

Optical Fibre Cable Technical Specification

Outdoor Aerial Fiber Cable 24core

G.652D ADSS 600m Span

Customer Approval			
	Name	Signature	Date
Approved by	Xuming		Oct, 2021

1. General

1.1 Scope

This Specification covers the design requirements and performance standard for the supply of optical fibre cable in the industry. UnitekFiber ensures a stable quality control system for our cable products through several programs including ISO 9001, ISO 14001 and ROHS.

Cable type	Application
ADSS-24B1.3-100M ADSS-24B1.3-600M	Aerial

1.2 Reference

The cable offered by UnitekFiber are designed, manufactured and tested according to the standards as follows:

ASTM B 736	Standard specification for aluminum, aluminum alloy and aluminum clad steel cable shielding stock
ASTM D 566	Standard test method for dropping point of lubricating grease.
ASTM D 974	Standard test method for acid and base number by colour indicator titration
ASTM D 1248	Standard specification for polyethylene plastics moulding and extrusion materials
ASTM D 1603	Test method for Carbon Black in Olefin Plastics
ITU-T G.652	Characteristics of single-mode optical fibres
IEC 60793	Optical Fibres Part 2 – Product Specification
IEC 60794	Optical Fibre Cables, Part 1 Generic Specification.
ISO 9002	Quality systems Model for quality assurance in production and installation
TIA/EIA-598-A	Fibre colour coding

1.3 Life Time

Optical fibre cables supplied in compliance with this specifications is capable to withstand the typical service condition for a period of twenty-five (25) years without detriment to the operation characteristics of the cable.

1.4 Application

Item	Value
Operation temperature	-40 °C ~+70 °C
Installation temperature	-20 °C ~+60 °C
Storage temperature	-40 °C ~+70 °C
Static bending radius	10 times the cable diameter
Dynamic bending radius	20 times the cable diameter

2. Optical Fibre

Optical Fibres supplied in this specification meet the requirements of ITU-T G.652D

Parameter	Specification
MFD (1310nm)	(8.6~9.2) ±0.4µm
Cladding diameter	125±0.7µm
Fiber diameter	235~255µm, with UV coating, and colored to : 250±15µm
Core/cladding concentricity error	≤ 0.6µm
Coating/cladding concentricity error	≤ 12.0µm
Cladding non circularity	≤ 1.0%
Cut-off wavelength	≤ 1260nm
Macro bend loss	Radius:30 mm; Number of turns:100; Maximum at 1550 nm ≤0.1 dB
Proof stress	≤0.69Gpa
Chromatic dispersion coefficient	1300nm≤λ 0≤1324nm
Zero-dispersion slope	S 0≤0.092 ps/nm ² × km
Attenuation coefficient	1310nm: 0.35dB/km max after cabling 1550nm: 0.21dB/km max after cabling
Bending-loss performance of optical fiber @1310nm&1550nm	≤0.05dB (100 turns around a mandrel of 50mm diameter)
PMD coefficient	M:20 cables Q:0.01% Maximum PMDQ≤ 0. 2 ps/√km

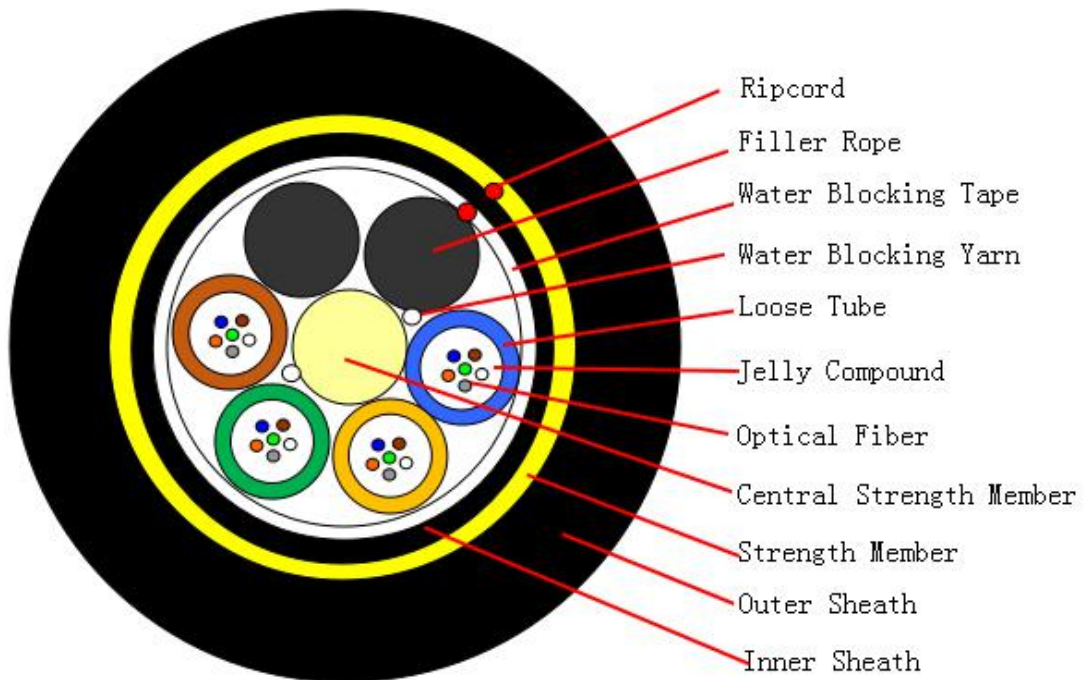
Refractive Index	1310 nm:1.4677 1550 nm:1.4682
Zero-dispersion slope	$\leq 0.092 \text{ps/nm}^2 \cdot \text{km}$

3. Optical Cable

3.1 Technical Characteristics

- The unique second coating and stranding technology provide the fibres with enough space and bending endurance, which ensure good optical property of the fibres in the cable
- Accurate process control ensures good mechanical and temperature performance
- High quality raw material guarantees the long service life of cable

3.2 Cross Section of Cable



Schematic for reference only

3.3 Fibre and Loose Tube Identification

The color code of fibres and loose tube will be identification in accordance with the following color sequence, other sequence also is available.

Fiber Color Code	1	2	3	4	5	6
	Blue	Orange	Green	Brown	Grey	White

Loose Tube Color Code	1	2	3	4
	Blue	Orange	Green	Brown

3.4 Dimensions and Descriptions

The standard optical cable structure is shown in the following table, other structure and fibre count are also available according to customer requirements.

Item	Contents	Value
	Span	600m
Structure	Type	1+6
Loose tube	Fiber counts/tube	6
	Outer diameter (mm)	1.8±0.1
Central strength member	Material	FRP
	Diameter (mm)	2.0±0.1
Water blocking	Material	Water Blocking Yarn&Water Blocking Tape
Inner Sheath	Material	MDPE
	Thickness (mm)	0.8±0.1
Strength member	Material	Armid yarn
Ripcord	Color	Red
	No.	2
Sheath	Material	HDPE
	Thickness (mm)	1.5±0.1
Cable diameter(mm)		12.6±0.2
Cable weight(kg/km) Approx.		115±10

4. Mechanical, Physical and Environmental Test Characteristics

The mechanical and environmental performance of the cable are in accordance with the following table. Unless otherwise specified, all attenuation measurements required in this section shall be performed at 1550nm.

Items	Test Method	Requirements
Tension	<u>IEC 60794-1-2-E1</u> Load: 2000N(100M)/12000N(600M) Sample length: Not less than 50m. Duration time: 1min	Fibre strain: $\leq 0.33\%$ Additional attenuation: $\leq 0.1\text{dB}$ after test No damage to outer jacket and inner elements
Crush	<u>IEC 60794-1-2-E3</u> Load: According to 2200N/100mm Duration of load: 1h	Additional attenuation: $\leq 0.1\text{dB}$ after test No damage to outer jacket and inner elements
Twisting	<u>IEC 60794-1-2-E3</u> Cycles: 10 cycles, $\pm 180^\circ$ Load: 100N Length: 1m	Additional attenuation: $\leq 0.1\text{dB}$ No damage to outer jacket and inner elements
Repeated bending	<u>IEC 60794-1-2-E6</u> Bending radius: $20 \times D$ Cycles: 30 Load: 75N	Additional attenuation: $\leq 0.1\text{dB}$ No damage to outer jacket and inner elements
Temperature cycling	<u>IEC 60794-1-2-F1</u> Sample length: at least 1000m Temperature range: $-20^\circ\text{C} \sim +70^\circ\text{C}$ Cycles: 5 Temperature cycling test dwell time: 24 hours	The change in attenuation coefficient shall be less than 0.1 dB/km at 1550nm .
Other parameters	According to <u>IEC 60794-1</u>	

5. Packaging and Drum

5.1 Packing and Marking

Each single length of cable shall be reeled on Iron/wooden Drum suitable for long distance shipment.

5.1.1 Covered by plastic buffer sheet.

5.1.2. Sealed by strong wooden battens.

5.1.3. At least 1 m of inside end of cable shall be reserved for testing.

5.1.4. Drum length

5.1.5. Standard drum length is $2000\text{m} \pm 2\%$; or as per BOQ requirement.

5.1.6. Total quantity is at least the ordered quantity.

5.1.7. PTCL and PO number shall be marked on outer sheath of cable after interval of one meter in addition to length marking. Marking shall be visible preferably in white colour.

5.2 Drum Marking

5.2.1. Manufacturer brand;

5.2.2. Roll-direction arrow;

5.2.3. Cable outer end position indicating arrow;

5.2.4. The word "OPTICAL FIBER CABLE";

5.2.5. Origin, The word "MADE IN -----"

5.2.6. Caution plate indicating the correct method for loading, unloading.

5.2.7. Contract no information

5.3 Marking plate

5.3.1. Product name;



- 5.3.2. Cable type and size;
- 5.3.3. Drum length;
- 5.3.4. Gross / Net weight in kilograms;
- 5.3.5. Drum number in meters;
- 5.3.6. Manufacturer's name;
- 5.3.7. Manufacturing year and mont



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