

TECHNICAL SPECIFICATION

Bending Insensitive Single-mode Optical Fiber

ÉRIU Sourcing

G.657.A2

ITU-T G.652.D / G.657.A2

Fiber Type	Standard	Wavelength Range	Min Bend Radius	Compatibility
G.657.A2 Bend Insensitive	ITU-T G.652.D / G.657.A2	1260 – 1625 nm	7.5 mm	Fully compatible with G.652.D

1. PRODUCT DESCRIPTION

Bending insensitive single-mode optical fiber (G.657.A2) bears the entire characteristics of dispersion unshifted single-mode optical fiber and superior bending performance. It is applicable to transmission over the entire wavelength from 1260 nm to 1625 nm. Under long wave band bending conditions, the bending radius can be as small as 7.5 mm with induced attenuation as low as 1 dB at 1625 nm.

Key Feature	Description
Bend Performance	Extremely high bending loss resistance in the 7.5 to 15 mm bending radius range.
Full-Band Transmission	Completely overcomes water peak attenuation at 1383 nm; operates over 1260–1625 nm.
G.652.D Compatible	Fully compatible with existing G.652.D fibers for seamless integration.
Geometry	Accurate geometrical parameters ensure low splicing loss and high splicing efficiency.
PMD Performance	Excellent PMD supports high-speed and long repeater spacing transmission systems.

Complies with or exceeds ITU-T G.652.D/G.657.A2 and IEC 60793-2-50 B1.3/B6.a2 specifications.

2. OPTICAL CHARACTERISTICS

Parameter	Condition	Unit	Value
Attenuation	1310 nm	dB/km	≤ 0.35
	1383 nm	dB/km	≤ 0.35
	1550 nm	dB/km	≤ 0.21
	1625 nm	dB/km	≤ 0.24
Attenuation vs. Wavelength	1285–1330 nm vs. 1310 nm	dB/km	≤ 0.04
	1525–1575 nm vs. 1550 nm	dB/km	≤ 0.03
Attenuation Discontinuity	1310 nm	dB	≤ 0.05
	1550 nm	dB	≤ 0.05

Attenuation Nonuniformity	1310 nm	dB/km	≤ 0.05
	1550 nm	dB/km	≤ 0.05
Bidirectional Attenuation	1310 nm	dB/km	≤ 0.05
	1550 nm	dB/km	≤ 0.05
Zero Dispersion Wavelength	—	nm	1300 – 1324
Zero Dispersion Slope	—	ps/(nm ² ·km)	≤ 0.092
Max PMD (Individual Fiber)	—	ps/√km	≤ 0.2
Cable Cutoff Wavelength λ_{cc}	—	nm	≤ 1260
Mode Field Diameter	1310 nm	μm	8.6 ± 0.4
Effective Group Refraction Index	1310 nm	—	1.467
	1550 nm	—	1.468

3. GEOMETRICAL CHARACTERISTICS

Parameter	Unit	Value
Cladding Diameter	μm	125 ± 0.7
Core-Cladding Concentricity Error	μm	≤ 0.5
Cladding Non-Circularity	%	≤ 1.0
Coating Diameter	μm	245 ± 10
Coating Non-Circularity	%	≤ 4
Coating-Cladding Concentricity Error	μm	≤ 12.5
Curl	m	≥ 4

4. ENVIRONMENTAL CHARACTERISTICS

Measured at 1310 nm, 1550 nm, and 1625 nm

Parameter	Condition	Unit	Value
Temperature Cycling	-60°C ~ +85°C	dB/km	≤ 0.05
High Temperature & High Humidity	85°C, RH 85%, 30 days	dB/km	≤ 0.05
Water Immersion	23°C, 30 days	dB/km	≤ 0.05
Dry Heat Aging	85°C, 30 days	dB/km	≤ 0.05

5. MECHANICAL CHARACTERISTICS

Parameter	Condition	Unit	Value
	—	N	≥ 9.0
Tensile Proof Test	—	%	≥ 1.0
	—	Kpsi	≥ 100
Coating Strip Force	Peak Force	N	1.0 – 8.9
	Typical Value	N	1.0 – 5.0
Tensile Strength	Weibull Prob. 50%	GPa	≥ 4.00
	Weibull Prob. 15%	GPa	≥ 3.20
Dynamic Fatigue Parameter n_d	—	—	≥ 20

6. MACROBENDING ATTENUATION

The macrobending performance is the defining characteristic of G.657.A2 fiber, enabling tight-radius routing in data centres, FTTx deployments, and in-building cabling.

Bend Radius	Turns	Wavelength	Unit	Max Loss
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15 mm	10	1550 nm	dB	≤ 0.03
		1625 nm	dB	≤ 0.1
10 mm	1	1550 nm	dB	≤ 0.1
		1625 nm	dB	≤ 0.2
7.5 mm	1	1550 nm	dB	≤ 0.5
		1625 nm	dB	≤ 1.0

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