

LGCE-23-OC1064-02 4F

Cable Description	4F CENTRAL TUBE MICRO OFC FOR DROP/DUCT APPLICATION
Type of Fibre	Single Mode, ITU-T G.657A1

Introduction

Central Loose tube, fibre optic cable containing LWP-SMF, in full compliance with ITU-T G657A1. The offered cables are fully compliant to the relevant IEC specifications.

Cable Design

- * Enhance low water peak single mode fibers in full compliance with ITU-T-G.657A1
- * Loose buffer tubes fully filled with Thixotropic Jelly and Fibre.
- * Aramid yarn over the tube as peripheral strength member.
- * Outer sheath - UV Stabilized HDPE, Black

Application

- * Suitable for Drop / Duct application
- * Suitable duct size - 7/4 mm

Special Features

- * Completely dielectric cable/ non metallic cable immune to electromagnetic interferences
- * Suitable for Micro duct Installation

Cable Physical Characteristics

Fibre Count	4
Number of Fibres in Loose Tube	4
Number of Loose Tube in cable	1
Cable Diameter (mm)	2.5
Tolerance $\pm$ (mm)	0.3
Approx Cable Weight (kg/km)	5.0
Standard Length (meters)	4000 $\pm$ 5 %

Cable Mechanical & Environmental Characteristics

Test	Standard	Product Performance
Temperature Range (°C)	[IEC 60794-1-22-F1]	Operation: -20 °C to +70 °C, Installation: -10 °C to +60 °C & Storage: -20 °C to +70 °C
Cable Bending Radius (mm)	[IEC 60794-1-21-E11 A & B]	20 x D, D = Cable Diameter
Tensile Force (N)	[IEC 60794-1-21-E1]	70 N
Crush Resistance (N)	[IEC 60794-1-21-E3 A]	100 N / (100 mm X 100 mm)
Impact Resistance (N-m)	[IEC 60794-1-21-E4]	1 N-m
Torsion Resistance	[IEC 60794-1-21-E7]	10 Cycle ($\pm$ 180°), L= 2 Mtr

Note: After the Test, Change in Attenuation shall be $\leq$ 0.05 dB/Km. No Fibre Break & Damage or Crack on the Cable

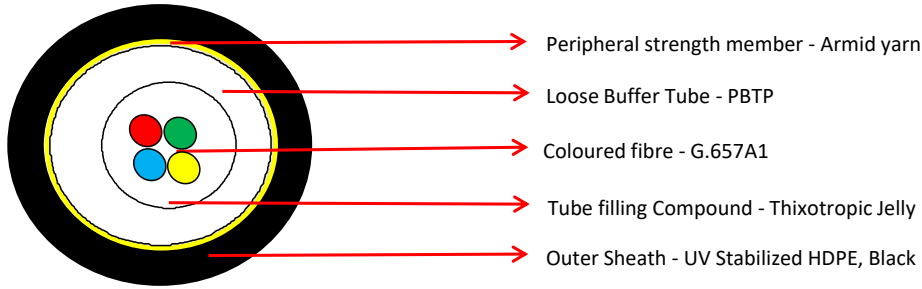
Cable Transmission Characteristics

Fibre Type		Attenuation Coefficient (dB/Km)					PMD	Cable Cut-Off	MFD
		850	1300	1310	1550		ps/sqrt.km	nm	μ m
Single Mode	G.657A1	-	-	$\leq$ 0.36	$\leq$ 0.23		$\leq$ 0.2	$\leq$ 1260	9.2 $\pm$ 0.4

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Cable Construcational Details

Cable Cross Sectional Diagram of 4F Cable [Drawing not to scale]



Identification Fibre & Loose Tube

Fibre Colour Red Green Blue Yellow

Loose Tube Colour White

Proposed Printing Details & Method at every meters

Printing Method & Colour	Ink Jet & Contrast Colour	0001m, LGCE, Telephone Symbol, Laser Symbol, 4 Fibre Micro Cable, G.657A1, YYYY, Cable ID... 0002m
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Proposed Stenciling on Drum

Every length will be delivered on non-returnable wooden drums. Generally the cable drum flange will be marked with following: (These details can also be customised.)

- * Arrow showing the direction, the drum can be rolled.
- * Country of origin.
- * The manufacturer's name
- * Number of fibers.
- * Nominal cable length in meters
- * Net and gross weight.
- * Drum number
- * Customer's/Project name and destination

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Specification of Single Mode Matched Clad Type Optical fibre Conforming to ITU - T Rec. G.657 A1

Properties	Unit	Values
Transmission		
Attenuation at 1310 nm	dB/km	≤ 0.34
Attenuation at 1550 nm	dB/km	≤ 0.20
Attenuation at 1625 nm	dB/km	≤ 0.23
Point discontinuity at 1310 & 1550 nm	dB	≤ 0.05
Difference in maximum attenuation in the range from		
1285 to 1330 nm w.r.t attenuation at 1310 nm	dB/km	≤ 0.03
1530 to 1570 nm w.r.t attenuation at 1550 nm	dB/km	≤ 0.02
Maximum chromatic dispersion at		
1285 - 1330 nm wavelength range	ps/nm.km	≤ 3.5
1270 - 1340 nm wavelength range	ps/nm.km	≤ 5.3
1550 nm	ps/nm.km	≤ 18.0
1625 nm	ps/nm.km	≤ 22.0
Zero dispersion wavelength	nm	1302 to 1322
Zero dispersion slope	ps/nm ² .km	≤ 0.092
PMD at 1310 & 1550 nm	ps/sqrt.km	≤ 0.2
PMD Link Design Value at 1310 & 1550 nm**	ps/sqrt.km	≤ 0.06
Cable cut-off wavelength	nm	≤ 1260
Mode field diameter range at 1310 nm	μm	9.2 ± 0.4
Mode field diameter range at 1550 nm	μm	10.4 ± 0.5
Geometrical		
Cladding Diameter	μm	125 ± 0.7
Cladding noncircularity	%	≤ 0.7
Primary Coating Diameter (uncoloured)	μm	242 ± 5
Coating Diameter (coloured)	μm	252 ± 10
Core/Clad or Mode Field concentricity error	μm	≤ 0.5
Coating / Cladding Concentricity error	μm	≤ 12
Numerical Aperature**		0.14
Refractive Index at 1310 & 1550 nm**		1.467 & 1.468
Mechanical**		
Proof Test for minimum strain level	kpsi, Gpa, %	$\geq 100, \geq 0.69, \geq 1$
Change in Attenuation with Bending		
10 Turns on 30 mm Diameter Mandrel		
at 1550	dB	≤ 0.25
at 1625	dB	≤ 1.0
1 Turn on 20 mm Diameter Mandrel		
at 1550	dB	≤ 0.75
at 1625	dB	≤ 1.5
Strippability force to remove primary coating of fibre	Newton	$1.3 \leq F \leq 8.9$
Fibre Curl	radius of curve.	≥ 4 mtrs
Dynamic tensile strength (unaged)	kpsi	≥ 550
Dynamic tensile strength (Aged)	kpsi	≥ 440
Dynamic Fatigue		≥ 20
Environmental**		
Induced attenuation at 1310 nm, 1550 nm & 1625 nm for		
Temperature & Humidity cycle from -10°C to +85°C at 98 % humidity (min), Reference Temperature 23°C	dB/km	≤ 0.05
Temperature cycle from -60°C to +85°C, Reference Temperature 23°C	dB/km	≤ 0.05
Water Immersion at $23 \pm 2^\circ\text{C}$	dB/km	≤ 0.05
Accelerated Ageing (Temperature) at $85 \pm 2^\circ\text{C}$, Reference Temperature 23°	dB/km	≤ 0.05

**** Fibre Manufacturer Certificate will be provided**