LTE CONNECT WITH CONFIDENCE

LT ENGINEERING & TRADE SERVICES ISO 9001:2015 CERTIFIED BY UKAS

CORPORATE PROFILE

L T Engineering & Trade Services Pvt. Ltd. (LTE), a distinguished OEM of Optical Fiber Cable in Pakistan. Since its establishment in the year 1992, the company has made remarkable contributions to the advancement of Pakistan's telecommunications infrastructure.

LTE has played a pivotal role in the growth of public and private telecommunication sector through provisioning of reliable and premium-quality optical fiber cables.

A notable achievement in LTE's history is its inaugural supply of Optical Fiber Cable to Pakistan Telecommunication Company Limited (PTCL), which has remained in operational service for nearly a quarter-century. Across this span of time, LTE has determinedly established its identity as a leading turnkey solution provider in Pakistan.

This stature is supported by a comprehensive spectrum of services encompassing optical network survey and design, cable laying, jointing, testing, commissioning, and ongoing nationwide optical fiber cable link maintenance. All these services adhere meticulously to International Quality Standards and Management Systems.

The unwavering dedication, unyielding commitment, and unflagging enthusiasm exhibited by LTE team have been instrumental in materializing the company's vision.

Today, LTE has firmly entrenched itself as a preeminent turnkey solution provider within the region, symbolising the zenith of that visionary Endeavor.

VISION

"To lead the way in enabling optical connectivity through state of the art technology"

MISSION

"To be the leading Optical Fiber Cable manufacturer & Turn Key solution provider by maintaining a customer centric approach, delivering product excellence and maintaining competitiveness with sustainable growth"

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Duct (DC) Optical Fiber Cable (Sm 12-288 Fibers)



Cable Description

This cable is purpose-built for metropolitan networks and is typically installed within ducts. It is offered with a fiber capacity of up to 288. Customers have the flexibility to choose the desired fiber count and type to match their specific needs. The cable core is fundamentally based on a dry-block construction.

	Application and Key features						
1	1 Usage Scenarios Ideal for Metropolitan Networks						
2	Installation Method	Suitable for Pulling in Ducts					
3	Cable Design	Stranded loose tube architecture					
4	No of Fibers	Supports fiber count of up to 288					
5	Fiber Types	Compatible with G.652.D and G.655.C fibers					
6	Characteristics	Characterized by its lightweight and flexible nature					

Cable cross-section

Polyester Binding Yams Polyester Binding Yams Colore Sheath Aramid Yams Colored Optic Fibers Water Swellably Tape User Binding Tape

144 F DC



Cable Parameter

No of Fibers	12 F	24 F	48 F	96 F	144 F	288 F
Fiber per Tube	04 F	06 F	08 F	12 F 12 F		12 F
No. of Tubes	03	04	06	08	12	First :09 Second:15
No. of Fillers	03	02	-	-	-	-
Outer dia.	11.0±0.5	11.0±0.5	12.0±0.5	14.0±0.5	16.5±0.5	20±0.5

Cable Item Description

S No.	ltem	Description			
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications			
2.	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter as per design .			
3.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is controlled during the manufacturing 			
4.	Moisture Barrier	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape			
5.	Identification Tape	The identification tape is placed with desired printing as per customer specification			
6.	Peripheral Strength Member	Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength, these strength member are used over the Water Swellable (WS) tape			
7.	Ripcord	Ripcord is provided and is placed below the Outer Sheath			
8.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)			



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



		-	Tube (Color	s			
Outer dia. 12F-24 F	Inner dia. 12-24 F	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube								Tube	Color	s				
Outer dia. 48F-288 F	Inner dia. 48F-288 F	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.6±0.1 mm	1.8±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

LTE -YEAR-CUSTOMER NAME SDC-144 F-OFC- XXXX-DRUM NO:XXXX				
LTE	Name of Manufacturer			
Year Manufacturing Year				
Customer Name	As per Customer Requirement			
SDC	Standard Duct Cables			
144F-OFC	144 Fibers SM-OFC			
XXXX	Length Marking			
Drum No:XXXX	Cable Drum Number			
The second secon				

• The marking is printed every 1 meter

- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification					
Fiber Type	SM					
Fiber Make	ITUT G652 D					
Dimensions						
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm					
Cladding Diameter	125±1 µm					
Primary Coating Diameter	250±10 μm					
Cladding Non-Circularity	≤1%					
Core-Clad Concentricity error	≤0.5 µm					
Coating-Cladding Concentricity	≤12 µm					
Fiber Curl	≥4m radius of curvature					
Cable Optical Specifications						
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km					
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km					
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length					
Fiber cut-off wavelength	1150 nm to 1310 nm					
Cable cut-off wavelength	Less than or equal to 1260 nm					
Chromatic Dispersion						
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}					
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm					
Zero dispersion slope	≤0.092 ps/(nm².km)					
Polarization Mode Dispersion (PMD)						
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)					
Mechanical Specifications						
Fiber Tensile Strength	≥400 MPa					
Performance Characteristics						
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)					



Mechanical Requirements

No	ITEM	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C \pm 5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	2000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 2 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute



9	Torsion Test	IEC 794-1-E7	7.8	No.of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km
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Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1 m of inside end of cable will be reserved for testing
- Nominal drum length is 2000,4000,6000m±5%

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

• Cable drum flanges will bear

- Manufacturer's Name
- Arrow showing the direction of drum roll
- Cable inner end position indicating arrow
- CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
- Caution plate indicating the correct method for loading, unloading and convey the cable
- Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

Armoured Buried (BC) Optical Fiber Cable (Sm 12-288 Fibers)



Cable Description

This cable is meticulously (very thoroughly) design for extensive long-distance transmission networks. It accommodates fiber count ranging from 12 to 288. The fiber type can be chosen as G.652.D, G.655.C, or a combination tailored to the customer's specifications. The cable's structure follows a stranded loose tube design.

	Application and Key features						
1	Usage Scenarios	Suitable for long-haul, metropolitan networks and for high tensile strength requirements					
2	Installation Method	Designed for direct burial					
3	Cable Design	Stranded loose tube architecture with addition to aramid yarns (DRY Block Type)					
4	No of Fibers	Supports fiber count up to 288					
5	Fiber Types	Compatible with G.652.D and G.655.C fibers					
6	Protection Against Rodents and Mechanical Stress	Equipped with Copolymer Coated Corrugated Steel Tape and Aramid yarns and double sheaths					
7	Characteristics	Demonstrates excellent mechanical resilience, high tensile and crush strength and temperature tolerance					

Cable cross-section

72 F BC





Cable Parameter

No. of Fiber	12 F	24 F	48 F	72 F
Fiber per Tube	04 F	06 F	08 F	12 F
No. of Tubes	03	04	06	08
No. of Fillers	03	02	-	-
Outer dia.	19±0.5	19±0.5	20.5±0.5	20.5±0.5

Cable Item Description

S No.	Item	Description
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D and G657A1/A2 specifications
2.	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter as per design .
3.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is controlled during the manufacturing
4.	First Moisture Barrier	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape
5.	Identification Tape	The identification tape is placed with desired printing as per customer specification
6.	Peripheral Strength Member	Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength
7.	Ripcord	Ripcord is provided and is placed below the Outer Sheath
9.	Second Moisture Protection	Aluminum Tape (optional)
10.	Inner Sheath	Cable Grade MDPE Black color (Medium Density Polyethylene)
11.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)
12.	Armoring	Copolymer corrugated steel tape



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



	Loose Tube		Tube Colors					
Outer dia. 12-24 F	Inner dia. 12-24 F	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube								Tube	Color	s				
Outer dia. 48-288 F	Inner dia. 48-288 F	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.6±0.1 mm	1.8±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

LTE -YEAR-CUSTOMER NAME PBC-48 F-OFC-XXXX-DRUM NO:XXXX						
LTE	Name of Manufacturer					
Year	Manufacturing Year					
Customer Name	As per Customer Requirement					
PBC	Premium Buried Cables					
48F-OFC	48 Fibers SM-OFC					
XXXX	Length Marking					
Drum No:XXXX	Cable Drum Number					

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification
Fiber Type	SM
Fiber Make	ITUT G652 D
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1 µm
Primary Coating Diameter	250±10 μm
Cladding Non-Circularity	≤1%
Core-Clad Concentricity error	≤0.5 µm
Coating-Cladding Concentricity	≤12 µm
Fiber Curl	≥4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length
Fiber cut-off wavelength	1150 nm to 1310 nm
Cable cut-off wavelength	Less than or equal to 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm
Zero dispersion slope	≤0.092 ps/(nm².km)
Polarization Mode Dispersion (PMD)	
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)
Mechanical Specifications	
Fiber Tensile Strength	≥400 MPa
Performance Characteristics	
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)

Mechanical Requirements

No	ITEM	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	2500 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 2kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	30 bends/min Load 75/125 N



9	Torsion Test	IEC 794-1-E7	7.8	No.of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km
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Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1 m of inside end of cable will be reserved for testing
- Nominal drum length is 2000,4000m±5%

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

• Cable drum flanges will bear

- Manufacturer's Name
- Arrow showing the direction of drum roll
- Cable inner end position indicating arrow
- CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
- Caution plate indicating the correct method for loading, unloading and convey the cable
- Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

Double Armoured Buried (DBC) Optical Fiber Cable (SM 12-144 Fibers)



Cable Description

This description pertains to the Triple Jacket Double Armored Optical Fiber Cable, meticulously crafted to meet the challenges of rugged environment due to its Double Armor and Three Jackets, offering enhanced strength and safeguarding against rodents.

		Application and Key features
1	Usage Scenarios	Suitable for long-haul, metropolitan networks and for high tensile strength requirements
2	Installation Method	Designed for direct burial
3	Cable Design	Stranded loose tube design with addition to aramid yarns (*Dry Block Type)
4	No of Fibers	Supports a fiber count of up to 144
5	Fiber Types	Compatible with G.652.D and G.655.C fibers
6	Protection Against Rodents and Mechanical Stress	Equipped with Double Armored Copolymer Coated Corrugated Steel Tape and Aramid yarns and triple sheaths
7	Characteristics	Demonstrates excellent mechanical resilience, high tensile and crush strength and environmental performance

Cable cross-section

48 F DBC (Double Armoured)





Cable Parameter

No. of Fiber	No. of Fiber 12 F 24 F		48 F	72 F	96 F	144 F
Fiber per Tube	04 F	06 F	08 F	12 F	12 F	12 F
No. of Tubes	03	04	06	06	08	12
No. of Fillers	03	02	-	-	-	-
Outer dia.	19.5±0.5	19.5±0.5	21±0.5	21±0.5	24±0.5	27±0.5

Cable Item Description

S No.	Item	Description
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications
2.	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter as per design .
3.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Controlled Excess Fiber length (EFL) is provided during the manufacturing O2 Binder yarns for the loose tube and one for the core wrap (WS tape)
4.	Moisture Barrier	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape
5.	Identification Tape	The identification tape is placed with desired printing as per customer specification
6.	Peripheral Strength Member	Glass/Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength
7.	1 st Inner Sheath	Cable Grade LDPE/MDPE Black color
8.	2 nd Inner Sheath	Cable Grade MDPE Black color (Medium Density Polyethylene)
9.	3 rd Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)
10.	Armoring	Copolymer corrugated steel tape



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



	Loose Tube		Tube Colors					
Outer dia. 12F-24 F	Inner dia. 12-24 F	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube								Tube	Color	s				
Outer dia. 48F-144 F	Inner dia. 48F-144 F	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.6±0.1 mm	1.8±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

LTE -YEAR-CUSTOMER NAME SBC-144 F-OFC-XXXX-DRUM NO:XXXX				
LTE	Name of Manufacturer			
Year	Manufacturing Year			
Customer Name	As per Customer Requirement			
DBC	Double Armoured Buried Cables			
144F-OFC	144 Fibers SM-OFC			
XXXX	Length Marking			
Drum No:XXXX	Cable Drum Number			
 The marking is printed every 1 meter Marking Technique (Engraved Hot foil printing / Inkjet Printing) The color of marking is white 				

• The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification
Fiber Type	SM
Fiber Make	ITUT G652 D, G655C
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1 µm
Primary Coating Diameter	250±10 µm
Cladding Non-Circularity	≤1%
Core-Clad Concentricity error	≤0.5 µm
Coating-Cladding Concentricity	≤12 µm
Fiber Curl	≥4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length
Fiber cut-off wavelength	1150 nm to 1310 nm
Cable cut-off wavelength	Less than or equal to 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm
Zero dispersion slope	≤0.092 ps/(nm².km)
Polarization Mode Dispersion (PMD) Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)
Mechanical Specifications	
Fiber Tensile Strength	≥400 MPa
Performance Characteristics	
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)



Mechanical Requirements

No	ltem	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	2500 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 2.5kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	30 bends/min Load 75/125 N



9	Torsion Test	IEC 794-1-E7	7.8	No.of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km
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Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1m of inside end of cable will be reserved for testing
- Nominal drum length is 2000/4000/6000m±5%

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

- Cable drum flanges will bear
 - Manufacturer's Name
 - Arrow showing the direction of drum roll
 - Cable inner end position indicating arrow
 - CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
 - Caution plate indicating the correct method for loading, unloading and convey the cable
 - Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilogram

High Fiber Count Buried (HFC-BC) Optical Fiber Cable (SM 12-288 Fibers)



Cable Description

This cable is meticulously engineered for extensive long-distance and feeder cable FTTH networks. It accommodates fiber count ranging from 12 to 288. The fiber type can be chosen as G.652, G.655, or a combination tailored to the customer's specifications. The cable's structure follows a stranded loose tube design.

	Application and Key features					
1	Usage Scenarios	Suitable for long-haul transmission networks, SCADA networks, and metropolitan networks				
2	Installation Method	Designed for direct burial				
3	Cable Design	Stranded loose tube structure (Dry Block Type)				
4	No of Fibers	Supports a fiber count of up to 288				
5	Fiber Types	Compatible with G.652.D and G.655.C fibers				
6	Protection Against Rodents and Mechanical Stress	Equipped with Copolymer Coated Corrugated Steel Tape and double sheaths				
7	Characteristics	Demonstrates excellent mechanical resilience and environmental performance				

Cable cross-section

288 F HFC-BC





Cable Parameter

No. of Fiber	12 F	24 F	48 F	96 F	144 F	288 F
Fiber per Tube04 F06 F		08 F	12 F	12 F	12 F	
No. of Tubes	03	04	06	08	12	First layer:09 Second:15
No. of Fillers	03	02	-	-	-	-
Outer dia.	14.5±0.5	14.5±0.5	15.5±0.5	17.5±0.5	20.5±0.5	25.5±0.5

Cable Item Description

S No.	Item	Description			
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G.652.D specifications			
2.	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter as per design .			
3.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Controlled Excess Fiber length (EFL) is provided during the manufacturing 			
4.	Moisture Barrier	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape			
5.	Identification Tape	The identification tape is placed with desired printing as per customer specification			
6.	Peripheral Strength Member	Glass/Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength			
7.	Ripcord	Ripcord is provided and is placed below the Outer Sheath			
8.	Inner Sheath	Cable Grade MDPE Black color (Medium Density Polyethylene)			
9.	Armoring	Copolymer corrugated steel tape			
10.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)			



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



	Loose Tube	Tube Colors						
Outer dia. 12F-24 F	Inner dia. 12-24 F	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube				Tube Colors										
Outer dia. 48F-288 F	Inner dia. 48F-288 F	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.6±0.1 mm	1.8±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

LTE -YEAR-CUSTOMER NAME SBC-144 F-OFC-XXXX-DRUM NO:XXXX				
LTE	Name of Manufacturer			
Year	Manufacturing Year			
Customer Name	As per Customer Requirement			
SBC	Standard Buried Cables			
144F-OFC	144 Fibers SM-OFC			
XXXX	Length Marking			
Drum No:XXXX	Cable Drum Number			
 The marking is printed every 1 meter Marking Technique (Engraved Hot foil printing / Inkjet Printing) 				

- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification
Fiber Type	SM
Fiber Make	ITUT G652 D
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1 µm
Primary Coating Diameter	250±10 µm
Cladding Non-Circularity	≤1%
Core-Clad Concentricity error	≤0.5 µm
Coating-Cladding Concentricity	≤12 µm
Fiber Curl	≥4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length
Fiber cut-off wavelength	1150 nm to 1310 nm
Cable cut-off wavelength	Less than or equal to 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}
Zero dispersion Wavelength	1310 nm≤λ _o ≤1324 nm
Zero dispersion slope	≤0.092 ps/(nm².km)
Polarization Mode Dispersion (PMD)	
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)
Mechanical Specifications	
Fiber Tensile Strength	≥400 MPa
Performance Characteristics	
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)



Mechanical Requirements

No	ITEM	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	2000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 2 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute



9	Torsion Test	IEC 794-1-E7	7.8	No.of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km
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Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1m of inside end of cable will be reserved for testing
- Nominal drum length is **2000,4000m±5%**

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

- Cable drum flanges will bear
 - Manufacturer's Name
 - Arrow showing the direction of drum roll
 - Cable inner end position indicating arrow
 - CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
 - Caution plate indicating the correct method for loading, unloading and convey the cable
 - Additional information: (if needed)

• Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

All Dielectric Self Supporting (ADSS-AC) Optical Fiber Cable (SM 08-288 Fibers)



Cable Description

This cable is specifically designed for metropolitan networks and is suitable for aerial applications. It is accessible with a fiber capacity of up to 144. Customers have the freedom to choose both the desired fiber count and fiber type according to their needs, with a maximum of 144 fibers achievable. It has been designed with enhanced tensile strength. The cable core maintains its foundation in dry-block construction principles.

	Application and Key features							
1	Usage Scenarios Well-suited for Aerial/Metropolitan Networks							
2	Installation Method	Suitable for both Aerial applicants						
3	Cable Design	Stranded loose tube architecture (*Dry Block Type)						
4	Number of Fibers	Maximum fiber count up to 144						
5	Fiber Types	Compatible with G.652.D and G.655.C fibers						
6	Characteristics	Characterized by its lightweight and flexible nature						

Cable cross-section

144 F ADSS-AC





Cable Parameter

No of Fibers	08 F	12 F	24 F	48 F	96 F	144 F	288 F
Fiber per Tube	04 F	04 F	06 F	08 F	12 F	12 F	12 F
No. of Tubes	02	03	04	06	08	12	9+15
No. of Fillers	03	02	01	-	-	-	-
Outer dia.	10.5±0.5	10.5±0.5	10.5±0.5	12±0.5	14.0±0.5	18.1±0.5	23±0.5

Cable Item Description

S No.	ltem	Description					
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications					
2.	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter as per design .					
3.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is controlled during the manufacturing 					
4.	Moisture Barrier	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape					
5.	Identification Tape	The identification tape is placed with desired printing as per customer specification					
6.	Peripheral Strength Member	Aramid Yarns / Glass Yarns are used as Peripheral Strength Member to provide the desired required tensile strength					
7.	Ripcord	Ripcord is used to shear the outer Jacket					
8.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)					



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

	Tube Colors							
Outer dia. 12F-24 F	Inner dia. 12-24 F	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube								Tube	Color	s				
Outer dia. 48F-288 F	Inner dia. 48F- 288 F	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

LTE -YEAR-CUSTOMER NAME ADSS-144 F-OFC-XXXX-DRUM NO:XXXX						
LTE	Name of Manufacturer					
Year	Manufacturing Year					
Customer Name	As per Customer Requirement					
ADSS	All Dielectric Self Supporting Cables					
144F-OFC	144 Fibers SM -OFC					
XXXX	Length Marking					
Drum No:XXXX	Cable Drum Number					
 The marking is printed every after 1 meter Marking Technique (Engraved Hot foil printing / Inkjet Printing) The color of marking is white 						

• The cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification
Fiber Type	SM
Fiber Make	ITUT G652 D
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1µm
Primary Coating Diameter	250±10 μm
Cladding Non-Circularity	≤1%
Core-Clad Concentricity error	≤0.5 µm
Coating-Cladding Concentricity	≤12 μm
Fiber Curl	≤4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length
Fiber cut-off wavelength	1150 nm to 1310 nm
Cable cut-off wavelength	Less than or equal to 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm
Zero dispersion slope	≤0.092 ps/(nm².km)
Polarization Mode Dispersion (PMD)	
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)
Mechanical Specifications	
Fiber Tensile Strength	≤400 MPa
Performance Characteristics	
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)

Mechanical Requirements

No	ITEM	IEC Ref	Clause	Specification			
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour			
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load			
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C			
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ± 5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5			
5	Crush Strength Test		7.4	2000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load			
6	Impact Test	IEC 794-1-E4	7.5	Weight of 1 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km			
7	Bending IEC 794-1-E6 7.6			10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km			



8	Repeated Bending Test	IEC 794-1-E6	7.7	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute
9	Torsion Test	IEC 794-1-E7	7.8	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- o Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1 m of inside end of cable will be reserved for testing
- Nominal drum length is **2000,4000,6000m±5%**

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

- Cable drum flanges will bear
 - Manufacturer's Name
 - Arrow showing the direction of drum roll
 - Cable inner end position indicating arrow
 - CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
 - Caution plate indicating the correct method for loading, unloading and convey the cable
 - Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

Aerial Figure-8 Cables (Fig-8 AC) Optical Fiber Cable (SM 12-144 Fibers)



Cable Description

The cable employs a Multi-Tube construction and prominently features a messenger wire, making it well-suited for FTTH and last mile aerial connectivity.

	Application and Key features							
1	Usage Scenarios Ideal for CATV, Railway & harsh environmental condition							
2	Installation Method	Suitable for Aerial Application and other relevant needs, designed as a Self-Supporting Cable						
3	Cable Design	Stranded loose tube design (Dry Block Type)						
4	No of Fibers	Supports a fiber count of up to 144						
5	Fiber Types	Compatible with G.652.D and G.655.C fibers						
6	Characteristics	Exhibits self-supporting capabilities through the integration of a Messenger Wire						

Cable cross-section



48 F F-8 AC


Cable Parameter

No of Fibers	12 F	24 F	48 F	96 F	144 F
Fiber Per Tube	04 F	06 F	08 F	12 F	12 F
No. of Tubes	03	04	06	08	12
No. of Fillers	03	02	-	-	-
Outer dia.(mm)	11.0/6±0.5	11.0/6±0.5	12.0/6±0.5	14.0/6±0.5	16.0/6±0.5

Cable Item Description

S No.	ltem	Description		
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications		
2.	Central Strength Member (CSM)	Fiber Reinforced Plastic (FRP) is used as Non-Metallic Strength Member with diameter as per design .		
3.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is provided during the manufacturing O2 Binder yarns for the loose tube and one for the core wrap (WS tape) 		
4.	Moisture Barrier	Dry Water Blocking Technology is used, the same is achieved through Water Swellable Yarns & Tape		
5.	Identification Tape	The identification tape is placed with desired printing as per customer specification		
6.	Peripheral Strength Member	Aramid Yarns are used as Peripheral Strength Member to provide the tensile strength, these strength member are used over the Water Swellable (WS) tape		
7.	Ripcord	Ripcord is provided and is placed below the Outer Sheath		
8.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)		
9.	Suspension Strand	Seven Stranded Galvanized Steel Wire is used as a supporting strength member		



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



Loose Tube				-	Tube	Color	s	
Outer dia. 12F-24 F	Inner dia. 12-24 F	Wall Thickness	1	2	3	4	5	6
2.2±0.1 mm	1.4±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White

Loose Tube								Tube	Color	s				
Outer dia. 48F-144 F	Inner dia. 48F-144 F	Wall Thickness	1	2	3	4	5	6	7	8	9	10	11	12
2.5±0.1 mm	1.7±0.1 mm	0.4 mm	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

Sheath Marking

LTE -YEAR-CUSTOMER NAME SAC-144 F-OFC-XXXX-DRUM NO:XXXX			
LTE	Name of Manufacturer		
Year	Manufacturing Year		
Customer Name	As per Customer Requirement		
SAC	Standard Aerial Cables		
144F-OFC	144 Fibers SM -OFC		
XXXX	Length Marking		
Drum No:XXXX	Cable Drum Number		

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification
Fiber Type	SM
Fiber Make	ITUT G652 D
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1µm
Primary Coating Diameter	250±10 μm
Cladding Non-Circularity	≤1%
Core-Clad Concentricity error	≤0.5 µm
Coating-Cladding Concentricity	≤12 µm
Fiber Curl	≥4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length
Fiber cut-off wavelength	1150 nm to 1310 nm
Cable cut-off wavelength	Less than or equal to 1260 nm
Chromatic Dispersion	
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm
Zero dispersion slope	≤0.092 ps/(nm².km)
Polarization Mode Dispersion (PMD)
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)
Mechanical Specifications	
Fiber Tensile Strength	≥400 MPa
Performance Characteristics	
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)



Mechanical Requirements

No	ITEM	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	2000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 2 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute



9	Torsion Test	IEC 794- 1-E7	7.8	No.of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km
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Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1 m of inside end of cable will be reserved for testing
- Nominal drum length is 2000,4000m±5%

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

• Cable drum flanges will bear

- Manufacturer's Name
- Arrow showing the direction of drum roll
- Cable inner end position indicating arrow
- CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
- Caution plate indicating the correct method for loading, unloading and convey the cable
- Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

CLT Fig-08 Armoured (Fig-08 CLT) Optical Fiber Cable (SM 02-12 Fibers)



Cable Description

FIG-08 is designed with 02 to 12 fibers. To ensure robustness and tensile strength steel wire is providing physical strength. While options such as HDPE or MDPE are available for jacketing the cable. Steel tape is corrugated to provide mechanical strength to the cable

	Application & Key features					
1	Usage Scenarios	CATV and similar uses				
2	Installation Method	Suitable for aerial installations and other similar requirements				
3	Design of Cable	Single tube design (Dry Block Type) with steel wire at the top of the cable to form Fig-08 design				
4	No of Fibers	Ranging from 02 to 12				
5 Fiber Types		Compatible with G.652.D and G.655.C				
6	Characteristics	Self-supporting with messenger wire and strong mechanical characteristics.				
7	Key Features	Employing Central Loose Tube (Fig-08) construction, exhibiting smaller diameters compared to alternative constructions. Incorporates Corrugated Steel Tape for enhanced protection against mechanical damage.				

Cable cross-section

06 F Fig-8 CLT





Cable Parameter

No. of Fibers	02 F	04 F	08 F	12 F	
Outer dia.	8/3.5±0.5	8/3.5±0.5	8/3.5±0.5	8/3.5±0.5	

Cable Item Description

S No.	ltem	Description			
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications			
2.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is controlled during the manufacturing 			
3.	Moisture Barrier	Thixotropic jelly and WS yarn			
4.	Strength Member	Steel wire 0.8/1.0 mm each			
5.	Armoring	Copolymer coated steel tape			
6.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)			



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



Loose Tube			Tube Color
Outer dia.	Inner dia.	Wall	1
02-06 F	02-06 F	Thickness	
2.4±0.1	1.6±0.1	0.4 mm	White/Colored (depending upon
mm	mm		customer requirements)

Loose Tube			Tube Color
Outer dia.Inner dia.Wall08-12 F08-12 FThickness		Wall Thickness	1
2.8±0.1 mm	2.0±0.1 mm	0.4 mm	White/Colored (depending upon customer requirements)

Sheath Marking

LTE -YEAR-CUSTOMER NAME-CLT FIG-8-12 F-OFC-XXXX-DRUM NO:XXXX			
LTE	Name of Manufacturer		
Year	Manufacturing Year		
Customer Name	As per Customer Requirement		
CLT FIG-8	Central Loose Tube Figure-8		
12 F-OFC	12 Fibers SM-OFC		
XXXX	Length Marking		
Drum No:XXXX Cable Drum Number			
The marking is printed over 1 meter			

• The marking is printed every 1 meter

- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification		
Fiber Type	SM		
Fiber Make	ITUT G652 D		
Dimensions			
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm		
Cladding Diameter	125±1µm		
Primary Coating Diameter	250±10 μm		
Cladding Non-Circularity	≤1%		
Core-Clad Concentricity error	≤0.5 µm		
Coating-Cladding Concentricity	≤12 µm		
Fiber Curl	≥4m radius of curvature		
Cable Optical Specifications			
Average Attenuation of Cable @1310 nm @ 1550 nm Attenuation vs Wavelength 1285-1330 nm reference	≤0.34 dB/km ≤0.21 dB/km 0.03 dB/km		
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length		
Fiber cut-off wavelength	1150 nm to 1310 nm		
Cable cut-off wavelength	Less than or equal to 1260 nm		
Chromatic Dispersion			
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}		
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm		
Zero dispersion slope	≤0.092 ps/(nm².km)		
Polarization Mode Dispersion (PMD)			
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)		
Mechanical Specifications			
Fiber Tensile Strength	≥400 MPa		
Performance Characteristics			
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)		



Mechanical Requirements

No	ITEM	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	1000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 1 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute



		1	1	
9	Torsion Test	IEC 794-1-E7	7.8	No. of cycles:05 Cycles:±180° No damage to any cable component Attenuation allowed for each fiber at 1550 nm shall be less than 0.1 dB/km

Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- At least 1m of inside end of cable will be reserved for testing
- Nominal drum length is 2000/4000/6000m±5%

Cable Identification Documents

- Test reports to be placed with each drum

Drum Marking

- Cable drum flanges will bear
 - Manufacturer's Name
 - Arrow showing the direction of drum roll
 - Cable inner end position indicating arrow
 - CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
 - Caution plate indicating the correct method for loading, unloading and convey the cable
 - Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

CLT Armoured Cable (CLT) Optical Fiber Cable (SM 02-12 Fibers)



Cable Description

This cable is specifically crafted for LANs and CATV networks where there is a low fiber count requirement. It follows the Central Loose Tube construction design.

	Application & Key features			
1	Usage Scenarios CATV and similar uses			
2	Installation Method	Suitable for aerial installations		
3	Design of Cable	Single tube design		
4	Number of Fibers	s Ranging from 2 to 12		
5	Fiber Types G.652.D			
6	5 Characteristics Lightweight and Flexible			
7	Key Features	Employing Central Loose Tube construction, exhibiting smaller diameters compared to alternative constructions. Incorporates Corrugated Steel Tape for enhanced protection against mechanical damage. Equipped with two phosphorus coated steel wires to ensure essential tensile strength.		

Cable cross-section

08 F CLT





Cable Parameter

No of Fibers	02 F 04 F		08 F	12 F		
Uni-tube (Single Tube) (Either White or Colored)						
Outer dia.	8.5±0.5	8.5±0.5	8.5±0.5	8.5±0.5		

Cable Item Description

S No.	Item	Description		
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications		
2.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02-12 (as per design) Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is controlled during the manufacturing 		
3.	Moisture Barrier	Thixotropic jelly is used in tubes, while WS yarn is used during outer sheath		
4.	Strength Member	2 x Steel wires, of 0.8/1 mm		
5.	Rodent protection	Copolymer coated steel tape		
6.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)		





Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A



	Tube Colors		
Outer dia. 02-12 F	Inner dia. 02-12 F	Wall Thickness	1
2.4±0.1 mm	1.6±0.1 mm	0.4 mm	Blue

Sheath Marking

LTE -YEAR-CUSTOMER NAME-CLT-12 F-OFC-XXXX-DRUM NO:XXXX			
LTE	Name of Manufacturer		
Year	Manufacturing Year		
Customer Name	As per Customer Requirement		
CLT	Central Loose Tube		
12F-OFC	12 Fibers SM-OFC		
XXXX	Length Marking		
Drum No:XXXX	Cable Drum Number		
The marking is printed every 1 meter			

- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification	
Fiber Type	SM	
Fiber Make	ITUT G.652.D	
Dimensions		
Mode Field Diameter		
@1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm	
	125+1 um	
Primary Coating Diameter	250±10 um	
Cladding Non-Circularity	≤1%	
Core-Clad Concentricity error	≤0.5 μm	
Coating-Cladding Concentricity	≤12 µm	
Fiber Curl	≥4m radius of curvature	
Cable Optical Specifications		
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km	
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km	
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length	
Fiber cut-off wavelength	1150 nm to 1310 nm	
Cable cut-off wavelength	Less than or equal to 1260 nm	
Chromatic Dispersion		
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}	
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm	
Zero dispersion slope	≤0.092 ps/(nm².km)	
Polarization Mode Dispersion (PMD)		
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)	
Mechanical Specifications		
Fiber Tensile Strength	≥400 MPa	
Performance Characteristics		
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)	

Mechanical Requirements

No	Item	IEC Ref	Clause	Specification
1	Longitudinal Water Protection	IEC 794-1-F5	7.1	IEC Requirement Height of water: 1m Sample Length: 3m Time: 24 hour
2	Tensile Strength	IEC 794-1-E1	7.2	Tensile force of the cable that the cable will be capable of withstanding without any damage to the cable or affecting its performance Attenuation increase at 1550 nm and 1310 nm shall be less than 0.1 dB/km at full load and removal of load
3	Temperature Range	IEC 794-1-F1	7.3.1	Installation: -10 to 70 °C Operating: -10 to 70 °C
4	Temperature Cycling Test	IEC 794-1-F1	7.3.2	As per IEC 60794-1-2-F1 Sample length: at least 500mtrs Preconditioning: 24 hours at 23 °C ±5 °C Low temperature TA:-10 °C Time t1: 24 hours High temperature TB: 70 °C Number of cycles: 5
5	Crush Strength Test	IEC 794-1-E3	7.4	1000 N for a period of half hour No increase in attenuation at 1310 nm and 1550 nm at full load or removal of load
6	Impact Test	IEC 794-1-E4	7.5	Weight of 1 kg from 1 meter height No fiber break& damage to the cable Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
7	Bending Requirements	IEC 794-1-E6	7.6	10xOD without load 20xOD with load Attenuation increase at 1310 nm and 1550 nm shall be less than 0.1 dB/km
8	Repeated Bending Test	IEC 794-1-E6	7.7	Shall be 15 times the outside diameter of the cable to be tested for 100 cycles at frequency of 30 cycles per minute



Packaging and Marking

Packaging

- Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
- Covered by plastic buffer sheet
- Sealed by strong wooden battens
- o At least 1 m of inside end of cable will be reserved for testing
- Nominal drum length is **2000,4000,6000m±5%**

Cable Identification Documents

Test reports to be placed with each drum

Drum Marking

- Cable drum flanges will bear
 - Manufacturer's Name
 - Arrow showing the direction of drum roll
 - Cable inner end position indicating arrow
 - CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
 - Caution plate indicating the correct method for loading, unloading and convey the cable
 - Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

FTTH Drop Cable (RDC) (Round Profile). 02-12 Fiber



Cable Description

The FTTH Drop Cable comes in a robust, lightweight, and space-efficient design, facilitating seamless data transmission. This easily connectable cable has remarkable tensile strength and resilience. Its flame-retardant jacket enhances fire protection in various environments. Suitable for both indoor and outdoor cabling.

Application and Key features		
1.	Usage Scenarios	Indoor/Outdoor Environments, Resistant to Bending, FTTH Implementation
2.	No of Fibers	Supports up to 2-12 Fiber
3.	Fiber Varieties	Compatible with G.652.D/G.657 Specification
4.	Characteristics	Elevated Strength, Gentle Texture, Feather light Mass, Supple Flexibility, Impervious to Bending Stress, UV Endurance, and Water Repellence

Cable cross-section

02 F (RDC)

Outer Sheath Coated) Glass Yarns Thixotropic Jelly Colored Optic Fiber



Cable Parameter

No of fibers	02-12 F
Sheath Thickness (mm)	1.2±0.2
Outer dia. (mm)	5.5±0.5
Minimum Recommended Sag	1 %
Span Length	≤50 meters
Cable Weight	30-45 kg approx.

Cable Item Description

S. No	ltem	Description	
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D/G-657 specifications	
2.	Loose Tube	 Loose tube material is Polybutylene Terephthalate (PBT), which allow free movement of fibers within the tube and protect them from axial or radial stresses Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise / controlled Excess Fiber length (EFL) is controlled during the manufacturing 	
3.	Strength Member	Aramid/Glass Yarn is used as Non-Metallic strength members	
4.	Outer Sheath	Cable Grade HDPE Black color (High Density Polyethylene)	



Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A

Νο	1	2
G.652.D	Blue	Orange

Loose Tube			
Outer dia.	Inner dia.	Wall Thickness	1
2.8±0.1 mm	2.0±0.1 mm	0.4 mm	White

Cable Sheath Marking

LTE -YEAR-CUSTOMER NAME - FTTH ROUND DROP-02 F-OFC-XXXX- DRUM NO:XXXX		
LTE	Name of Manufacturer	
Year	Manufacturing Year	
Customer Name	As per customer requirements	
Cable Code	FTTH Round Drop Aerial	
02F-OFC	02 Fibers SM-OFC	
XXXX	Length Marking	
Drum No:XXXX	Cable Drum Number	
The marking is printed after every 1 meter		

- The marking is printed after every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- Both cable ends are sealed with heat shrinkable end caps



The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification		
Fiber Type	SM		
Fiber Make	ITUT G652 D		
Dimensions			
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm		
Cladding Diameter	125±1 µm		
Primary Coating Diameter	250±10 μm		
Cladding Non-Circularity	≤1%		
Core-Clad Concentricity error	≤0.5 µm		
Coating-Cladding Concentricity	≤12 µm		
Fiber Curl	≥4m radius of curvature		
Cable Optical Specifications			
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.21 dB/km		
Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km		
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length		
Fiber cut-off wavelength	1150 nm to 1310 nm		
Cable cut-off wavelength	Less than or equal to 1260 nm		
Chromatic Dispersion			
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}		
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm		



The properties of SM optical fiber (ITUT.G.652.D)

Zero dispersion slope	≤0.092 ps/(nm².km)		
Polarization Mode Dispersion (PMD)			
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)		
Mechanical Specifications			
Fiber Tensile Strength	≥400 MPa		
Performance Characteristics			
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)		

Mechanical Requirements

No	ITEM	Specification	
1	Operating Temperature	-10 to 70 °C	
2	Minimum Bending Radius	Static: 10xOD without load Dynamic: 20xOD with load	
3	Tensile Strength	1000-1500 N	
4	Crush Resistance	1000 N	

Packaging and Marking

- Packaging
 - Each single length of cable shall be reeled on Fumigated Wooden Drum suitable for long distance shipment
 - o Covered by plastic buffer sheet
 - o Sealed by strong wooden battens
 - At least 1 m of inside end of cable will be reserved for testing
 - Nominal drum length is **1000,2000m±5%**



• Cable Identification Documents

Test reports to be placed with each drum

Drum Marking

-

- Cable drum flanges will bear
 - Manufacturer's Name
 - Arrow showing the direction of drum roll
 - Cable inner end position indicating arrow
 - CAUTION-OPTICAL FIBER CABLE-NOT TO BE LAID FLAT
 - Caution plate indicating the correct method for loading, unloading and convey the cable
 - Additional information: (if needed)

o Marking Plates

- Customer Name
- Cable Type and Length
- Number of Fibers
- Drum Number
- Manufacturer's Name
- Year of manufacturer
- Contract Number
- Gross/Net weight in kilograms

Bow Type Drop Cable (BDC-MW-IO) 02 Fiber Self Supporting



Cable Description

The Self-Supporting Bow Type Drop Cable has been meticulously (thoroughly examined) crafted with a compact meter length to facilitate with easy splicing, installation, and maintenance. With its distinctive butterfly-shaped and flat configuration, it significantly simplifies the drop cable structure while maintaining a lightweight profile.

Application and Key features			
1	1 Usage Scenarios Perfectly suited for FTTH applications		
2	Cable Design	Safeguarded by dual parallel strength elements crafted from FRP (non-metallic) and steel wire (metallic), this design ensures effective protection and offers robust resistance against crushing forces	
3	No of Fibers	ers Supports fiber count up to 02	
4	Fiber Types Compatible with G.657.A1 and G.657.A2 fibers		
5	Characteristics	Excellent mechanical and environmental performance	

Cable cross-section

02 F BDC-MW-IO





Cable Parameter

Paran	Detail	
	No of Fiber	2
Fiber	Color	Blue, Orange
	Туре	G.657.A1/A2
Steel wire Material		Steel
	Material	LSZH
Sneath	Color	Black
Cable Size(H×W)(mm	(2.0±0.2) × (5.0±0.2)	
Cable weight (kg/km)	18	
Minimum bending	Static(Rip off steel wire)	7.5
diameter(mm)	Dynamic	30

Cable Item Description

S No.	ltem	Description
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G657.A1/A2 specifications
2.	Strength Member	Strength Member (STEEL WIRE)
3.	Sheathing	Fire Retardant Black LSZH (Low Smoke Zero Halogen) is used
4.	Messenger Wire	Steel Wire: 1 mm

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A

No	1	2
G.657.A1/A2	Blue	Orange



Sheath Marking

LTE -YEAR-CUSTOMER NAME- SELF SUPPORTING BOW TYPE DROP CABLE- 02F-OFC-XXXX-DRUM NO:XXXX		
LTE	Name of Manufacturer	
Year	Manufacturing Year	
Customer Name	As per customer requirements	
Cable Code	Self-Supporting Bow Type drop cable	
02F-OFC	02 Fibers SM-Optical Fiber Cable	
XXXX	Length Marking	
Drum No:XXXX	Cable Drum Number	
The marking is printed every 1 meter		

- Marking Technique (Engraved Laser / Inkjet Printing)
- The color of marking is **white**
- The both cable ends are sealed with heat shrinkable end caps

The properties of SM optical fiber (ITUT.G.657.A1/A2)

Item	Specification	
Fiber Type	SM	
Fiber Make	ITUT G657 A1/A2	
Dimensions		
Mode Field Diameter @1310 nm @1550 nm	8.8±0.4 μm 9.8±0.5 μm	
Cladding Diameter	125±0.7 μm	
Primary Coating Diameter	250±10 μm	
Cladding Non-Circularity	≤0.7%	
Core-Clad Concentricity error	≤0.5m µm	
Coating-Cladding Concentricity	≤12 µm	
Cable Optical Specifications		
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.36 dB/km ≤0.25 dB/km	
Cable cut-off wavelength	Less than or equal to 1260 nm	



Chromatic Dispersion		
Chromatic Dispersion	≤18 ps/(nm.km) ^{@1288-1339 nm} ≤23 ps/(nm.km) ^{@1550 nm}	
Zero dispersion Wavelength	1300 nm≤λ₀≤1324 nm	
Zero dispersion slope	≤0.092 ps/(nm².km)	
Polarization Mode Dispersion (PMD)		
PMD Coefficient	≤0.1 ps/(√ km)	
Bending loss performance of OFC		
Bending loss performance of OFC@1550nm	≤0.25DB (10 turns around a mandrel of 30 mm diameter)	

Mechanical Requirements

No	ITEM	Specification	
1	Operating Temperature	-10 to 70 °C	
2	Minimum Bending Radius	Static: 7.5xOD rip off steel wire Dynamic: 30xOD with load	
3	Tensile Strength	800 N	
4	Crush Resistance	500 N	

Packaging and Marking

- Packaging
 - Each single length of cable shall be reeled on Plywood Drum suitable for long distance shipment
 - Standard reel length 1000,2000m±5%

Bow Type Drop Cable (BDC-I)

Cable Description

The Bow Type Drop Cable has been meticulously designed to facilitate with easy splicing, installation, and maintenance for FTTH networks. With its distinctive butterflyshaped and flat configuration, it significantly simplifies the drop cable structure while maintaining a lightweight profile.

	Application and Key features		
1	Usage Scenarios	Perfectly suited for FTTH networks for indoor installation	
2	Installation Method	This cable can be installed for FTTH networks	
3	Cable Design	Safeguarded by dual parallel strength elements crafted from FRP (non-metallic)	
4	No of Fibers	Supports fiber count up to 02	
5	Fiber Types	Compatible with G.657.A1 and G.657.A2 fibers	
6	Characteristics	Excellent mechanical and environmental performance	

Cable cross-section

02 F BDC-I





Cable Parameter

Parameter		Detail
	No of Fiber	2
Fiber	Color	Blue, Orange
	Туре	G.657.A1/A2
Steel wire Material		Steel
Charth	Material	LSZH
Sneath	Color	Black
Cable Size(H×W)(mm)		(2.0±0.2) × (5.0±0.2)
Cable weight (kg/km)		18
Minimum bending	Static	7.5
diameter(mm)	Dynamic	30

Cable Item Description

S No.	ltem	Description
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G657.A1/A2 specifications
3.	Sheathing	Fire Retardant Black LSZH (Low Smoke Zero Halogen) is used

Fiber Identification

Fiber Identification is made as per TIA/EIA 598-A

Νο	1	2
G.657.A1/A2	Blue	Orange



Sheath Marking

LTE -YEAR-CUSTOMER NAME- BOW TYPE DROP CABLE-02F-OFC-XXXX- DRUM NO:XXXX		
LTE	Name of Manufacturer	
Year	Manufacturing Year	
Customer Name	As per customer requirements	
Cable Code	Bow Type drop cable	
02F-OFC	02 Fibers SM-Optical Fiber Cable	
XXXX	Length Marking	
Drum No:XXXX	Cable Drum Number	
• The marking is printed every 1 meter		

- Marking Technique (Engraved Laser / Inkjet Printing)
- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps

The properties of SM optical fiber (ITUT.G.657.A1/A2)

Item	Specification	
Fiber Type	SM	
Fiber Make	ITUT G657 A1/A2	
Dimensions		
Mode Field Diameter @1310 nm @1550 nm	8.8±0.4 μm 9.8±0.5 μm	
Cladding Diameter	125±0.7 μm	
Primary Coating Diameter	250±10 μm	
Cladding Non-Circularity	≤0.7%	
Core-Clad Concentricity error	≤0.5m µm	
Coating-Cladding Concentricity	≤12 µm	
Cable Optical Specifications		
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.36 dB/km ≤0.25 dB/km	
Cable cut-off wavelength	Less than or equal to 1260 nm	



Chromatic Dispersion				
Chromatic Dispersion	≤18 ps/(nm.km) ^{@1288-1339 nm} ≤23 ps/(nm.km) ^{@1550 nm}			
Zero dispersion Wavelength	1300 nm≤λ₀≤1324 nm			
Zero dispersion slope	≤0.092 ps/(nm².km)			
Polarization Mode Dispersion (PMD)				
PMD Coefficient	≤0.1 ps/(√ km)			
Bending loss performance of OFC				
Bending loss performance of OFC@1550nm	≤0.25DB (10 turns around a mandrel of 30 mm diameter)			

Mechanical Requirements

No	ITEM	Specification			
1	Operating Temperature -10 to 70 °C				
2	Minimum Bending Radius	Static: 7.5xOD Dynamic: 30xOD with load			
3	Tensile Strength	800 N			
4	Crush Resistance	500 N			

Packaging and Marking

- Packaging
 - Each single length of cable shall be reeled on Plywood Drum suitable for long distance shipment
 - Standard reel length 1000,2000m±5%

Drop Cable (ODC-IO) Outdoor/Indoor 02-12 Fiber



Cable Description

Oval Drop Cable design has an exclusively dielectric composition, comprised of Black MDPE with integrated Fiber Reinforced Plastic (FRP) / steel wire within the sheath wall. This innovative design renders the cable self-supporting, lending its adaptability for installation aerial and FTTH applicable.

	Application and Key features					
1	Usage Scenarios	Fiber drop cables find common use in linking the fiber terminal to residential or commercial structures, catering to outdoor scenarios.				
2	Installation Method	This cable can be installed either in-duct or through direct burial				
3	Cable Design	Safeguarded by dual parallel strength elements galvanized steel wire (metallic),				
4	No of Fibers	Supports a fiber count of up to 02-12				
5	Fiber Types	Compatible with G.652 D				
6	Characteristics	These cables are meticulously designed to endure even the harshest environmental elements, such as sunlight, high temperatures, freezing cold, moisture.				

Cable cross-section





Cable Parameter

Sr. No	Parameter	Detail
1.	Fiber Type	G652.D
2.	No. of Fiber	02-12
3.	Loose Tube material	РВТ
4.	Strength Member	2 X Galvanized steel FRP wires:1.0m
5.	Cable Dimensions	6.0x3.5 mm ± 0.5

Cable Item Description

S No.	ltem	Description
1.	Fiber	The cable is based on Single Mode(SM) Fiber as per ITUT G652.D specifications
2.	Strength Member	02 Galvanized Steel wires: 01mm dia/FRP
3.	Outer Sheath	Cable grade Black HDPE (High Density Polyethylene) is used as outer sheath
4.	Loose Tube	 Loose tube is made up of Polybutylene Terephthalate (PBT), Loose tube will allow free movement of fibers with in the tube and protect them from axial or radial stresses No. of Fibers in the tube:02 Loose tube is filled with Thixotropic Jelly, the filling compound prevents the ingress of water in to the tube Precise Excess Fiber length (EFL) is provided during the manufacturing

Fiber Identification

Fiber Identification is made per TIA/EIA 598-A

No	1	2	3	4	5	6	7	8	9	10	11	12
G.652.D	Blue	Orange	Green	Brown	Gray	White	Red	Black	Yellow	Violet	Pink	Aqua

	Tube Colors		
Outer dia. 02-12 F	Inner dia. 02-12 F	Wall Thickness	1
2.4±0.1 mm	1.6±0.1 mm	0.4 mm	Blue



Sheath Marking

LTE -YEAR-CUSTOMER NAME- OUTDOOR DROP CABLE-02 F-OFC-XXXX-DRUM NO:XXXX

LTE	Name of Manufacturer
Year	Manufacturing Year
Customer Name	As per customer requirements
Cable Code	Outdoor Drop Cable
02F-OFC	02 Fibers SM-Optical Fiber Cable
XXXX	Length Marking
Drum No:XXXX	Cable Drum Number

- The marking is printed every 1 meter
- Marking Technique (Engraved Hot foil printing / Inkjet Printing)
- The color of marking is white
- The both cable ends are sealed with heat shrinkable end caps

The properties of SM optical fiber (ITUT.G.652.D)

Item	Specification
Fiber Type	SM
Fiber Make	ITUT G652 D
Dimensions	
Mode Field Diameter @1310 nm @1550 nm	9.2±0.4 μm 10.4±0.8 μm
Cladding Diameter	125±1 µm
Primary Coating Diameter	250±10 μm
Cladding Non-Circularity	≤1%
Core-Clad Concentricity error	≤0.5 µm
Coating-Cladding Concentricity	≤12 µm
Fiber Curl	≥4m radius of curvature
Cable Optical Specifications	
Average Attenuation of Cable @1310 nm @ 1550 nm	≤0.34 dB/km ≤0.22 dB/km



Attenuation vs Wavelength 1285-1330 nm reference 1525-1575 nm reference	0.03 dB/km 0.02 dB/km		
Attenuation Uniformity	No localized discontinuity in excess of 0.1 dB at any of the designed length		
Fiber cut-off wavelength	1150 nm to 1310 nm		
Cable cut-off wavelength	Less than or equal to 1260 nm		
Chromatic Dispersion			
Chromatic Dispersion	≤3.5 ps/(nm.km) ^{@1285-1330 nm} ≤18 ps/(nm.km) ^{@1550 nm}		
Zero dispersion Wavelength	1310 nm≤λ₀≤1324 nm		
Zero dispersion slope	≤0.092 ps/(nm².km)		
Polarization Mode Dispersion (PMD)			
Maximum Individual fiber PMD Coefficient	≤0.2 ps/(√ km)		
Mechanical Specifications			
Fiber Tensile Strength	≥400 MPa		
Performance Characteristics			
Effective group index of refraction	1.4670 (1310 nm) 1.4677 (1550 nm)		

Mechanical Requirements

No	Item	Specification
1	Operating Temperature	-10 to 70 °C
2	Tensile Strength	800-1000 N
3	Crush Resistance	500 N

Packaging and Marking

- Packaging
 - Each single length of cable shall be reeled on Drum suitable for long distance shipment (2000 meters±5%)
 - Standard reel length 1000,2000m±5%



Rapid Deployment Optical Fiber Cable

Rapid deployment cable is particularly designed for the telecom field and harsh environment.

- Flexible
- Flame retardant
- Crush Resistance
- Wide Operating Temperature Range

Paramenters	Values
No. of Fibers/Type	04 /SM G657 A2
Cable Diameter (mm)	±0.5
Weight (Kg/Km)	32
Tensile Strength (N)	1500
Crush Resistant (N/10 cm)	2500
Impact (N.m)	2.2
Operating Temperature	-40 to +70 degree Centigrade




Armored Rapid Deployment Optical Fiber Cable

Armored Rapid deployment Cable is particularly designed for the telecom field and harsh environment.

- Flexible
- Flame retardant
- High Crush Resistance
- Wide Operating Temperature Range

Paramenters	Values
No. of Fibers/Type	04/SM G.657 A2
Cable Diameter (mm)	8.0
Weight (Kg/Km)	40
Tensile Strength (N)	1500
Crush Resistant (N/10 cm)	2500
Impact (N.m)	4.5
Operating Temperature	-40 to +70 degree Centigrade



Backpack With Reel



Shoulder-Mounted backpack system provides efficient and easy-to-handle method for deployment of short lengths tactical cables in all types of terrains.

- Cable assembly ready for operation. Laying cable in various landscapes.
- Increased cable length carried by an individual.
- Use of full or partial cable lengths.

Description:

• Backpack frame in aluminum, anodized, equipped with handbrakes, excluding reel, including Accessory bag with crank for rewinding.

Reel with the following features:

- Extensible axle for easy storage.
- Separate connector compartment.
- Protective sheath covering the cable and two belts protecting the cable ends with its connectors.
- Reel delivered made ready to use with cable and connectors.
- Number of backpack frames compared to the number of reels is depending on the application.

Accessories offered:

• Preassembled expanded beam connectors. Adapting cables, e.g. from bulkhead to LC, ST or any standard connectors.

Material:

- Backpack frame in aluminum, anodized green colored.
- Accessories bag in canvas.
- Reels in aluminum, colored green.

Color:

• Green.



Expanded Beam Connector



Description:

Hermaphroditic Expanded Beam Connectors are designed for use in the harsh environment, communications, outside broadcast, petrochemical plant, mining, etc., using the latest state-of-the-art Expanded Beam technology.

The Expanded-Beam Connectors provide high reliability and robustness over normal connectors.

Benifits include easy handling, easy cleaning, interconnection in daisy-chain without using adapters/couplers, etc.

Connector Specifications					
Insertion Loss	Singlemode Fiber:1to4channels:-2.0db/-2.5maxat1310nm/1550nm				
Return Loss	>30dB (typical 40dB)				
Durability	3000 Matings minimum				
Operating Temperature	-40°C to +85°C				
Storage Temperature	-55° to +85°C				
Water Immersion	1.0 m				
Free Fall Resistance	500 Falls From 1.2 m height				
Vibration	10-500Hz, 3 directions, 0.75mm amplitude @ 10g acceleration				
Bump	4000 bumps @ 40g acceleration				
Crush Resistance	6.7KN				
Corrosion Resistance	500 Hours Salt Spray				
Cable Retention	1500 (Cable Dependant)				
Weight (approx)	Aluminium Stainless Steel Nickel Aluminium BronzePlug:160g300g285gBulkhead:150g255g240g				
Connector Shell Material/ Colour	Black anodised Aluminium, Nickel Aluminium Bronze or Stainless Steel. Grip & boot: Black or Olive Green				

LTE

FTTH PASSIVE COMPONENTS



LTE ODN Solution



GXF-53 Series Optical Cross Connecting Cabinet



Features:

TE.

- Fully closed SMC body, modular design provides largest flexibility
- Dust-free, water-free and good corrosion resistance and anti-aging function.
- Jump free design concept to further reduce communication fault point.
- Integrated splice tray with 12F, is suitable for FC, SC, LC adapter.
- For 288F, it can be assembled 6 sets of 1:8 module splitter.
- For \$576, it can be assembled 16 sets of 1:32 module splitter.
- Combine functions of fiber termination, scheduling and resource management

Туре	Dimension(mm)	Capacity	Application	
GXF5-53-288F	765 X 1515 X 340	288F	Outdoor	
GXF5-53-S288	530 X 700 X 290	288F	Outdoor	
GXF5-53-S288F	765 X 1515 X 340	288F	Outdoor	
GXF5-53-S144	1545 X 1450 X 360	144F	Outdoor	
GXF5-53-S576F	530 X 700 X 290	576F	Outdoor	



Optical Distribution Box





Features:

- Total enclosed structure with PC and ABS material, prevent from dust, erosion and aging resistance, and has good safety performance.
- Optical fiber cable, patch cord and pigtail are routed independently to each other without mutual interference.
- Wall mounted and pole mounted two kinds of installation modes can be chosen for both indoor and outdoor using.

Туре	Dimension(mm)	Capacity	Outer carton size
GF-KSW-8A	239 X 201.5X77	12F	500X310X440 (6pcs)
GF-KSW-16A	326 X 277.5 X 124	24F	420X650X550 (6pcs)
GF-KSW-24A/B	374 X264 X 112	24F	575X415 X 490 (6pcs)
GF-KSW-48A/B	504 X 374 X 134	48F	565X420X540 (3pcs



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GF-KSW-8A, 12F



GF-KSW-24A/B, 24F



GF-KSW-16A, 24F



GXF6-15N6S, 16F



GF-KSW-48A/B, 48F



GXF6-15N27A/B, 24F



Fiber Joint Closure-In-line



GPJ09-9401 (2*2,36F)



GPJ09-6807 (2*2, 96F)



GPJ09-6812 (2*2,72F)



GPJ09-6806 (2*2,144F)





GPJ09-6601 (3*3,72F)(2*2,144F) GPJ09-6408 (4*4,144F)



Fiber Joint Closure-Dome (Mechanical sealing)

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GPJ09-5603, 48F



GPJ09-5608,72F



GPJ09-5607,96F



GPJOY-5601,144F



GPJ09-L4-BJ





GPJ09-L5-BJ

GPJ09-L6-BJ, 240F



Fiber Joint Closure-Dome (Heat shrink sealing)



GPJ09-5808, 144F



GPJ09-5816,216F



GPJ09-5606,96F



GPJ09-5817-B,360F



L5-BR, 144F



GPJ09-5813



L7-BR, 288F



LTE OSP CIVIL & MAINTENANCE SERVICES



LTE OSP SERVICES

L T E is equipped with a skilled workforce comprising engineers, designers, and technical experts, adeptly capable of managing nationwide tasks encompassing survey and design, network planning, installation, commissioning, and live fiber cable maintenance.

LTE QUALITY POLICY

LTE's dedication to quality is articulated through our Quality Policy. This policy governs the implementation of all existing management and production systems at LTE. The core purpose of our Quality Management System is to provide customers with the assurance of quality by showcasing:

- Comprehensive Quality Planning
- Precise Process Control
- Demonstrable Process Capability

The ultimate triumph of any enterprise rests in the realm of customer satisfaction. For LTE, this satisfaction stands as the foremost priority. Beyond offering competitive pricing, superior design, precision manufacturing, stringent quality control, and prompt services, LTE also places great importance on the value of teamwork, which is pivotal for harmonizing these essential components. OPTICAL FIBER CABLE OUTSIDE PLANT WORK PASSIVE COMPONENT (FTTH) LINK TESTING SYSTEM INSTALLATION

AFTER SALE SERVICES & NETWORK MAINTENANCE

EXPERIENCE LTE FOR YOURSELF

The most compelling validation of our commitment to exceptional customer satisfaction emerges through direct engagement with our solutions.

Our confidence extends beyond the role of a supplier of optical fiber cable. We firmly believe in evolving ourself as your steadfast partner.



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