Specification

For

DIRECT BURIED

LOOSE TUBE CABLE

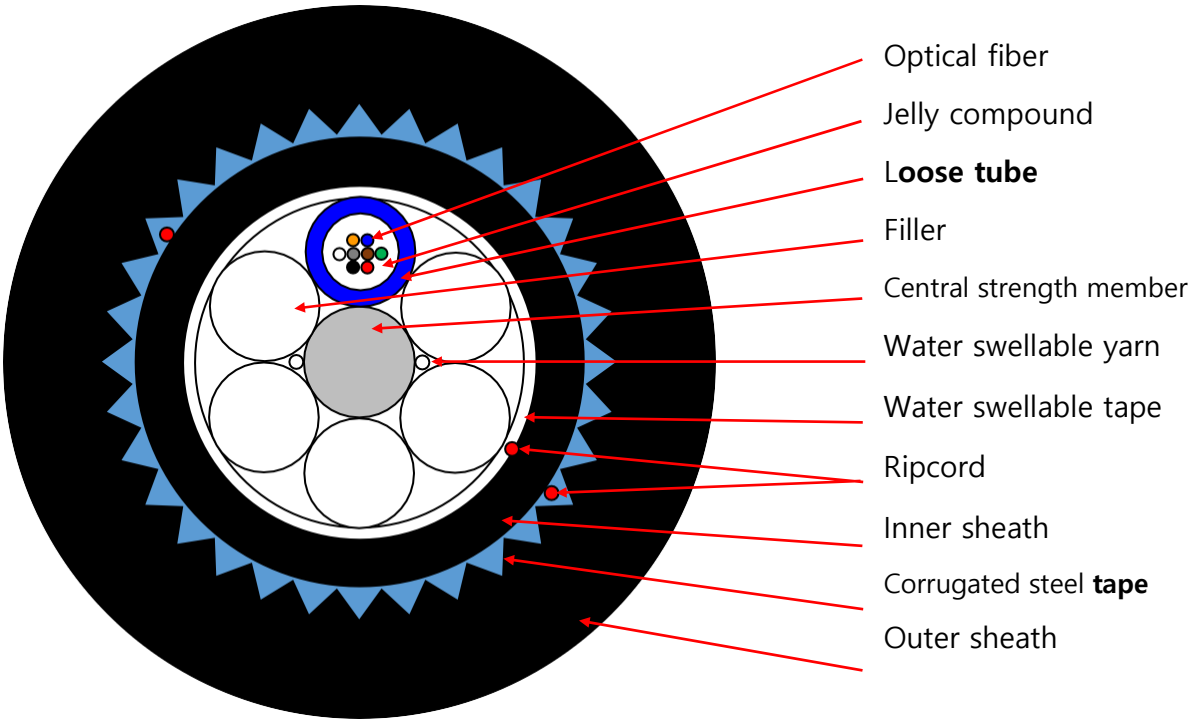
- Type : Double Jacket, Steel tape Armored
  G.652D 8F,12F,18F,24F,36F,48F,96F
- Spec. No. : GOC50330-54-220607 REV.0
- Customer : UZBEKTELCOM

0	06/07/22	Original Issue	J. I Choi	S. H Kim	J. H Lee
Rev.	Date	Description	Prepared by	Reviewed by	Approved by

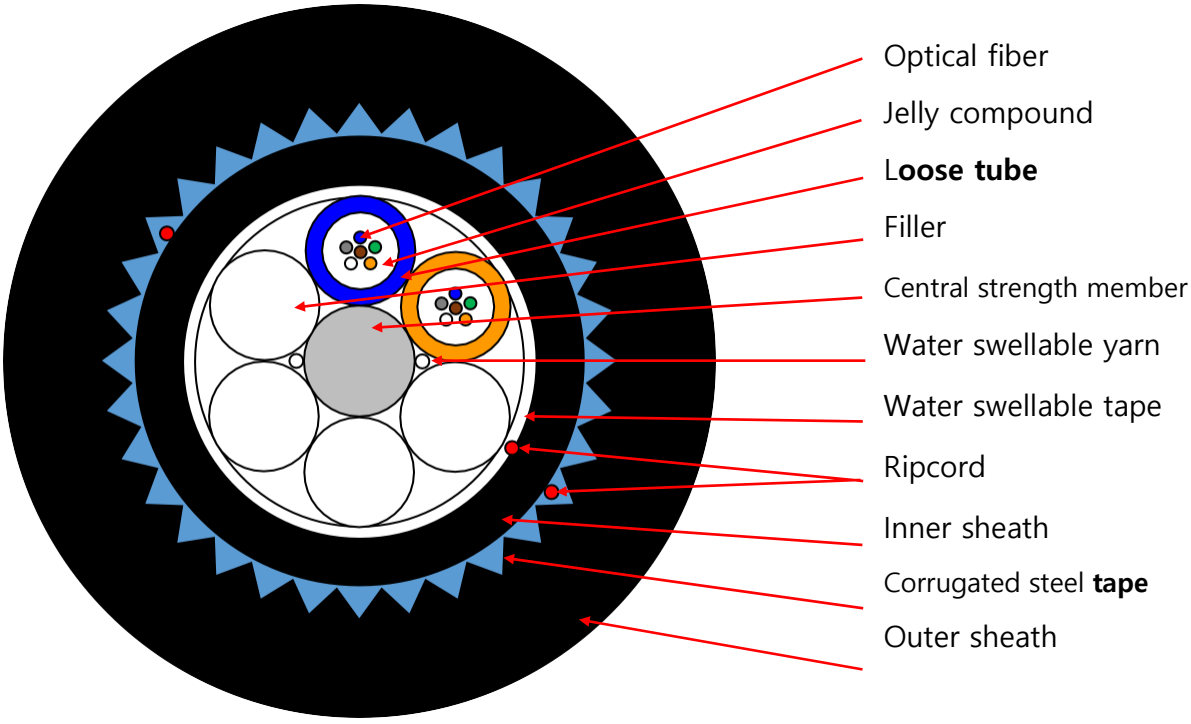
1. Cable construction

1.1 Cross Section of Fiber Optic Cable

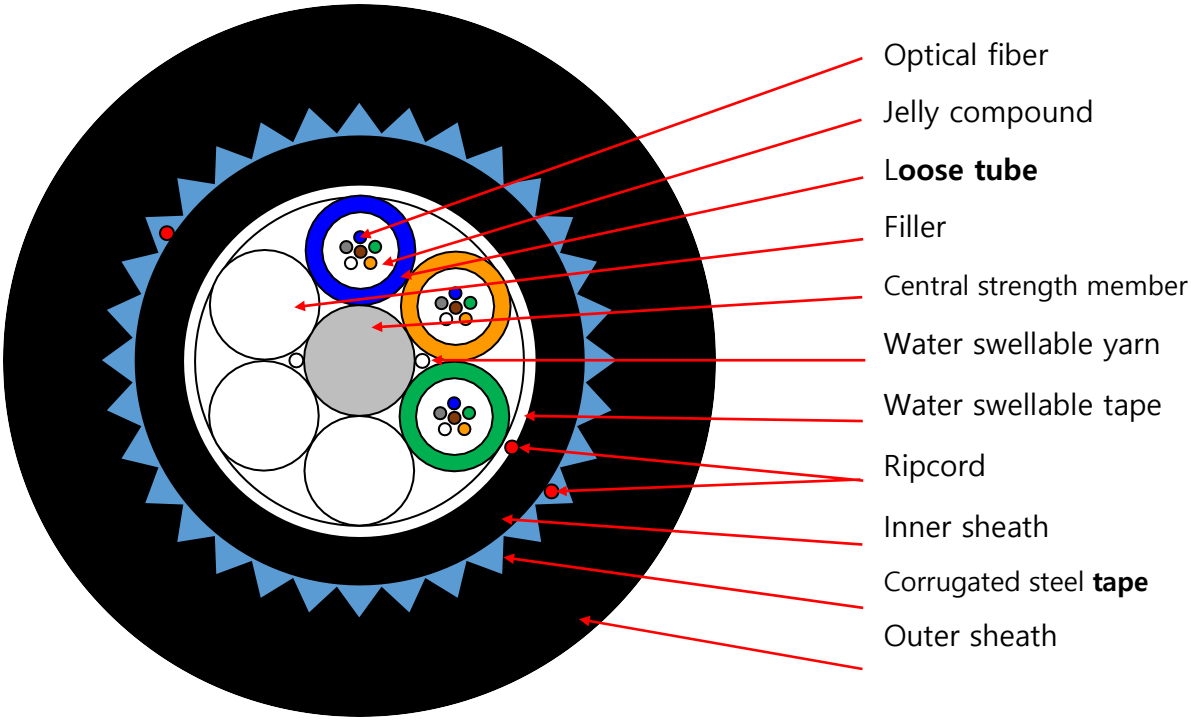
1.1.1 8F



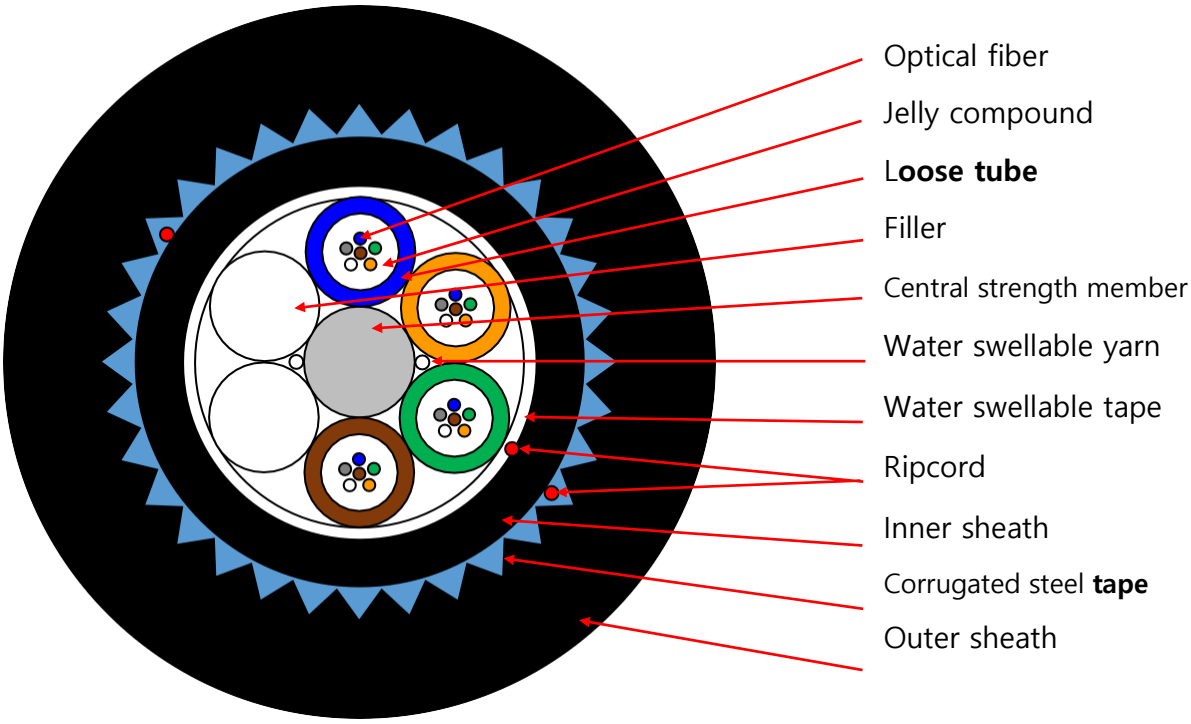
1.1.2 12F



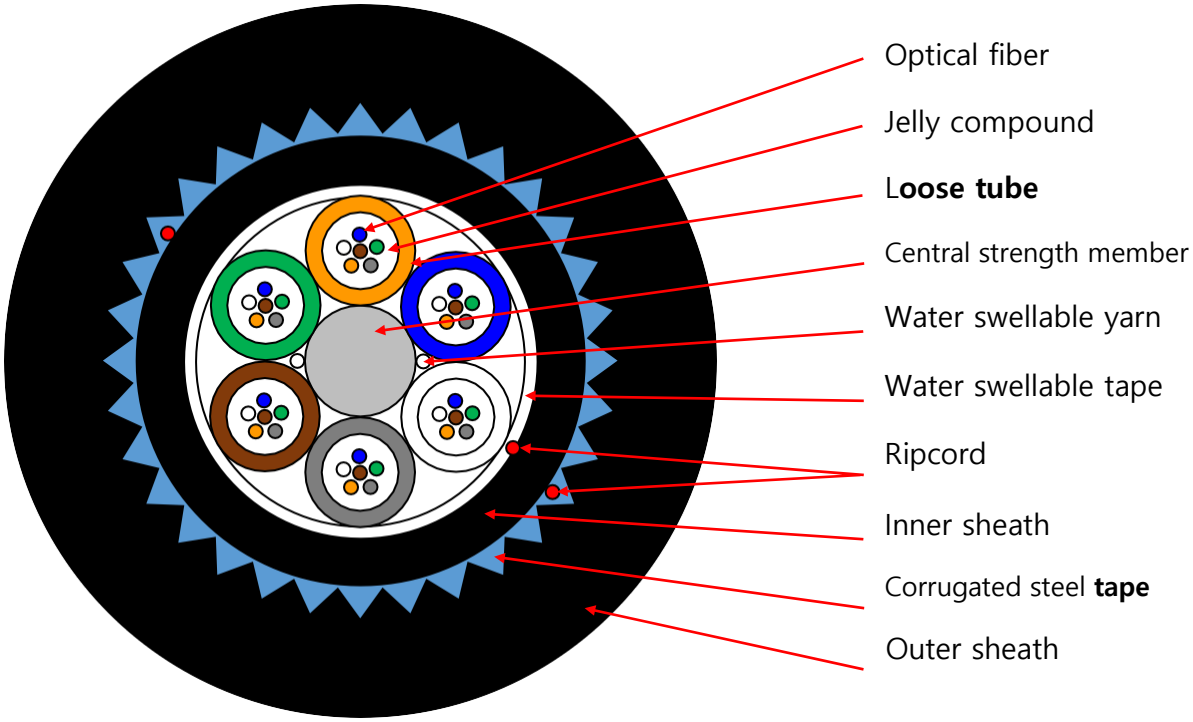
1.1.3 18F



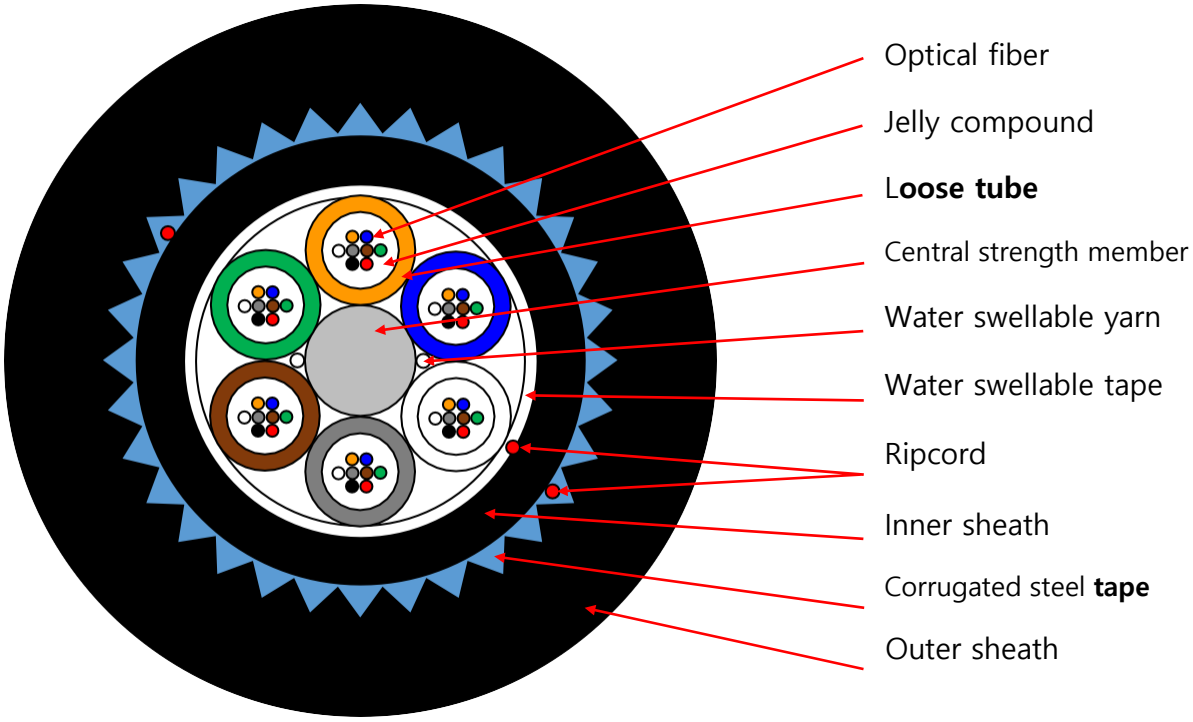
1.1.4 24F



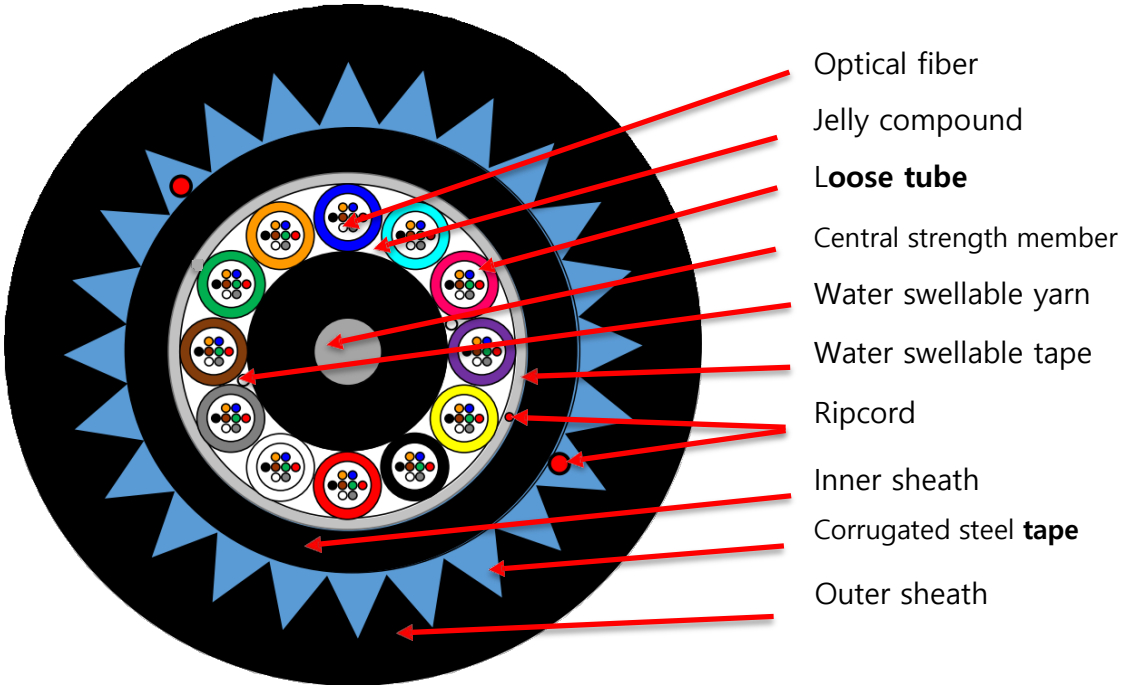
1.1.5 36F



1.1.6 48F



1.1.7 96F



1.1 Construction of Fiber Optic Cable

Structure			Material	Specifications
Optical Fiber			Fiber	- SMF : G.652D, MFD: 9.2 ± 0.4μm @1310nm
			Color	- Reference. 1.3.1
Loose tube			Material	- PBT
			Water proof	- Jelly compound
			Diameter	- 2.0 ± 0.1mm
			Color	- Reference 1.3.1
SZ Stranding	Central strength member			- Steel wire or steel wire with PE coated
	Water proof			- Water swellable yarn
	Filler		PE Rod	- Nom. 2.0mm
	Core wrapping tape		Water Proof	- Water swellable tape
Inner Sheath	Ripcord			- Red color , 1ea
	Sheath		Material	- HDPE, black
			Diameter	- Reference1.3 - Thickness : Nom. 0.9mm, Min. 0.8mm
Outer Sheath	Armored		Steel tape	- Corrugated steel tape, overlap 3mm
	Ripcord			- Red color , 2ea
	Sheath		Material	- HDPE, black
			Diameter	- Reference1.3 - Thickness: Nom. 2.0mm Min. 1.8mm.
Marking				- Ink-jet or Indent, White, 1m interval

1.2 Cable diameter & Construction details

Fiber Count	Outer Diameter(mm)	Inner Diameter(mm)	Loose tube Diameter(mm)	Construction (Fiber/Tube*tube, Filler)	Tensile Strength
8F	13.7 ± 0.5	8.3 ± 0.3	2.0 ± 0.1	8F * 1Tube, 5Filler	2.7kN
12F	13.7 ± 0.5	8.3 ± 0.3	2.0 ± 0.1	6F * 2Tube, 4Filler	2.7kN
18F	13.7 ± 0.5	8.3 ± 0.3	2.0 ± 0.1	6F * 3Tube, 3Filler	2.7kN
24F	13.7 ± 0.5	8.3 ± 0.3	2.0 ± 0.1	6F * 4Tube, 2Filler	2.7kN
36F	13.7 ± 0.5	8.3 ± 0.3	2.0 ± 0.1	6F * 6Tube	2.7kN
48F	13.7 ± 0.5	8.3 ± 0.3	2.0 ± 0.1	8F * 6Tube	2.7kN
96F	17.5 ± 0.5	12.1 ± 0.3	2.0 ± 0.1	8F * 12Tube	3.0kN

1.2.1 Color code

- **Color of fiber in the loose tube**

No.	1	2	3	4	5	6
Color	Blue	Orange	Green	Brown	Gray	White
No.	7	8	9	10	11	12
Color	Red	Black	Yellow	Violet	Pink	Aqua

- **Tube / fiber arrangement details : Tube color code (No. of fiber)**

No.	8F	12F	18F	24F	36F	48F	96F
1	Blue(8)	Blue(6)	Blue(6)	Blue(6)	Blue(6)	Blue(8)	Blue(8)
2	Filler	Orange(6)	Orange(6)	Orange(6)	Orange(6)	Orange(8)	Orange(8)
3	Filler	Filler	Green(6)	Green(6)	Green(6)	Green(8)	Green(8)
4	Filler	Filler	Filler	Brown(6)	Brown(6)	Brown(8)	Brown(8)
5	Filler	Filler	Filler	Filler	Gray(6)	Gray(8)	Gray(8)
6	Filler	Filler	Filler	Filler	White(6)	White(8)	White(8)
7							Red(8)
8							Black(8)
9							Yellow(8)
10							Violet(8)
11							Pink(8)
12							Aqua(8)

1.3 Marking

- Followed by customer request.
- The marking is printed every 1 meter.

1.4 Packing

- Wooden drum, Wrapping
- Standard length : 4km

2. Optical Fiber Property

2.1 The properties of single mode fiber (ITU-T. G.652D)

Parameter	Specification
Attenuation coefficient @ 1310 nm @ 1550 nm	 ≤ 0.35dB/km ≤ 0.21dB/km
PMD(Maximum individual fiber)	≤ 0.2dB ($ps/km^{1/2}$)
Cable cut-off wavelength	≤ 1260 nm
Zero-dispersion wavelength	1300 ~ 1324 nm
Zero-dispersion slope	≤ 0.092 ps/(nm^2.km)
Chromatic dispersion @ 1285 ~ 1330 nm @ 1550 nm	 ≤ 3.5 ps/(nm.km) ≤ 18.0 ps/(nm.km)
Mode field diameter @ 1310 nm	9.2 ± 0.4 um
Core/Clad concentricity error	≤ 0.6 um
Cladding diameter	125.0 ± 1.0 um
Cladding non-circularity	≤ 1.0 %
Primary Coating diameter	245 ± 10 um
Refractive index	1.4673 @ 1310 nm 1.4678 @ 1550 nm
Proof test level	100 kpsi, 1%

3. Cable Property

3.1 Mechanical & Environmental properties

3.1.1 Cable bending radius : 15 x cable diameter (during operation)
20 x cable diameter (during installation)

3.1.2 Operating temperature range : -40°C to +70°C
Installation temperature range : 0°C to +50°C
Storage temperature range : -40°C to +70°C

3.2 Mechanical & Environmental requirements

No	Item	Test method	Specification
1	Tensile load	1) Test method: IEC 60794-1-2 E1 2) Applied Load : Reference 1.3 3) Test length : 100m 4) Applied time : 10min	-Loss change ≤ 0.1 dB @1550 nm
2	Crush	1) Test method: IEC 60794-1-2 E3 2) Applied load : 2,500N/100mm plate 3) Duration time : 5min 4) No. of tests : 3 different point	-Loss change ≤ 0.1 dB @1550 nm
3	Impact	1) Test method: IEC-60794-1-2 E4 2) Test load: 1kg x 1m x 10 different point	-Loss change ≤ 0.1 dB @1550 nm
4	Repeated Bending	1) Test method: IEC-60794-1-2 E6 2) Bending radius : 20 x Cable dia. 3) Bending angle : ±90° 4) No. of cycle : 20	-Loss change ≤ 0.1 dB @1550 nm
5	Torsion	1) Test method: IEC-60794-1-2 E7 2) Test length : 4m 3) Twist angle : ±360° 4) Twist cycles : 10cycle	-Loss change ≤ 0.1 dB @1550 nm
6	Temperature Cycling	1) Test method: IEC-60794-1-2 F1 2) Test length : 1,000m 3) Temperature : +23℃→-40℃→+70℃→-40℃→+70℃→+23℃ 3) Applied time : 12h at each step 4) No. of cycle : 1cycle	-Loss change ≤ 0.1 dB @1550 nm
7	Water Penetration IEC-60794-1-2 F5	1) Test method: IEC-60794-1-2 F5 2) Test length : 3m 3) Water height : 1m 4) Duration time : 24hrs	-No Leakage Only, inner cable is satisfied.