

Spec No.: 13-1100011

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# TECHNICAL SPECIFICATION

## Single Mode Optical Fiber Cable for FTTH Application

**(SM 2 Fibers)**

**(According to ITU-T G.657)**

Designer :



**Senior Technical Manager  
International Department**

Approver :



**Chief Technical Engineer  
International Department**

## 1. General

### 1.1 Scope

This listed specification covers the design requirements and performance standard for the supply of optical fiber cable in the industry. It also includes premium designed cable with optical, mechanical and geometrical characteristics.

### 1.2 Cable Description

Those cable possesses high tensile strength and flexibility in compact cable sizes. At the same time, it provides excellent optical transmission and physical performance.

### 1.3 Reliability

Initial and periodic product qualification tests for performance and durability are performed rigorously to ensure product reliability.

### 1.4 Reference

The cable which offered are designed, manufactured and tested according to international

IEC60793-1	Optical fiber Part 1: Generic specifications
IEC60793-2	Optical fiber Part 2: Product specifications
EIA/TIA598 B	Color code of fiber optic cables
ITU-T G.650	Definition and test methods for the relevant parameters of single-mode fibers
ITU-T G.657	Characteristics of a single-mode optical fiber cable

## 2. Optical Fiber

The optical fiber is made of high pure silica and germanium doped silica. UV curable acrylate material is applied over fiber cladding as optical fiber primary protective coating. The detail data of optical fiber performance are shown in the following table.

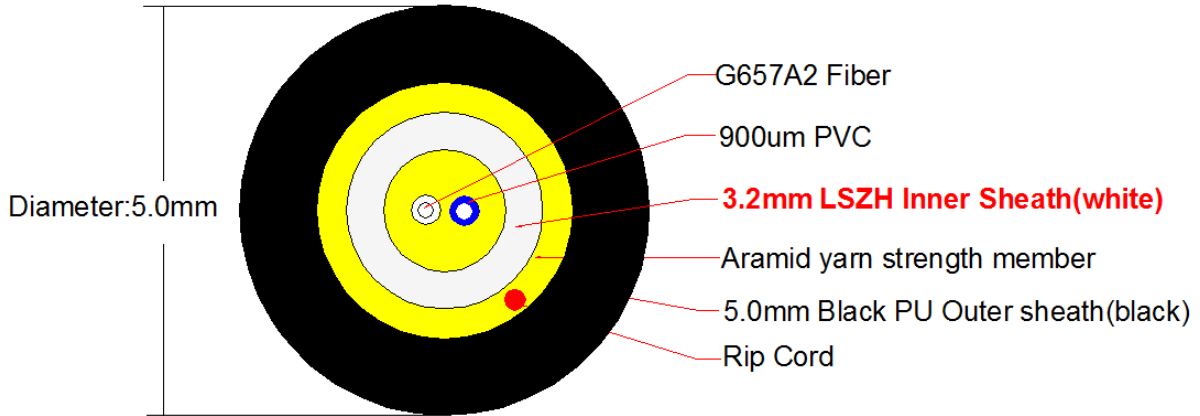
The performance of cabled single mode optical fiber (ITU-T Rec. G.657.A2)

<b>Physical Characteristics</b>	
<b>Item Description</b>	<b>Specification</b>
Maximum Cladding Diameter (major axis)	125.6 $\mu\text{m}$
Minimum Overall Cladding Diameter	124.0 $\mu\text{m}$
Coating Diameter (uncolored)	500 $\pm$ 15 $\mu\text{m}$
Core/Clad Concentricity Error	Less than or equal to ( $\leq$ ) 0.5 $\mu\text{m}$
Coating/cladding Concentricity	$\leq$ 10 $\mu\text{m}$
Clad Non-Circularity	Less than or equal to ( $\leq$ ) 1%
Coating Non-Circularity	Less than or equal to ( $\leq$ ) 5%
<b>Optical Characteristics</b>	
<b>Item Description (unless otherwise agreed upon)</b>	<b>Specification</b>
Maximum Attenuation (unless otherwise specified)	$\leq$ 0.35 dB/km @ 1310nm
	$\leq$ 0.31 dB/km @ 1383nm
	$\leq$ 0.21 dB/km @ 1550nm
	$\leq$ 0.24 dB/km @ 1625nm
Point Discontinuities	$\leq$ 0.05 dB/km @ 1310 & 1550 nm
Mode Field Diameter	8.8 $\pm$ 0.4 $\mu\text{m}$ @ 1310 nm
	9.8 $\pm$ 0.5 $\mu\text{m}$ @ 1550 nm
Zero Dispersion Wavelength Range	1302 – 1322 nm
Maximum Zero Dispersion slope	0.092 ps/(nm <sup>2</sup> -km)
Group Refractive Index	1.467 @ 1310 nm
	1.468 @ 1550 nm
Cable Cutoff Wavelength	$\leq$ 1260nm
PMD Link Design Value	$\leq$ 0.12 ps/ $\sqrt{\text{km}}$
Maximum Individual Fiber PMD	$\leq$ 0.15 ps/ $\sqrt{\text{km}}$
Typical Fiber Polarization Mode Dispersion	$\leq$ 0.06 ps/ $\sqrt{\text{km}}$
<b>Mechanical Requirements</b>	
<b>Item Description</b>	<b>Specification</b>
Proof Test	100 kpsi
Coating Strip Force (aged and unaged)	$\geq$ 1.3 N (0.3 lbf) < 8.9 N (2.0 lbf)
Coating appearance	Dual coating layers are free of voids and entrapped bubbles
Pullout Force	$\geq$ 6.2 N (1.4 lbf) $\leq$ 22.2 N (4.9 lbf)
<b>Macro bending Performance</b>	
1 turn @ 7.5 mm Radius	$\leq$ 0.5 dB max. @ 1550 nm
	$\leq$ 1.0 dB max. @ 1625 nm
1 turn @ 10 mm Radius	$\leq$ 0.1 dB max. @ 1550 nm
	$\leq$ 0.2 dB max. @ 1625 nm
10 turns @ 15 mm Radius	$\leq$ 0.03 dB max. @ 1550 nm

	≤ 0.1 dB max. @ 1625 nm
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### 3. Cable structure

#### 3.1 Construction of cable



#### 3.2 Dimension and Properties

Items		Specifications
Fiber Type		G657A2
Fiber Count		2
Tight-buffered Fiber	Dimension	900±50µm
	Material	PVC
Strength Member		Kevlar
Inner Jacket	Dimension	3.2±0.2mm
	Material	LSZH
	Color	White
Outer Jacket	Dimension	5.0±0.2mm
	Material	PU
	Color	Black

### 4. Mechanical and Environmental Characteristics

Items	Unit	Specifications
Tension (Long Term)	N	300

## Optical Fiber Cable

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Tension (Short Term)	N	1000
Crush (Long Term)	N/10cm	300
Crush (Short Term)	N/10cm	1000
Min. Bend Radius (Dynamic)	mm	20D
Min. Bend Radius (Static)	mm	10D
Operation temperature	□	-25 ~ +70
Installation temperature	□	-20 ~ +60
Storage temperature	□	-40 ~ +60