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GOVERNMENT OF INDIA
MINISTRY OF COMMUNICATIONS
DEPARTMENT OF TELECOMMUNICATIONS
TELECOMMUNICATION ENGINEERING CENTRE
Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi-110001

CERTIFICATE OF DESIGNATION

M/s BIRLA FURUKAWA FIBRE OPTICS PRIVATE LIMITED (OPTICAL FIBRE TESTING LABORATORY), GOA

has been assessed and designated as Conformity Assessment Body (CAB)
for its facilities at

PLOT No's.: L-62 TO L-64, VERNA INDUSTRIAL ESTATE, VERNA, SOUTH GOA, GOA – 403 722

In the field of Testing

Certificate No. TEC/MRA/CAB/IND-D/105

Issue Date: 21/01/2025 **Validity: 21/01/2025 to 20/01/2028**

This Certificate remains valid for the Scope of Designation as specified in the Annexure subject to the continued validity of NABL Accreditation and satisfied compliance to the Standards/specifications against which lab has been designated and strict compliance to the relevant terms and conditions of TEC CAB Designation Scheme.

(To see the scope of designation of this laboratory, you may also visit TEC website www.tec.gov.in)

Signed for and on behalf of TEC

Digitally signed by
Sanjeev Kumar Arya
Date: 21-01-2025 16:31:49

Sanjeev Kumar Arya
Director (CA)
For Designating Authority
TEC

Certificate No: TEC/MRA/CAB/IND-D/105 dated 21/01/2025 issued to
M/s Birla Furukawa Fibre Optics Private Limited
(Optical Fibre Testing Laboratory), Goa
Plot No's.: L-62 to l-64, Verna Industrial Estate,
Verna, South Goa, – 403 722

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Validity: -21/01/2025 to 20/01/2028

Terms & Conditions

This certificate is issued as per the terms and conditions stipulated in the TEC SCHEME FOR DESIGNATING DOMESTIC CONFORMITY ASSESEMENT BODIES AND CERTIFICATION BODIES FOR CONFORMITY ASSESEMENT AND CERTIFICATION OF TELECOMMUNICATION EQUIPMENT ISSUE 3 NO. TEC 04019:2023.

Some of the conditions are reiterated as under:

A. Obligations of the Designated CAB.

1. It shall ensure that it maintains its accreditation status from any recognised Indian accreditation body like NABL during validity period of certificate.

2. It shall follow the stipulated procedures, rules and policies laid down by Designating Authority (DA) or Mutual Recognition Agreement (MRA)* partner for testing and evaluation.

3. In respect of tests for which it is seeking designation, it shall have no interest whatsoever in any business to carry on testing in an unfair or biased manner.

4. It shall fully indemnify DA from and against all liabilities, damages, claims, costs, and expenses incurred or sustained by DA as a result of any action taken or omitted by DA relating to the process of designation.

5. It shall comply with DA's or MRA partner's terms and conditions for designation and recognition as modified from time to time.

6. It shall be under obligation to participate in the online process prescribed by TEC for test and certification against TEC's GR/IR/ER and standards.

7. It shall have a record system which shall have a retention period of at least 5 years for documents related to the equipment testing. It shall maintain all the relevant documents including list of products submitted for testing, product-wise testing and evaluation reports. These documents shall be produced before the DA within seven days, as and when required.

8. It shall ensure the Intellectual Property Rights of the customers in the course of testing by maintaining professional ethics, secrecy and keeping all the product related information confidential.

*Applicable only if recognized by MRA (Mutual Recognition Agreement) partner.

9. It shall notify the DA in writing of occurrence of any of the following incident(s) within 2 weeks of its occurrence

a) Cessation of its business of conformity assessment for which it is Designated or accredited
b) Changes in its legal, commercial, or Organisational status
c) Changes, which may affect continuing compliance with any of the criteria or requirement specified by DA or MRA partner.
d) Change of premises

B. REFERENCE TO DESIGNATION STATUS

1. Designated CABs may advertise their designation status with regard to standards or parts thereof which are included in the scope of designation.

2. The advertisement should not imply, or otherwise suggest that DA or MRA Partner has endorsed the product or imply that the designated CAB is an agent or representative of DA or MRA Partner.

3. CABs whose designations have been suspended or withdrawn for any reason, shall discontinue advertisement of their designated status and not make any misleading statements regarding their designation status.

C. POST-DESIGNATION SURVEILLANCE

As and when required, DA shall conduct surveillance assessments and other non-routine assessments on the Designated CABs to ensure that standards of practices are maintained as well as to investigate complaints made against them.

D. SUSPENSION OR WITHDRAWAL OF DESIGNATION

1. DA shall suspend or withdraw the designation of a CAB if
   a. Its accreditation is withdrawn.
   b. It is found that the CAB is not complying with the stipulated criteria or requirements.
   c. It is guilty of any offence involving fraud or dishonesty.
   d. DA concludes that there is a just cause for withdrawing the designation.

2. A CAB whose designation, and recognition in case of MRA, has been suspended or withdrawn shall be removed from the list of designated CABs, in case it fails to take corrective measures.

3. DA shall keep the designation of a Designated CAB under suspension, until the completion of formal review process.

E. AMENDMENT TO THE SCHEME

DA reserves the rights to amend the scheme, as and when required, for the purpose of streamlining designation process.

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SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited
(Optical Fibre Testing Laboratory), Goa
Plot No's.: L-62 to l-64, Verna Industrial Estate,
Verna, South Goa, – 403 722

Certificate Number: TEC/MRA/CAB/IND-D/105 **Page 1 of 55**

Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing	Standard/ Specification

Sl. No.	Product	Test Parameters with Standard		Standards
1.	**Optical Fibre – Single Mode- ITU-T G.652.D**	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70112401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding Non-circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad concentricity error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating diameter IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding concentricity IEC 60793-1-21	TEC ER No. TEC70012401
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1310 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1490 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1270 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Water Peak attenuation at 1380 to 1390 nm IEC 60793-1-40	TEC ER No. TEC70012401

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Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.652.D	**Transmission Characteristics (Attenuation of uncabled Fibre)**	Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC 60793-1-42	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-42	TEC ER No. TEC70012401
			In 1285 nm -1330 nm band IEC 60793-1-42	TEC ER No. TEC70012401
			In 1270 nm-1340 nm band IEC 60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Slope IEC 60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Wavelength range IEC 60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Polarization Mode Dispersion)	Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link design value for un-cabled fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Cable Cutoff Wavelength IEC 60793-1-44	TEC ER No. TEC70012401

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Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.652.D	**Transmission Characteristics (Fibre Macro bend loss)**	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when fiber is coiled with 100 turns on 50 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
		Mechanical Characteristics	Proof Test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength (Unaged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.652.D	**Environmental Characteristics of Fiber for both color and Uncolor Fibres**	Temperature Cycle Test: Temperature dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401
			Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.652.D	**Environmental Characteristics of Fiber for both color and Uncolor Fibres**	High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color Fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
	Optical Fibre – Single Mode- ITU-T G.655	**Geometrical Characteristics**	Mode Field Diameter at 1550 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding non-circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad Concentricity error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding Concentricity IEC 60793-1-21	TEC ER No. TEC70012401
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.655	**Transmission Characteristics (Chromatic Dispersion)**	At1530 nm to 1565 nm IEC 60793-1-42	TEC ER No. TEC70012401
			At 1565 nm to 1625 nm IEC 60793-1-42	TEC ER No. TEC70012401
			Dispersion Slope at 1550 nm IEC 60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Polarization Mode Dispersion)	for Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link design value for Un-cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Cable Cut-off Wavelength IEC 60793-1-44	TEC ER No. TEC70012401
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
		Mechanical Characteristics	Proof test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability Force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.655	**Mechanical Characteristics**	Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401
		Environmental Characteristics of Fiber for both color and Uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401

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Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.655	**Environmental Characteristics of Fiber for both color and Uncolor fibres**	Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
	Optical Fibre – Single Mode- ITU-T G.656	**Geometrical Characteristics**	Mode Field Diameter at 1550 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding Non-Circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad Concentricity Error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding Concentricity IEC 60793-1-21	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.656	**Transmission Characteristics (Attenuation of Uncabled Fibre)**	At 1460 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1383 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1460 nm to 1550 nm IEC 60793-1-42	TEC ER No. TEC70012401
			At 1550 nm to 1625 nm IEC 60793-1-42	TEC ER No. TEC70012401
			Dispersion Slope at 1550 nm IEC 60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Polarization Mode Dispersion)	For Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link Design Value for Un-cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Cable Cut-off wavelength IEC 60793-1-44	TEC ER No. TEC70012401

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Certificate Number: TEC/MRA/CAB/IND-D/105 **Page 10 of 55**

Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.656	**Transmission Characteristics (Fibre Macro Bend Loss)**	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
		Mechanical Characteristics	Proof Test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.656	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401
			Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401

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SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited
(Optical Fibre Testing Laboratory), Goa
Plot No's.: L-62 to l-64, Verna Industrial Estate,
Verna, South Goa, – 403 722

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.656	**Environmental Characteristics of Fiber for both color and uncolor fibres**	High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour Qualification for color fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
	Optical Fibre – Single Mode- ITU-T G.657.A1	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding Non-Circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad Concentricity Error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter (i) 250 µm Fibre (ii) 200µm Fibre IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding Concentricity (i) 250 µm Fibre (ii) 200 µm Fibre IEC 60793-1-21	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A1	**Transmission Characteristics (Attenuation of Uncabled Fibre)**	At 1310 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1490 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1270 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Water Peak attenuation at 1380 nm to 1 390 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC60793-1-42	TEC ER No. TEC70012401
			At 1625 nm IEC60793-1-42	TEC ER No. TEC70012401
			In 1285 nm-1330 nm Band IEC60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	In 1270 nm-1340 nm Band IEC60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Slope IEC60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Wavelength Range IEC60793-1-42	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A1	**Transmission Characteristics (Polarization Mode Dispersion)**	For Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link design value for un-cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Fiber cut off wavelength for Fibre used in Patch cords & Pig-tails IEC 60793-1-44	TEC ER No. TEC70012401
			Cable cut-off wavelength IEC 60793-1-44	TEC ER No. TEC70012401
		Transmission Characteristics (Fibre Macro Bend Loss)	Change in attenuation when Fibre is coiled with 10 turns on 15 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when Fibre is coiled with 1 turn on 10 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401
		Mechanical Characteristics	Proof test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp heat aged) (i) 250 µm fibre (ii)200µm fibre IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength(Un aged) IEC 60793-1-31	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A1	**Mechanical Characteristics**	Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401
		Environmental Characteristics of Fiber for both color and Uncolor Fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A1	**Environmental Characteristics of Fiber for both color and Uncolor Fibres**	Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color Fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
	Optical Fibre – Single Mode- ITU-T G.657.A2	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding Non-Circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad Concentricity Error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter (i) 250 µm fibre (ii) 200 µm fibre IEC 60793-1-21	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A2	**Geometrical Characteristics**	Coating /Cladding Concentricity (i) 250µm fibre (ii) 200µm fibre IEC 60793-1-21	TEC ER No. TEC70012401
		Transmission Characteristics (Attenuation of Uncabled Fibre)	At 1310 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1490 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1270 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Water Peak attenuation at 1380 nm to 1 390 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC60793-1-42	TEC ER No. TEC70012401
			At 1625 nm IEC60793-1-42	TEC ER No. TEC70012401
			In 1285 nm-1330 nm Band IEC60793-1-42	TEC ER No. TEC70012401
			In 1270 nm-1340 nm Band IEC 60793-2-50 and IEC60793-1-42	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A2	**Transmission Characteristics (Chromatic Dispersion)**	Zero Dispersion Slope IEC60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Wavelength Range IEC60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Polarization Mode Dispersion)	For Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link Design Value for Un-Cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Fiber cut off wavelength for Fibre used in Patch cords & Pig-tails IEC 60793-1-44	TEC ER No. TEC70012401
			Cable cut-off wavelength IEC 60793-1-44	TEC ER No. TEC70012401
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when Fibre is coiled with 10 turns on 15 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when Fibre is coiled with 1 turn on 10 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when Fibre is coiled with 1 turn on 7.5 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode-ITU-T G.657.A2	**Mechanical Characteristics**	Proof Test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) (i) 250 µm fibre (ii) 200 µm fibre IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength(Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401
		Environmental Characteristics of Fiber for both color and uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.A2	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401
			Retention of Coating Color: Coated fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
	Optical Fibre – Single Mode- ITU-T G.657.B3	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding Non-Circularity IEC 60793-1-20	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.B3	**Geometrical Characteristics**	Core Clad Concentricity Error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding Concentricity IEC 60793-1-21	TEC ER No. TEC70012401
		Transmission Characteristics (Attenuation of Uncabled Fibre)	At 1310 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1490 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1270 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Water Peak attenuation at 1380 nm to 1 390 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC60793-1-42	TEC ER No. TEC70012401
			Chromatic Dispersion at 1625 nm IEC60793-1-42	TEC ER No. TEC70012401
			In 1285 nm -1330 nm Band IEC60793-1-42	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.B3	**Transmission Characteristics (Chromatic Dispersion)**	In 1270 nm-1340 nm Band IEC 60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Slope IEC 60793-1-42	TEC ER No. TEC70012401
			Zero Dispersion Wavelength Range IEC 60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Polarization Mode Dispersion)	For Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link Design Value for Un-Cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Fiber Cut off Wavelength for Fibre used in Patch cords & Pig-tails IEC 60793-1-44	TEC ER No. TEC70012401
			Cable Cut-off Wavelength IEC 60793-1-44	TEC ER No. TEC70012401
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when Fibre is coiled with 1 turns on 10 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when Fibre is coiled with 1 turn on 5 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401
			Change in attenuation when Fibre is coiled with 1 turn on 7.5 mm radius mandrel IEC 60793-1-47	TEC ER No. TEC70012401

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	Optical Fibre – Single Mode- ITU-T G.657.B3	**Mechanical Characteristics**	Proof test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength(Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401
		Environmental Characteristics of Fiber for both color and uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401

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SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited
(Optical Fibre Testing Laboratory), Goa
Plot No's.: L-62 to l-64, Verna Industrial Estate,
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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.657.B3	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401
			Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
	Optical Fibre – Single Mode- ITU-T G.654.D	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.654.D	**Geometrical Characteristics**	Cladding Non-Circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad Concentricity Error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding Concentricity IEC 60793-1-21	TEC ER No. TEC70012401
		Transmission Characteristics (Attenuation of Uncabled Fibre)	at 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1530 nm to 1612 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC60793-1-42	TEC ER No. TEC70012401
			Dispersion Slope at 1550 nm IEC60793-1-42	TEC ER No. TEC70012401
		Transmission Characteristics (Polarization Mode Dispersion)	For Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link Design Value for Un-Cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cut-off Wavelength)	Cable Cut-off Wavelength IEC 60793-1-44	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.654.D	**Transmission Characteristics (Fibre Macro Bend Loss)**	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
		Mechanical Characteristics	Proof Test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401
		Environmental Characteristics of Fiber for both color and Uncolor Fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre – Single Mode- ITU-T G.654.D	**Environmental Characteristics of Fiber for both color and Uncolor Fibres**	Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC70012401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC ER No. TEC70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC70012401
			Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre-Single Mode-ITU-T G.654.E	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70012401
			Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401
			Cladding Non-Circularity IEC 60793-1-20	TEC ER No. TEC70012401
			Core Clad Concentricity Error IEC 60793-1-20	TEC ER No. TEC70012401
			Coating Diameter IEC 60793-1-21	TEC ER No. TEC70012401
			Coating /Cladding Concentricity IEC 60793-1-21	TEC ER No. TEC70012401
		Transmission Characteristics (Attenuation of Uncabled Fibre)	At 1550 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1530 nm -1612 nm IEC 60793-1-40	TEC ER No. TEC70012401
			At 1612 nm to 1625 nm IEC 60793-1-40	TEC ER No. TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC 60793-1-42	TEC ER No. TEC70012401
			Dispersion Slope IEC 60793-1-42	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre-Single Mode-ITU-T G.654.E	**Transmission Characteristics (Polarization Mode Dispersion)**	For Uncabled Fiber IEC 60793-1-48	TEC ER No. TEC70012401
			Link Design Value for Un-Cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401
		Transmission Characteristics (Cutoff Wavelength)	Cable Cut-off Wavelength IEC 60793-1-44	TEC ER No. TEC70012401
		Transmission Characteristics (Fibre Macro Bend Loss)	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm di ameter mandrel IEC 60793-1-47	TEC ER No. TEC70012401
		Mechanical Characteristics	Proof test for Minimum Strain Level IEC 60793-1-30	TEC ER No. TEC70012401
			Peak Stripability force to remove Prima ry coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC ER No. TEC70012401
			Dynamic Tensile Strength(Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC ER No. TEC70012401
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC ER No. TEC70012401
			Fiber Curl IEC 60793-1-34	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre-Single Mode-ITU-T G.654.E	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC ER No. TEC70012401
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC ER No. TEC 70012401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at23 ± 2°C IEC 60793-1-53	TEC ER No. TEC 70012401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC ER No. TEC 70012401
			Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC ER No. TEC70012401

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre-Single Mode-ITU-T G.654.E	**Environmental Characteristics of Fiber for both color and uncolor fibres**	High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC ER No. TEC70012401
		Colour qualification for color fibres	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC70012401
2.	**Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.652.D)**	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC GR No. TEC89010:2021
			Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021
			Cladding Non- Circularity IEC 60793-1-20	TEC GR No. TEC89010:2021
			Core Clad Concentricity Error IEC 60793-1-20	TEC GR No. TEC89010:2021
			Coating Diameter IEC 60793-1-21	TEC GR No. TEC89010:2021
			Coating /Cladding Concentricity IEC 60793-1-21	TEC GR No. TEC89010:2021
		Transmission Characteristics (Attenuation of Uncabled Fibre)	At 1310 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1550 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1490 nm IEC 60793-1-40	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.652.D)	**Transmission Characteristics (Attenuation of Uncabled Fibre)**	At 1270 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Water Peak Attenuation at 1380 nm to 1 390 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Sudden irregularity in attenuation IEC 60793-1-40	TEC GR No. TEC89010:2021
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC60793-1-42	TEC GR No. TEC89010:2021
			At 1625 nm IEC60793-1-42	TEC GR No. TEC89010:2021
			In 1285 nm-1330 nm Band IEC60793-1-42	TEC GR No. TEC89010:2021
			In 1270 nm-1340 nm Band IEC60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion Slope IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion Wavelength range IEC 60793-1-42	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization Mode Dispersion)	Uncabled Fiber IEC 60793-1-48	TEC GR No. TEC89010:2021
			Link design value for un-cabled fibre IEC 60793-1-48	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.652.D)	**Transmission Characteristics (Cutoff wavelength)**	Cable Cut-off wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fiber is coiled with 100 turns on50 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
		Mechanical Characteristics	Proof Test for Minimum Strain Level IEC 60793-1-30	TEC GR No. TEC89010:2021
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength (Unaged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable-(Optical Fibre –ITU-T G.652.D)	**Mechanical Characteristics**	Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC GR No. TEC89010:2021
			Fiber Curl IEC 60793-1-34	TEC GR No. TEC89010:2021
		Environmental Characteristics of Fiber for both color and Uncolor Fibres	Temperature Cycle Test: Temperature dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC GR No. TEC89010:2021
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC GR No. TEC89010:2021
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC GR No. TEC89010:2021
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC GR No. TEC89010:2021

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	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.652.D)	**Environmental Characteristics of Fiber for both color and Uncolor Fibres**	Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC GR No. TEC89010:2021
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC GR No. TEC89010:2021
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.655)	**Geometrical Characteristics**	Mode Field Diameter at 1550 nm IEC 60793-1-45	TEC GR No. TEC89010:2021
			Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021
			Cladding non-circularity IEC 60793-1-20	TEC GR No. TEC89010:2021
			Core Clad Concentricity error IEC 60793-1-20	TEC GR No. TEC89010:2021
			Coating Diameter IEC 60793-1-21	TEC GR No. TEC89010:2021
			Coating /Cladding Concentricity IEC 60793-1-21	TEC GR No. TEC89010:2021
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1550 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Sudden irregularity in attenuation IEC 60793-1-40	TEC GR No. TEC89010:2021

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SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited
(Optical Fibre Testing Laboratory), Goa
Plot No's.: L-62 to l-64, Verna Industrial Estate,
Verna, South Goa, – 403 722

Certificate Number: TEC/MRA/CAB/IND-D/105 **Page 36 of 55**

Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable-(Optical Fibre –ITU-T G.655)	**Transmission Characteristics (Chromatic Dispersion)**	At1530 nm to 1565 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			At 1565 nm to 1625 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			Dispersion Slope at 1550 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization Mode Dispersion)	for Uncabled Fiber IEC 60793-1-48	TEC GR No. TEC89010:2021
			Link design value for Un-cabled Fibre IEC 60793-1-48	TEC GR No. TEC89010:2021
		Transmission Characteristics (Cutoff Wavelength)	Cable Cut-off Wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
		Mechanical Characteristics	Proof test for Minimum Strain Level IEC 60793-1-30	TEC GR No. TEC89010:2021
			Peak Stripability Force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC GR No. TEC89010:2021

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(Optical Fibre Testing Laboratory), Goa
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Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.655)	**Mechanical Characteristics**	Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC GR No. TEC89010:2021
			Fiber Curl IEC 60793-1-34	TEC GR No. TEC89010:2021
		Environmental Characteristics of Fiber for both color and Uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC GR No. TEC89010:2021
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC GR No. TEC89010:2021
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC GR No. TEC89010:2021
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC GR No. TEC89010:2021

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Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.655)	**Environmental Characteristics of Fiber for both color and Uncolor fibres**	Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC GR No. TEC89010:2021
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC GR No. TEC89010:2021
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC GR No. TEC89010:2021
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.656)	**Geometrical Characteristics**	Mode Field Diameter at 1550 nm IEC 60793-1-45	TEC GR No. TEC89010:2021
			Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021
			Cladding Non-Circularity IEC 60793-1-20	TEC GR No. TEC89010:2021
			Core Clad Concentricity Error IEC 60793-1-20	TEC GR No. TEC89010:2021
			Coating Diameter IEC 60793-1-21	TEC GR No. TEC89010:2021
			Coating /Cladding Concentricity IEC 60793-1-21	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.656)	**Transmission Characteristics (Attenuation of Uncabled Fibre)**	At 1460 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1550 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1383 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Sudden irregularity in attenuation IEC 60793-1-40	TEC GR No. TEC89010:2021
		Transmission Characteristics (Chromatic Dispersion)	At 1460 nm to 1550 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			At 1550 nm to 1625 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			Dispersion Slope at 1550 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization Mode Dispersion)	For Uncabled Fiber IEC 60793-1-48	TEC GR No. TEC89010:2021
			Link Design Value for Un-cabled Fibre IEC 60793-1-48	TEC GR No. TEC89010:2021
		Transmission Characteristics (Cutoff Wavelength)	Cable Cut-off wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021
		Transmission Characteristics (Fibre Macro Bend Loss)	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.656)	**Transmission Characteristics (Fibre Macro Bend Loss)**	Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
		Mechanical Characteristics	Proof Test for Minimum Strain Level IEC 60793-1-30	TEC GR No. TEC89010:2021
			Peak Stripability force to remove Primary coating of the fiber (Unaged, Water aged, Damp Heat aged) IEC 60793-1-32	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength- Aged (Damp Heat aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC GR No. TEC89010:2021
			Fiber Curl IEC 60793-1-34	TEC GR No. TEC89010:2021
		Environmental Characteristics of Fiber for both color and Uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.656)	**Environmental Characteristics of Fiber for both color and Uncolor fibres**	Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C to +85°C and 95% relative humidity EIA/TIA 455-73	TEC GR No. TEC89010:2021
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC GR No. TEC89010:2021
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2° C IEC 60793-1-51	TEC GR No. TEC89010:2021
			Retention of Coating Color: Coated Fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC GR No. TEC89010:2021
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC GR No. TEC89010:2021
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC GR No. TEC89010:2021

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Validity: 21/01/2025 to 20/01/2028 **Last Amended on: ----**

Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A1)	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC GR No. TEC89010:2021
			Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021
			Cladding Non-circularity IEC 60793-1-20	TEC GR No. TEC89010:2021
			Core Clad concentricity error IEC 60793-1-20	TEC GR No. TEC89010:2021
			Coating diameter a) 250µm fibre b) 200µm fibre IEC 60793-1-21	TEC GR No. TEC89010:2021
			Coating /Cladding concentricity a) 250µm fibre b) 200µm fibre IEC 60793-1-21	TEC GR No. TEC89010:2021
		Transmission Characteristics (Attenuation of Uncabled fibres)	At 1310 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1550 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1490 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1270 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A1)	**Transmission Characteristics (Attenuation of Uncabled fibres)**	Water Peak attenuation at 1380 nm to 1390 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Sudden irregularity in attenuation IEC60793-1-40	TEC GR No. TEC89010:2021
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			In 1285 nm-1330 nm band IEC 60793-1-42	TEC GR No. TEC89010:2021
			In 1270 nm-1340 nm band IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion slope IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion wavelength range IEC 60793-1-42	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization Mode Dispersion)	Un-cabled Fiber IEC 60793-1-48	TEC GR No. TEC89010:2021
			Link design value for un-cabled fibre IEC 60793-1-48	TEC GR No. TEC89010:2021
		Transmission Characteristics (Cut-off wavelength)	Fiber Cut off wavelength for fibre used in Patch cords & Pig-tails(2m sample) IEC 60793-1-44	TEC GR No. TEC89010:2021
			Cable Cut off wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A1)	**Transmission Characteristics (Fibre Macro bend loss)**	Change in attenuation when fibre is coiled with 10 turns on 15 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fibre is coiled with 1 turn on 10 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
		Mechanical Characteristics	Proof Test for minimum strain level IEC 60793-1-30	TEC GR No. TEC89010:2021
			Peak Stripability force to remove primary coating of the fiber (Unaged, Water aged, Damp heat aged) a) 250µm fibre b) 200µm fibre IEC 60793-1-32	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength Aged (Damp Heat aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Fatigue (Unaged and Damp heat aged) IEC 60793-1-33	TEC GR No. TEC89010:2021
			Fiber Curl IEC 60793-1-34	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A1)	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC GR No. TEC89010:2021
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C TO +85°C and 95% relative humidity EIA/TIA 455-73	TEC GR No. TEC89010:2021
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2 °C IEC 60793-1-53	TEC GR No. TEC89010:2021
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2 °C IEC 60793-1-51	TEC GR No. TEC89010:2021
			Retention of Coating Color: Coated fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A1)		High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC GR No. TEC89010:2021
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC GR No. TEC89010:2021
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A2)	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC GR No. TEC89010:2021
			Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021
			Cladding Non-circularity IEC 60793-1-20	TEC GR No. TEC89010:2021
			Core Clad concentricity error IEC 60793-1-20	TEC GR No. TEC89010:2021
			Coating diameter a) 250µm fibre b) 200µm fibre IEC 60793-1-21	TEC GR No. TEC89010:2021
			Coating /Cladding concentricity a) 250µm fibre b) 200µm fibre IEC 60793-1-21	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A2)	**Transmission Characteristics (Attenuation of uncabled fibre)**	At 1310 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1550 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1490 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1270 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Water peak attenuation at 1380 nm to 1390 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Sudden irregularity in attenuation IEC60793-1-40	TEC GR No. TEC89010:2021
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			In 1285 nm-1330 nm band IEC 60793-1-42	TEC GR No. TEC89010:2021
			In 1270 nm – 1340 nm band IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion Slope IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion Wavelength range IEC 60793-1-42	TEC GR No. TEC89010:2021

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Certificate Number: TEC/MRA/CAB/IND-D/105 **Page 48 of 55**

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable-(Optical Fibre –ITU-T G.657.A2)	**Transmission Characteristics (Polarization Mode Dispersion)**	Uncabled Fiber IEC 60793-1-48	TEC GR No. TEC89010:2021
			Link design value for un-cabled fibre IEC 60793-1-48	TEC GR No. TEC89010:2021
		Transmission Characteristics (Cut off wavelength)	Fiber Cut off wavelength for fibre used in Patch cords & Pig-tails (2m sample) IEC 60793-1-44	TEC GR No. TEC89010:2021
			Cable Cut-off wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fibre is coiled with 10 turns on 15 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fibre is coiled with 1 turn on 10 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fibre is coiled with 1 turn on 7.5 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
		Mechanical Characteristics	Proof test for minimum strain level IEC 60793-1-30	TEC GR No. TEC89010:2021

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ISO 9001:2015

SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited
(Optical Fibre Testing Laboratory), Goa
Plot No's.: L-62 to l-64, Verna Industrial Estate,
Verna, South Goa, – 403 722

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable-(Optical Fibre –ITU-T G.657.A2)	**Mechanical Characteristics**	Peak Stripability force to remove primary coating of the fiber (Unaged, Water aged, Damp heat aged) a) 250µm fibre b) 200µm fibre IEC 60793-1-32	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength Aged (Damp heat aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Fatigue Unaged and Damp heat aged IEC 60793-1-33	TEC GR No. TEC89010:2021
			Fiber Curl IEC 60793-1-34	TEC GR No. TEC89010:2021
		Environmental Characteristics of Fiber for both color and uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC GR No. TEC89010:2021
			Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C TO +85°C and 95% relative humidity EIA/TIA 455-73	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A2)	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23±2°C IEC 60793-1-53	TEC GR No. TEC89010:2021
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85±2°C IEC 60793-1-51	TEC GR No. TEC89010:2021
			Retention of Coating Color: Coated fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC GR No. TEC89010:2021
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC GR No. TEC89010:2021
		Colour qualification	MEK RUB Test(Methyl Ethyl Ketone) IEC 60794-1-219	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.B3)	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC GR No. TEC89010:2021
			Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021
			Cladding Non-circularity IEC 60793-1-20	TEC GR No. TEC89010:2021
			Core Clad concentricity error IEC 60793-1-20	TEC GR No. TEC89010:2021
			Coating diameter IEC 60793-1-21	TEC GR No. TEC89010:2021
			Coating /Cladding concentricity IEC 60793-1-21	TEC GR No. TEC89010:2021
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1310 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1550 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1490 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1270 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Water peak attenuation at 1380 nm to 1390 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
			Sudden irregularity in attenuation IEC 60793-1-40	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable-(Optical Fibre –ITU-T G.657.B3)	**Transmission Characteristics (Chromatic Dispersion)**	At 1550 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			At 1625 nm IEC 60793-1-42	TEC GR No. TEC89010:2021
			In 1285 nm-1330 nm band IEC 60793-1-42	TEC GR No. TEC89010:2021
			In 1270 nm-1340 nm band IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion Slope IEC 60793-1-42	TEC GR No. TEC89010:2021
			Zero Dispersion Wavelength range IEC 60793-1-42	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization Mode Dispersion)	Uncabled Fiber IEC 60793-1-48	TEC GR No. TEC89010:2021
			Link design value for un-cabled fibre IEC 60793-1-48	TEC GR No. TEC89010:2021
		Transmission Characteristics (Cut-off wavelength)	Fiber Cutoff wavelength for fibre used in patch cords & Pig-tails IEC 60793-1-44	TEC GR No. TEC89010:2021
			Cable Cutoff Wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fibre is coiled with 1 turn on 10 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.B3)	**Transmission Characteristics (Fibre Macro bend loss)**	Change in attenuation when fibre is coiled with 1 turn on 7.5 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
			Change in attenuation when fibre is coiled with 1 turn on 5 mm radius mandrel IEC 60793-1-47	TEC GR No. TEC89010:2021
		Mechanical Characteristics	Proof test for minimum strain level IEC 60793-1-30	TEC GR No. TEC89010:2021
			Peak Stripability force to remove primary coating of the fiber (Unaged, Water aged, Damp heat aged) IEC 60793-1-32	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Tensile Strength Aged (Damp heat aged) IEC 60793-1-31	TEC GR No. TEC89010:2021
			Dynamic Fatigue (Unaged and Damp heat aged) IEC 60793-1-33	TEC GR No. TEC89010:2021
			Fiber Curl IEC 60793-1-34	TEC GR No. TEC89010:2021
		Environmental Characteristics of Fiber for both color and uncolor fibres	Temperature Cycle Test: Temperature Dependence of Attenuation: Induced Attenuation at 1550 nm and 1625 nm at -60°C to +85°C IEC 60793-1-52	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.B3)	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Temperature-Humidity Cycle Test: Induced attenuation at 1550 nm and 1625 nm at -10°C TO +85°C and 95% relative humidity EIA/ TIA 455-73	TEC GR No. TEC89010:2021
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-1-53	TEC GR No. TEC89010:2021
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85± 2°C IEC 60793-1-51	TEC GR No. TEC89010:2021
			Retention of Coating Color: Coated fibre aged for 30 days at 85°C temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-1-51	TEC GR No. TEC89010:2021
			High Temperature and High Humidity (Damp Heat) Test: Induced attenuation at 1550 nm & 1625 nm at 85°C temperature and 85% Relative Humidity for 30 days IEC 60793-1-50	TEC GR No. TEC89010:2021

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Raw Material for Manufacturing of Optical Fibre Cable-(Optical Fibre –ITU-T G.657.B3)	**Colour qualification**	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC GR No. TEC89010:2021

Digitally signed by
Rajeev Ranjan
Date: 21-01-2025 16:33:51

AD (CA), TEC

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