ES-23-F8TBRDLZ-Rev.0

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Specification

F-8 Round Drop Optic Cable

Compact and Easy-to-Locate Fiber Optic Cable for the Last Link in Your FTTx Network
(Span 80m, NESC Light)

1. GENERAL

1.1 Scope

This document specifies the single mode optical fiber cables for use at long wavelength, which are suitable for long haul optical transmission system.

1.2 Application

The cable is suitable for aerial installation.

1.3 Construction

1.3.1 The fibers are single mode type, which are having a tight buffered of low smoke zero halogen.

1.3.2 The center of the core contains a non-metallic strength member. The strength member is optimized so as to limit the application of maximum recommended installation tension.

1.3.3 A tight buffer, followed by an **AERIAL** (TBAY+LSZH/F8) sheath is applied. Figure 1 illustrates the cable construction.

2. REFERENCES

·EIA/TIA 598 Color Coding of fiber Optic Cables.
·IEC 794 Optical Fiber Cables. Part I Generic Specifications.
·ITU-T G.650 Definition and test methods for the relevant parameters of single-mode fibers
·ITU-T G.652 Characteristics of a single-mode optical fiber cable.

3. DESIGN

3.1 Optical Fiber

3.1.1 The core of the optical fiber with a higher refractive index compared to the cladding is made of SiO_2(Silicon dioxide) doped with GeO_2(Germanium dioxide).

3.1.2 The cladding of the optical fiber is made of SiO_2(Silicon dioxide.

3.1.3 The primary coating shall be consisted of a double layer UV-cured acrylate. The coating shall be easy to remove from the glass fiber.

3.1.4 The proof test level shall be 115 kpsi (0.8Gpa).

3.2 Tight Buffer

3.2.1 The materials of each fiber shall be a LSZH.

3.2.2 The dimensions of which shall be such as to ensure that the fibers are subjected to no mechanical stresses or curvature that would cause any impairment in the transmission.

3.2.4 Tight buffer tube shall be individually color coded to facilitate their ready identification at either end of any cable length.

A common fiber color sequence shall be in accordance with the Annex 1.

3.3 Strength Member

3.3.1 The center of the core contains a non-metallic strength member of Aramid yarn.

3.3.2 The strength is optimized so as to limit the application of maximum recommended installation tension.

3.4 Sheath

3.4.1 Messenger Wire

The messenger wire consists of galvanized steel 7-strands wire having a diameter of at nom. 1/16"(0.53mm, 7-Strands)

3.4.1 Outer LSZH Sheath the sheath shall be consisted of a high molecular weight black LSZH. The sheath shall contain carbon black for UV light protection. The sheath shall be circular, free from pinholes, joints, mended places and other defects.

The nominal thickness of sheath shall be 0.68mm ~ 1.2 mm.

4. PROPERTIES

4.1 Optical Properties

The fibers in the cable shall maintain their properties as specified below provided the mechanical and environmental conditions specified in paragraph 3.2 have not been exceeded and the proper installation procedures have been followed. The geometrical structures and optical characteristics shall be in accordance with Table 1 and the optical fibers shall meet ITU-T Multi mode recommendation and test method shall meet IEC 60793-1 and IEC 60793-2 international standard

Table 1. Optical Properties of ITU-T Single Mode Fiber(G.657 A2)

Parameter	Specification
Optical Characteristics	
Attenuation coefficient (After cable) @ 1310 nm @ 1550 nm	 ≤ 0.40 dB/km ≤ 0.30 dB/km
Attenuation vs. Wavelength Max. α difference	≤ 0.03dB/km at 1285 ~ 1330 nm ≤ 0.02dB/km at 1525 ~ 1575 nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	≤ 0.092 ps/(nm^2.km)
PMD Maximum Individual Fiber	 ≤ 0.2 ps/km$^{1/2}$
Cable cut-off wavelength	≤ 1260 nm
Mode field diameter @ 1310 nm	8. ± 0.4 um
Geometrical Characteristics	
Cladding diameter	125.0 ± 0.7 um
Cladding non-circularity	≤ 0.7 %
Coating diameter	245 ± 5 um
Coating-Cladding concentricity error	≤ 12.0 um
Coating Non-circularity error	≤ 6.0 %
Core-Clad concentricity error	≤ 0.5 um

Curl (Radius)	≥4m
Mechanical Specification	
Proof test level	≥100 kpsi
Micro-bend induced attenuation 10 turns around a mandrel of 30mm diameter 1 turn around a mandrel of 20mm diameter 1 turn around a mandrel of 15mm diameter	 ≤0.03 dB at 1550 nm, ≤0.1 dB at 1625 nm ≤0.1 dB at 1550 nm, ≤0.2 dB at 1625 nm ≤0.2 dB at 1550 nm, ≤0.5 dB at 1625 nm

4.2 Cable Dimensions &Physical, Environmental, Mechanical Test Specifications

Table2 . Dimensions and Specifications

Item		Construction	
Total fiber count		1	2
Cable Dimension (Nom. mm) (Width x Height)		3.8 x 6.5	3.8x6.5
Tight Buffer	Material	LSZH	
	Diameter	0.90mm ± 0.05mm	
	Strip length	50mm / 1time ↑	
Strength Member		Aramid Yarn	
Messenger Wire		1/16"(7/0.53mm)	
Outer Sheath		LSZH - Black	
Web (mm)		1.0 x 1.0	
Cable Weight (Nom. kg/km)		21	22
Sag		80m	
Max. wind speed		70 km/hr	
Physical Specifications			
Bending Radius	Operation	15 x Cable diameter	
	Installation	20 x Cable diameter	
Tensile Load(N)	long term, max.	800	
	short term, max.	1400	
Environmental Specifications			
Environmental Space		Aerial	
Installation Temperature		- 30℃ ~ + 60℃	
Operating Temperature		- 30℃ ~ + 70℃	
Storage Temperature		- 30℃ ~ + 60℃	
Mechanical Test Specifications			
Compression		44 N/mm Test Method : IEC 60794-1 E3	
Flex		35 cycles Test Method : IEC 60794-1 E6	
Impact		4.41 N-m Test Method : IEC 60794-1 E4	
Twist		10 cycles Test Method : IEC 60794-1 E7	

Repeat Bending Test	20times x cable diameter Test method : IEC-60794-1-2 E6
Environmental Test Specifications	
Cable Freeze	-2 °C Test Method : IEC 60794-1 F15
Heat Age	-40 °C to +85 °C Test Method : IEC 60794-1 F9
Low High Bend	-30 °C to +60 °C Test Method : IEC 60794-1 E11
Temperature Cycle	-40 °C to +70 °C Test Method : IEC 60794-1 F1
Regulatory Compliance/Certifications	
RoHS 2011/65/EU	Compliant
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system

5. Identification

5.1 Color Code of the individual tight buffer

No.	1	2
2F	Blue	Orange

6. MARKING AND PACKING

6.1 Cable Marking

6.1.1 Standard length of cable shall be 1,000m. Other cable length is also available if requested by customer.

6.1.2 Each length of the cable shall be wound on a separate MDF reels.

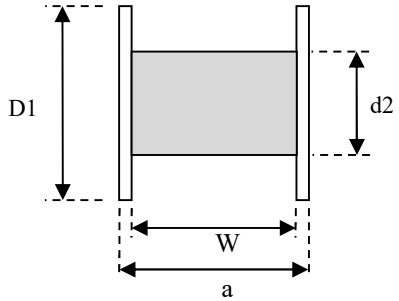
6.1.3 Both ends of the cable shall be sealed with suitable plastic caps to prevent the entry of moisture during shipping, handling and storage.

6.1.4 The cable ends shall be securely fastened to the reel to prevent the cable from becoming loose in transit or during placing operations.

6.2 Packing Detail

6.2.1 Reel dimension

Cable Type	Dimension (mm)				Cable Length	Weight (kg / EA)
	D1	d2	W	A		
1C	500	250	352	375	4km	5kg
2C	800	300	410	450	4km	17kg



6.2.2 Pallet packing

Cable Type	Materials	Size (mm)	Weight (kg / EA)	Quantity (EA)
1C	Wooden	1100(W) x 1200(L) x 150(H)	17.0	8
2C	Wooden	900(W) x 550(L) x 150(H)	13.0	1

7. QUALITY CONTROL

7.1 Incoming Inspection

All the raw materials that are used for optical fiber cable shall be inspected by the raw material testing methods that are specified by the manufacturer and that are based on 'Korea Standard' or 'ASTM'. In some cases, suppliers' test report shall substitute for the raw material manufacturer's test. Any materials that do not meet the manufacturer's raw material specification shall be rejected or scrapped, and the passed materials only shall be used in the process. Some raw material specifications and subsequent raw material test method may be changed without notice, if and only if the new specification and the new test method do not affect the quality of optical fiber cable.

7.2 In-Process Inspection

Semi-final goods shall be inspected in accordance with specified manufacturer's testing method. The testing method may be changed without notice, if it does not affect quality of optical fiber cable.

7.3 Final Cable Inspection

Following quality properties of finished cable shall be tested to assure the field performances.

- Optical characteristics (Table 1)
- Mechanical characteristics (Table 2)
- Cable construction (Tolerance of dimension : ≤ ±5%)

7.4 Quality System

International Industrial Certification (IIC) applies ISO 9001, ISO 14001 and TL 9000 to assure the conformance to specified requirements during our production.

8. SAFETY

8.1 ROHS Directive

All cables and any associated packing and labeling materials shall meet RoHS (Restriction of the Use of certain Hazardous Substances) regulations as appropriate.

8.2 ISPM 15 Directive

All wooden packing materials shall meet ISPM (International Standards for Phytosanitary Measures) regulations as appropriate

Cross-Sectional Drawing

- End of Specification -