850	300	300	300	NST	4.0	4.0	4.0	NST
10G Ethernet									
10GBASE-S	850	26 ⁴	82 ⁵	300	NST	2.6 ^{6, 7}	2.3 ^{6, 8}	2.6	NST
10GBASE-L	1310	NST	NST	NST	10000 ⁹	NST	NST	NST	6.0
10GBASE-E	1550	NST	NST	NST	40000	NST	NST	NST	11.0 ¹⁰
10GBASE-LX4	1300	300	300 ¹¹	300	-	2.5 ^{6,12}	2.0 ^{6,12}	2.0 ^{6,12}	-
10GBASE-LX4	1310	-	-	-	10000	-	-	-	6.6 ⁶

¹ “NST” (non-standard) entries indicate where this standard does not recognize use of the media, but where equipment may be available to convert the native application signals to a form compatible with the non-native media.

² Specifications shown in this table are for TIA-568-B.1 recognized fiber types. Specifications for other non-recognized types of fibers are included in these footnotes where applicable.

³ 850-nm laser-optimized 50/125 μm multimode fiber supports the same maximum channel distances and insertion losses as 500/500 MHz•km 50/125 μm multimode fiber for applications specified within TIA-568-B.1.

⁴ For 62.5/125 μm fiber, IEEE specifies 26 m (85 ft) for fiber with 160/500 MHz•km modal bandwidth and 33 m (108 ft) for fiber with 200/500 MHz•km modal bandwidth.

⁵ For 50/125 μm fiber, IEEE specifies 66 m (216 ft) for fiber with 400/400 MHz•km modal bandwidth and 82 m (269 ft) for fiber with 500/500 MHz•km modal bandwidth.

⁶ Includes maximum channel insertion loss plus additional allowable insertion loss.

⁷ For 62.5/125 μm multimode fiber, IEEE specifies 2.6 dB for fiber with 160/500 MHz•km modal bandwidth and 2.5 dB for fiber with 200/500 MHz•km modal bandwidth.

⁸ For 50/125 μm multimode fiber, IEEE specifies 2.2 dB for fiber with 400/400 MHz•km modal bandwidth and 2.3 dB for fiber with 500/500 MHz•km modal bandwidth.

⁹ Channels are specified within TIA-568-B.1 up to 3 km (9840 ft). Distances provided within this table are the maximum distances specified within IEEE 802.3 and invoke cabling specifications that may differ from TIA-568-B.3.

¹⁰ 10GBASE-E channels are specified to have a minimum of 5 dB and maximum of 11 dB channel insertion loss.

¹¹ For 50/125 μm multimode fiber, IEEE specifies 240 m (787 ft) for fiber with 400/400 MHz•km modal bandwidth and 300 m (984 ft) for fiber with 500/500 MHz•km modal bandwidth.

¹² The maximum channel attenuation is allowed to be up to 0.5 dB higher than the value shown when including loss from mode conditioning patch cords.

