

TECHNICAL SPECIFICATION

Optical Cable Parts

A	May 7, 2021	Bryan	Loran	Fiona
Version	Date	Prepared	Reviewed	Approved

1. General

1.1 Scope

This specification describes the basic design of patch cord or pigtail with its main components: the fibers, the connectors. Furthermore this specification contains information concerning the quality assurance during manufacturing, the final acceptance tests, the packaging. Any technical data mentioned in this product specification serve for describing the product only and should not be understood as an assurance of properties.

1.2 Definition

Patch cord: cable with two connectors at both end.

Pigtail: cable with one connector at any end.

Type of cable and connector shall be assigned by purchaser.

1.3 Quality

Excellent quality control is achieved through intense in-house quality check and stringent audit acceptance by ISO 9001.

1.4 Reliability

ZTT ensures product reliability through rigorous qualification testing of each product family. Both initial and periodic qualification testing are performed to assure the cable's performance and durability in the field environments.

1.5 Reference

The cable which ZTT offered are designed, manufactured and tested according to international standards as follows:

IEC 60793-1	Optical fiber Part 1: Generic specifications
IEC 60793-2	Optical fiber Part 2: Product specifications
IEC 60794-2	Optical fiber cables-part 2 indoor cables- sectional specification
ITU-T G.651	Characteristics of multi-mode optical fiber
ITU-T G.652	Characteristics of a single-mode optical fiber and cable
ITU-T G.655	Characteristics of a non-zero dispersion-shifted single-mode optical fiber and cable
ITU-T G.657	Characteristics of a bending-loss insensitive single-mode optical fiber

The standards for the connector as follows:

IEC 61300-1	Basic test and measurement procedures-Visual examination
IEC 61754	Fiber optic connector interfaces
IEC 61300-3-6	Basic test and measurement procedures- Examinations and measurements-Return loss
IEC 61300-3-34	Basic test and measurement procedures- Examinations and measurements-Attenuation of random mated connectors

2. Optical Cable Parts, DLC/UPC-DLC/UPC, single mode, 5m, 10m, 20m, 30m, 40m, 50m, 60m, 70m, 80m, 100m, 120m, 150m, 2 cores, 0.03m/0.34m, GYFJH-2G.657A2, 7.0mm, 2mm, LSZH, Armored branch.

Optical Cable Parts, DLC/UPC-2FC/UPC, single mode, 5m, 10m, 20m, 30m, 40m, 50m, 80m, 100m, 150m, 2 cores, 0.03m/0.8m, GYFJH-2G.657A2, 7.0mm, 2mm, LSZH, Armored branch.

Optical Cable Parts, DLC/UPC-DLC/UPC, single mode, 5m, 10m, 2 cores, 0.03m/0.03m, GYFJH-2G.657A2, 7.0mm, 2mm, LSZH, Armored branch.

Optical Cable Parts, DLC/UPC-2SC/UPC, single mode, 50m, 2 cores, 0.03m/0.8m, GYFJH-2G.657A2, 7.0mm, 2mm, LSZH, Armored branch.

Optical Cable Parts, DLC/UPC-2FC/UPC, single mode, 5m, 2 cores, 0.34m/0.8m, GYFJH-2G.657A2, 7.0mm, 2mm, LSZH, Armored branch.

2.1 General Properties:



Note: The picture provides a reference only.

2.2 Technical Characteristics for Connectors:

Technical data				
Fiber type	Single-Mode			Multi-Mode
Connector type	SC/LC			SC/LC
Grinding type	PC	UPC	APC	≤0.3
Insertion loss(dB)	≤0.3	≤0.3	≤0.3	
Return loss(dB)	≥45	≥50	≥60	/
Operation temperature(°C)	-25°C to +70 °C			
Durability	> 500 times			
Standard	IEC61754-04/20			

Technical data				
Fiber type	Single-Mode			Multi-Mode
Connector type	FC			FC
Grinding type	PC	UPC	APC	≤0.3
Insertion loss(dB)	≤0.3	≤0.3	≤0.3	
Return loss(dB)	≥45	≥50	≥60	/
Operation temperature(°C)	-40°C to +80 °C			
Durability	> 500 times			
Standard	IEC61754-13			

2.3 Cable Information

The outer sheath of the cable is LSZH material.

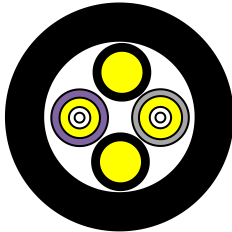
2.4 Optical Fiber: G657A2

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.

Standard	ITU-T G.657A2 UBIF [®] R7.5		
Optical	Fibre attenuation	Before cabled ≤0.35 dB/km@1310nm ≤0.21 dB/km@1550nm	After cabled ≤0.36 dB/km@1310nm ≤0.23 dB/km@1550nm
	Zero Dispersion Wavelength	1300~1324 nm	
	Zero Dispersion Slope	≤0.092 ps/nm ² ·km	
	Cable Cutoff Wavelength (λ_{cc})	*≤1260 nm	
	PMD Max. Value	≤0.2 ps/√km	
	PMD Link design value (M=20 cables, Q=0.01%)	≤0.1ps/√km	
	Macro bending Loss (10 turns; Φ30 mm) @1550 nm (10 turns; Φ30 mm) @1625 nm (1 turns; Φ20 mm) @1550 nm (1 turns; Φ20 mm) @1625 nm (1 turns; Φ15 mm) @1550 nm (1 turns; Φ15 mm) @1625 nm	≤ 0.03 dB ≤ 0.10 dB ≤ 0.10 dB ≤ 0.20 dB ≤ 0.50 dB ≤ 1.00 dB	
	Mode Field Diameter	8.6±0.4 μm @1310 nm 9.6±0.5 μm @1550 nm	
Geometric	Cladding Diameter	125±0.7 μm	
	Cladding non circularity	≤ 1.0%	
	Core/clad concentricity error	≤ 0.5μm	
Mechanical	Proof stress	≥ 1.05%	

3. Cable structure

Application / Construction

Identification	GYFJH-2 G.657A2		
Application	Indoor distribution or device connection		
Cross section ..not to scale..	2 fibers 		
Configuration	- Bare fiber - Tight buffer (LSZH, White) - Aramid yarns in sub-unit cable and fillers - Sub-unit /filler cable sheath (LSZH) - Outer sheath (LSZH, anti-UV, Black)		
Temperature range	Storage and transport -30 to +70°C	Installation -20 to +60°C	Operation -40 to +80°C
Standards	IEC 60794-2, IEC 61034-1/2, IEC 60332-1-2		
Customer Reference	Common standard		

Dimensions

Buffer Φ (± 0.05)	mm	0.85
Sub-unit Φ (± 0.1)	mm	1.9
Filler Φ (± 0.1)		2.0
Outer diameter (-0.2,+0)	mm	7.0
Weight	Kg/km	41

Sizes and values without tolerances are nominal values

Mechanical Properties

Tensile load	Short term: 600N, Long term: 300N
Crush resistance	Short term: 2200N/10cm, Long term: 1100N/10cm
Min. bending radius	Static: 10D, Dynamic: 20D
Impact	4.5 Nm

Marking

Fiber color: Natural; Buffer color: White; Sheath color of sub unit cable: Orange , Grey

Sheath color of fillers: Black

Outer Sheath: Black, ink jet print, marking in 1 meter intervals as follows (for example) :

ZTT BREAKOUT CABLE Cable Type Batch No. <meter marking >