



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 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

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

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

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

Sl. No.	Product	Test Parameters with Standard Standards		
1.	Single Mode-		Mode Field Diameter at 1310 nm IEC 60793-1-45	TEC ER No. TEC70112401
	ITU-T G.652.D		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
		Characteristics		TEC ER No. TEC70012401
		(Attenuation of uncabled Fibre)	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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1-122/2024-税1.ए./टी.ई.税. 1/3243449/2025

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Plot No's.: L-62 to l-64, Verna Industrial Estate,

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

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

Optical Fibre –	Transmission	Change in attenuation when fiber is coil	TEC ER No.
_	Characteristics	ed with 100 turns on 60 ± 1.0 mm diame	TEC70012401
Single Mode-	(Fibre Macro	ter mandrel	12070012401
ITU-T G.652.D	bend loss)	IEC 60793-1-47	
	bella loss)	Change in attenuation when fiber is coil	TEC ER No.
		ed with 1 turn around 32 ± 0.5 mm diam	TEC70012401
		eter mandrel	1EC/0012401
		IEC 60793-1-47	
			TEC ED Ma
		Change in attenuation when fiber is coil	TEC ER No.
		ed with 100 turns on 50 ± 0.5 mm diame	TEC70012401
		ter mandrel	
		IEC 60793-1-47	
	Mechanical	Proof Test for Minimum Strain Level	TEC ER No.
	Characteristics	IEC 60793-1-30	TEC70012401
		Peak Stripability force to remove Prima	TEC ER No.
		ry coating of the fiber	TEC70012401
		(Unaged, Water aged, Damp Heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength (Unaged)	TEC ER No.
		IEC 60793-1-31	TEC70012401
		Dynamic Tensile Strength- Aged	TEC ER No.
		(Damp Heat aged)	TEC70012401
		IEC 60793-1-31	
		Dynamic Fatigue	TEC ER No.
		(Unaged and Damp Heat aged)	TEC70012401
		IEC 60793-1-33	
		Fiber Curl	TEC ER No.
		IEC 60793-1-34	TEC70012401

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

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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Standard/

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Sl. Telecom

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Test Parameter or Type of Testing

No.	Equipment/ Product			Specification
	Optical Fibre –	Environmental	High Temperature and High Humidity	TEC ER No.
	Single Mode-	Characteristics	(Damp Heat) Test: Induced attenuation	TEC ER 10.
	ITU-T G.652.D	of Fiber for	at 1550 nm & 1625 nm at 85°C	1EC/0012401
	110-1 0.032.D	both color and	temperature and 85% Relative	
		Uncolor Fibres	Humidity for 30 days	
		Chedioi Fibres	IEC 60793-1-50	
		Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC ER No.
		qualification	IEC 60794-1-219	TEC70012401
		for color Fibres		
	Optical Fibre –	Geometrical	Mode Field Diameter at 1550 nm	TEC ER No.
	Single Mode-	Characteristics	IEC 60793-1-45	TEC70012401
	ITU-T G.655		Cladding Diameter	TEC ER No.
			IEC 60793-1-20	TEC70012401
			Cladding non-circularity	TEC ER No.
			IEC 60793-1-20	TEC70012401
			Core Clad Concentricity error	TEC ER No.
			IEC 60793-1-20	TEC70012401
			Coating Diameter	TEC ER No.
			IEC 60793-1-21	TEC70012401
			Coating /Cladding Concentricity	TEC ER No.
			IEC 60793-1-21	TEC70012401
		Transmission	At 1550 nm	TEC ER No.
		Characteristics	IEC 60793-1-40	TEC70012401
		(Attenuation of	At 1625 nm	TEC ER No.
		uncabled Fibre)	IEC 60793-1-40	TEC70012401
			Sudden irregularity in attenuation	TEC ER No.
			IEC 60793-1-40	TEC70012401

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

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Standard/

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Sl. Telecom

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 7 of 55

Test Parameter or Type of Testing

No.	Equipment/ Product		of Type of Testing	Specification
	Optical Fibre – Single Mode-	Mechanical Characteristics	Dynamic Tensile Strength (Un aged) IEC 60793-1-31	TEC ER No. TEC70012401
	ITU-T G.655		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	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
		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

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Standard/

Specification

Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

SCOPE OF DESIGNATION (ANNEXURE)

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Telecom

No. Equipment/

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Test Parameter or Type of Testing

Product			•
	T	h	
_	Environmental	Retention of Coating Color:	TEC ER No
Single Mode-	Characteristics	Coated Fibre aged for 30 days at 85°C	TEC700124
ITU-T G.655	of Fiber for	temperature with 95% Humidity and	
	both color and	then 20 days in 85°C dry heat	
	Uncolor fibres	IEC 60793-1-51	
		High Temperature and High Humidity	TEC ER No
		(Damp Heat) Test: Induced attenuation	TEC700124
		at 1550 nm & 1625 nm at 85°C	
		temperature and 85% Relative Humidity	
		for 30 days	
	~ .	IEC 60793-1-50	med ep 11
	Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC ER No
	qualification	IEC 60794-1-219	TEC700124
	for color fibres		
Optical Fibre –	Geometrical	Mode Field Diameter at 1550 nm	TEC ER No
Single Mode-	Characteristics	IEC 60793-1-45	TEC700124
ITU-T G.656		Cladding Diameter	TEC ER No
		IEC 60793-1-20	TEC700124
		Cladding Non-Circularity	TEC ER No
		IEC 60793-1-20	TEC700124
		Core Clad Concentricity Error	TEC ER No
		IEC 60793-1-20	TEC700124
		Coating Diameter	TEC ER No
		IEC 60793-1-21	TEC700124
		Coating /Cladding Concentricity	TEC ER No
		IEC 60793-1-21	TEC700124

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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 1550 nm IEC 60793-1-40 At 1625 nm IEC 60793-1-40 At 1383 nm IEC 60793-1-40 Sudden irregularity in attenuation	TEC ER No. TEC70012401 TEC ER No.
		Transmission Characteristics (Chromatic Dispersion)	IEC 60793-1-40 At 1460 nm to 1550 nm IEC 60793-1-42 At 1550 nm to 1625 nm IEC 60793-1-42 Dispersion Slope at 1550 nm IEC 60793-1-42	TEC70012401 TEC ER No. TEC70012401 TEC ER No. TEC70012401 TEC ER No. TEC70012401
		(Polarization Mode Dispersion) Transmission	For Uncabled Fiber IEC 60793-1-48 Link Design Value for Un-cabled Fibre IEC 60793-1-48 Cable Cut-off wavelength	TEC ER No. TEC70012401 TEC ER No. TEC70012401 TEC ER No.
		Characteristics (Cutoff Wavelength)	IEC 60793-1-44	TEC70012401

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Standard/

Specification

TEC ER No.

TEC70012401

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Telecom

No. Equipment/

Product

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Test Parameter or Type of Testing

Froduct			
Optical Fibre –	Transmission	Change in attenuation when fiber is coil	TEC ER No
Single Mode-	Characteristics	ed with 100 turns on 60 ± 1.0 mm diame	TEC700124
ITU-T G.656	(Fibre Macro	ter mandrel	
	Bend Loss)	IEC 60793-1-47	
		Change in attenuation when fiber is coil	TEC ER No
		ed with 1 turn around 32 ± 0.5 mm diam	TEC700124
		eter mandrel	
		IEC 60793-1-47	
	Mechanical	Proof Test for Minimum Strain Level	TEC ER No
	Characteristics	IEC 60793-1-30	TEC700124
		Peak Stripability force to remove Prima	TEC ER No
		ry coating of the fiber (Unaged, Water a	TEC700124
		ged, Damp Heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength (Un aged)	TEC ER No
		IEC 60793-1-31	TEC700124
		Dynamic Tensile Strength- Aged	TEC ER No
		(Damp Heat aged)	TEC700124
		IEC 60793-1-31	
		Dynamic Fatigue	TEC ER No
		(Unaged and Damp Heat aged) IEC 60793-1-33	TEC700124

Fiber Curl

IEC 60793-1-34

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

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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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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 12 of 55

Telecom Equipment/ Product	Test Parameter	or Type of Testing	Standard/ Specification
	Environmental	High Temperature and High Humidity	TEC ER No.
-		(Damp Heat) Test: Induced attenuation	TEC ER No. TEC70012401

Opucai Fibre –	Environmentai	High Temperature and High Humidity	TEC ER No.
Single Mode-	Characteristics	(Damp Heat) Test: Induced attenuation	TEC70012401
ITU-T G.656	of Fiber for	at 1550 nm & 1625 nm at 85°C	
110 1 0.000	both color and	temperature and 85% Relative	
	uncolor fibres	Humidity for 30 days	
		IEC 60793-1-50	
	Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC ER No.
	Qualification	IEC 60794-1-219	TEC70012401
	for color fibres		
Optical Fibre –	Geometrical	Mode Field Diameter at 1310 nm	TEC ER No.
Single Mode-	Characteristics	IEC 60793-1-45	TEC70012401
ITU-T		Cladding Diameter	TEC ER No.
G.657.A1		IEC 60793-1-20	TEC70012401
G.037.A1		Cladding Non-Circularity	TEC ER No.
		IEC 60793-1-20	TEC70012401
		Core Clad Concentricity Error	TEC ER No.
		IEC 60793-1-20	TEC70012401
		Coating Diameter	TEC ER No.
		(i) 250 µm Fibre	TEC70012401
		(ii) 200µm Fibre	
		IEC 60793-1-21	
		Coating /Cladding Concentricity	TEC ER No.
		(i) 250 µm Fibre	TEC70012401
		(ii) 200 µm Fibre	2.00=-701
		IEC 60793-1-21	
		120 00773 1 21	
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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 13 of 55

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

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 14 of 55

Sl. No.	Telecom Equipment/ Product	Test Parameter	r 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 Link design value for un-cabled Fibre IEC 60793-1-48	TEC ER No. TEC70012401 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 TEC ER No.
		Transmission	Cable cut-off wavelength IEC 60793-1-44 Change in attenuation when Fibre is	TEC70012401 TEC ER No.
		Characteristics (Fibre Macro Bend Loss)	coiled with 10 turns on 15 mm radius mandrel IEC 60793-1-47	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 Prima ry coating of the fiber (Unaged, Water a ged, 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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Standard/

Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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(Optical Fibre Testing Laboratory), Goa

Plot No's.: L-62 to l-64, Verna Industrial Estate,

Verna, South Goa, – 403 722

Sl Telecom

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 15 of 55

Test Parameter or Type of Testing

No.	Equipment/	1 est Parameter	or Type of Testing	Standard/ Specification
	Product			•
		1		1
	Optical Fibre –	Mechanical	Dynamic Tensile Strength- Aged	TEC ER No.
	Single Mode-	Characteristics	(Damp Heat aged)	TEC70012401
	ITU-T		IEC 60793-1-31	
	G.657.A1		Dynamic Fatigue	TEC ER No.
			(Unaged and Damp Heat aged) IEC 60793-1-33	TEC70012401
			Fiber Curl	TEC ER No.
			IEC 60793-1-34	TEC70012401
		Environmental	Temperature Cycle Test:	TEC ER No.
		Characteristics	Temperature Dependence of	TEC70012401
		of Fiber for	Attenuation: Induced Attenuation at	
		both color and	1550 nm and 1625 nm at -60°C to	
		Uncolor Fibres	+85°C	
			IEC 60793-1-52	
			Temperature-Humidity Cycle Test:	TEC ER No.
			Induced attenuation at 1550 nm and	TEC70012401
			1625 nm at -10°C to +85°C and 95%	
			relative humidity	
			EIA/TIA 455-73	TEC ED Ma
			Water Immersion Test: Induced attenuation at 1550 nm and	TEC ER No. TEC70012401
			1625 nm due to water immersion at	1EC/0012401
			$23 \pm 2^{\circ}$ C	
			IEC 60793-1-53	
			Accelerated Aging (Dry Heat) Test:	TEC ER No.
			Induced attenuation at 1550 nm and	TEC70012401
			1625 nm due to Temperature aging at	
			$85 \pm 2^{\circ} \text{ C}$	
			IEC 60793-1-51	

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Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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 16 of 55

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

Optical Fibre –	Environmental	Retention of Coating Color:	TEC ER No.
•		Coated Fibre aged for 30 days at 85°C	TEC ER No.
Single Mode-	of Fiber for	temperature with 95% Humidity and	1EC/0012401
ITU-T		1 ±	
G.657.A1		then 20 days in 85°C dry heat	
		IEC 60793-1-51	mpg pp M
		High Temperature and High Humidity	TEC ER No.
		(Damp Heat) Test:	TEC70012401
		Induced attenuation at 1550 nm & 1625	
		nm at 85°C temperature and 85%	
		Relative Humidity for 30 days	
		IEC 60793-1-50	
	Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC ER No.
	qualification for	IEC 60794-1-219	TEC70012401
	color Fibres		
Optical Fibre –	Geometrical	Mode Field Diameter at 1310 nm	TEC ER No.
Single Mode-	Characteristics	IEC 60793-1-45	TEC70012401
ITU-T		Cladding Diameter	TEC ER No.
G.657.A2		IEC 60793-1-20	TEC70012401
		Cladding Non-Circularity	TEC ER No.
		IEC 60793-1-20	TEC70012401
		Core Clad Concentricity Error	TEC ER No.
		IEC 60793-1-20	TEC70012401
		Coating Diameter	TEC ER No.
		(i) 250 μm fibre	TEC70012401
		(ii) 200 µm fibre	
		IEC 60793-1-21	
	i		l

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Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 17 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
	-	Geometrical Characteristics	Coating /Cladding Concentricity	TEC ER No. TEC70012401
	Single Mode- ITU-T	Characteristics	(i) 250μm fibre(ii) 200μm fibreIEC 60793-1-21	TEC/0012401
	G.657.A2	Transmission Characteristics	At 1310 nm	TEC ER No. TEC70012401
		(Attenuation of Uncabled Fibre)	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 At 1625 nm	TEC ER No. TEC70012401 TEC ER No.
			IEC 60793-1-40 Water Peak attenuation at 1380 nm to 1	TEC ER No. TEC70012401 TEC ER No.
			390 nm IEC 60793-1-40	TEC70012401
			Sudden irregularity in attenuation IEC 60793-1-40	TEC ER No. TEC70012401
			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 In 1270 nm-1340 nm Band	TEC ER No. TEC70012401 TEC ER No.
			IEC 60793-2-50 and IEC60793-1-42	TEC70012401

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 18 of 55

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

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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



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(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 19 of 55

Sl.	Telecom	Test Parameter	Test Parameter or Type of Testing		
No.	Equipment/			Specification	
	Product				
	Optical Fibre –	Mechanical	Proof Test for Minimum Strain Level	TEC ER No.	
	Single Mode-	Characteristics	IEC 60793-1-30	TEC70012401	
	ITU-T		Peak Stripability force to remove Prima	TEC ER No.	
	C (== 1.3		1 2 1 21	EEE CE 0010101	

Single Mode-	Characteristics	IEC 60793-1-30	TEC70012401
ITU-T		Peak Stripability force to remove Prima	TEC ER No.
G.657.A2		ry coating of the fiber	TEC70012401
		(Unaged, Water aged, Damp Heat aged)	
		(i) 250 μm fibre	
		(ii) 200 μm fibre	
		IEC 60793-1-32	
		Dynamic Tensile Strength(Un aged)	TEC ER No.
		IEC 60793-1-31	TEC70012401
		Dynamic Tensile Strength- Aged	TEC ER No.
		(Damp Heat aged)	TEC70012401
		IEC 60793-1-31	
		Dynamic Fatigue	TEC ER No.
		(Unaged and Damp Heat aged)	TEC70012401
		IEC 60793-1-33	
		Fiber Curl	TEC ER No.
		IEC 60793-1-34	TEC70012401
		Temperature Cycle Test:	TEC ER No.
		Temperature Dependence of	TEC70012401
		Attenuation: Induced Attenuation at	
		1550 nm and 1625 nm at -60°C to	
	uncolor fibres	+85°C	
		IEC 60793-1-52	
		Temperature-Humidity Cycle Test:	TEC ER No.
		Induced attenuation at 1550 nm and	TEC70012401
		1625 nm at -10°C to +85°C and 95%	
		relative humidity	
		EIA/TIA 455-73	

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 20 of 55

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

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 21 of 55

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

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 22 of 55

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

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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



Standard/ Specification

Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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

Telecom

No. Equipment/

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 23 of 55

Test Parameter or Type of Testing

- Equipment			Specification
Product			
Optical Fibre –	Mechanical	Proof test for Minimum Strain Level	TEC ER No.
Single Mode-	Characteristics	IEC 60793-1-30	TEC70012401
ITU-T		Peak Stripability force to remove Prima	TEC ER No.
G.657.B3		ry coating of the fiber	TEC7001240
		(Unaged, Water aged, Damp Heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength(Un aged)	TEC ER No.
		IEC 60793-1-31	TEC7001240
		Dynamic Tensile Strength- Aged	TEC ER No.
		(Damp Heat aged)	TEC7001240
		IEC 60793-1-31	
		Dynamic Fatigue	TEC ER No.
		(Unaged and Damp Heat aged)	TEC7001240
		IEC 60793-1-33	
		Fiber Curl	TEC ER No.
		IEC 60793-1-34	TEC7001240
	Environmental	Temperature Cycle Test: Temperature	TEC ER No.
	Characteristics	Dependence of Attenuation: Induced	TEC7001240
	of Fiber for	Attenuation at 1550 nm and 1625 nm at	
	both color and	-60°C to +85°C	
	uncolor fibres	IEC 60793-1-52	
		Temperature-Humidity Cycle Test:	TEC ER No.
		Induced attenuation at 1550 nm and	TEC70012401
		1625 nm at -10°C to +85°C and 95%	
1	1		i

relative humidity EIA/TIA 455-73

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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



Standard/

Specification

TEC ER No.

TEC70012401

Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

SCOPE OF DESIGNATION (ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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Plot No's.: L-62 to l-64, Verna Industrial Estate,

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Telecom

ITU-T G.654.D

No. Equipment/

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Test Parameter or Type of Testing

Product			
	_		
Optical Fibre –	Environmental	Water Immersion Test: Induced	TEC ER No.
Single Mode-	Characteristics	attenuation at 1550 nm and 1625 nm	TEC7001240
ITU-T	of Fiber for	due to water immersion at $23 \pm 2^{\circ}$ C	
G.657.B3	both color and	IEC 60793-1-53	
	uncolor fibres	Accelerated Aging (Dry Heat) Test:	TEC ER No.
		Induced attenuation at 1550 nm and	TEC7001240
		1625 nm due to Temperature aging at	
		$85 \pm 2^{\circ} C$	
		IEC 60793-1-51	
		Retention of Coating Color: Coated	TEC ER No.
		Fibre aged for 30 days at 85°C	TEC7001240
		temperature with 95% Humidity and	
		then 20 days in 85°C dry heat	
		IEC 60793-1-51	
		High Temperature and High Humidity	TEC ER No.
		(Damp Heat) Test: Induced attenuation	TEC7001240
		at 1550 nm & 1625 nm at 85°C	
		temperature and 85% Relative	
		Humidity for 30 days	
		IEC 60793-1-50	
	Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC ER No.
	qualification	IEC 60794-1-219	TEC7001240
	for color fibres		
Optical Fibre –	Geometrical	Mode Field Diameter at 1310 nm	TEC ER No.
Single Mode-	Characteristics	IEC 60793-1-45	TEC7001240

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Cladding Diameter

IEC 60793-1-20

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SCOPE OF DESIGNATION (ANNEXURE)

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

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Test Parameter or Type of Testing

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

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SCOPE OF DESIGNATION (ANNEXURE)

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Test Parameter or Type of Testing

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

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Test Parameter or Type of Testing

No.	1 1	1 est 1 arameter	of Type of Testing	Specification
	Product			
	Optical Fibre- Single Mode- ITU-T G.654.E	Geometrical Characteristics	Mode Field Diameter at 1310 nm IEC 60793-1-45 Cladding Diameter IEC 60793-1-20	TEC ER No. TEC70012401 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		TEC ER No. TEC70012401
		(Attenuation of Uncabled Fibre)		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	At 1550 nm IEC 60793-1-42	TEC ER No. TEC70012401
		Dispersion)	Dispersion Slope IEC 60793-1-42	TEC ER No. TEC70012401

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Test Parameter or Type of Testing

No. Equipment/ Product		of Type of Testing	Specification
Optical Fibre-	Transmission	For Uncabled Fiber	TEC ER No.
Single Mode-	Characteristics	IEC 60793-1-48	TEC70012401
ITU-T G.654.E	(Polarization	Link Design Value for Un-Cabled Fibre	TEC ER No.
	Mode	IEC 60793-1-48	TEC70012401
	Dispersion)	LEC 00775 1 10	120,0012.01
	Transmission	Cable Cut-off Wavelength	TEC ER No.
	Characteristics	IEC 60793-1-44	TEC70012401
	(Cutoff		
	Wavelength)		
	Transmission	Change in attenuation when fiber is	TEC ER No.
	Characteristics	coiled with 100 turns on 60 ± 1.0 mm di	TEC70012401
	(Fibre Macro	ameter mandrel	
	Bend Loss)	IEC 60793-1-47	
	Mechanical	Proof test for Minimum Strain Level	TEC ER No.
	Characteristics	IEC 60793-1-30	TEC70012401
		Peak Stripability force to remove Prima	TEC ER No.
		ry coating of the fiber	TEC70012401
		(Unaged, Water aged, Damp Heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength(Un aged)	TEC ER No.
		IEC 60793-1-31	TEC70012401
		Dynamic Tensile Strength- Aged	TEC ER No.
		(Damp Heat aged)	TEC70012401
		IEC 60793-1-31	
		Dynamic Fatigue	TEC ER No.
		(Unaged and Damp Heat aged)	TEC70012401
		IEC 60793-1-33	
		Fiber Curl	TEC ER No.
		IEC 60793-1-34	TEC70012401

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SCOPE OF DESIGNATION (ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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Plot No's.: L-62 to l-64, Verna Industrial Estate,

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

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 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 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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Standard/

Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

SCOPE OF DESIGNATION (ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

(Optical Fibre Testing Laboratory), Goa

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Sl. Telecom

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Test Parameter or Type of Testing

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

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1-122/2024-税1.ए./टी.ई.税. 1/3243449/2025

GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



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SCOPE OF DESIGNATION (ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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Sl.	Telecom	Test Parameter or Type of Testing		Standard/
No.	1 1			Specification
	Product			
	T	T		1
			At 1270 nm	TEC GR No.
	for		IEC 60793-1-40	TEC89010:2021
	O		At 1625 nm	TEC GR No.
	of Optical Fibre	Uncabled Fibre)	IEC 60793-1-40	TEC89010:2021
	Cable- (Optical		Water Peak Attenuation at 1380 nm to 1	TEC GR No.
	Fibre –ITU-T		390 nm	TEC89010:2021
	G.652.D)		IEC 60793-1-40	
			Sudden irregularity in attenuation	TEC GR No.
			IEC 60793-1-40	TEC89010:2021
		Transmission	At 1550 nm	TEC GR No.
		Characteristics	IEC60793-1-42	TEC89010:2021
		(Chromatic	At 1625 nm	TEC GR No.
		Dispersion)	IEC60793-1-42	TEC89010:2021
			In 1285 nm-1330 nm Band	TEC GR No.
			IEC60793-1-42	TEC89010:2021
			In 1270 nm-1340 nm Band	TEC GR No.
			IEC60793-1-42	TEC89010:2021
			Zero Dispersion Slope	TEC GR No.
			IEC 60793-1-42	TEC89010:2021
			Zero Dispersion Wavelength range	TEC GR No.
			IEC 60793-1-42	TEC89010:2021
		Transmission	Uncabled Fiber	TEC GR No.
			IEC 60793-1-48	TEC89010:2021
		(Polarization	Link design value for un-cabled fibre	TEC GR No.
		Mode		TEC 9010:2021
		Dispersion)	IEC 00/33-1-40	11207010.2021

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SCOPE OF DESIGNATION (ANNEXURE)

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Sl. No.	Telecom Equipment/ Product	VI 8		Standard/ Specification	
	Raw Material	Transmission	Cable Cut-off wavelength		TEC GR No.
	for	Characteristics	IFC 60793-1-44		TEC89010:2021

Raw Material	Transmission	Cable Cut-off wavelength	TEC GR No.
for	Characteristics	IEC 60793-1-44	TEC89010:2021
Manufacturing	(Cutoff		
of Optical	wavelength)		
Fibre Cable-	Transmission	Change in attenuation when fiber is coil	TEC GR No.
(Optical Fibre	Characteristics	ed with 100 turns on 60 ± 1.0 mm diame	TEC89010:2021
-ITU-T	(Fibre Macro	ter mandrel	
G.652.D)	bend loss)	IEC 60793-1-47	
		Change in attenuation when fiber is coil	TEC GR No.
		ed with 1 turn around 32 ± 0.5 mm diam	
		eter mandrel	
		IEC 60793-1-47	
		Change in attenuation when fiber is coil	TEC GR No.
		ed with 100 turns on 50 ± 0.5 mm diame	TEC89010:2021
		ter mandrel	
IE		IEC 60793-1-47	
	Mechanical	Proof Test for Minimum Strain Level	TEC GR No.
	Characteristics	IEC 60793-1-30	TEC89010:2021
		Peak Stripability force to remove Prima	TEC GR No.
		ry coating of the fiber	TEC89010:2021
		(Unaged, Water aged, Damp Heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength (Unaged)	TEC GR No.
		IEC 60793-1-31	TEC89010:2021
		Dynamic Tensile Strength- Aged	TEC GR No.
		(Damp Heat aged)	TEC89010:2021
		IEC 60793-1-31	

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SCOPE OF DESIGNATION (ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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Test Parameter or Type of Testing

No. Equipment/ Product			Specification
Raw Material	Machanical	Demonia Estiana	TEC CD No
for Manufacturing	Mechanical Characteristics	Dynamic Fatigue (Unaged and Damp Heat aged) IEC 60793-1-33	TEC GR No. TEC89010:2021
of Optical Fibre Cable-		Fiber Curl IEC 60793-1-34	TEC GR No. ΓΕC89010:2021
(Optical Fibre -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 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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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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 35 of 55

Sl. No.	Telecom Equipment/ Product	Test Parameter	or Type of Testing	Standard/ Specification
	b 35	ha		erra an M
	Raw Material		Retention of Coating Color: Coated	TEC GR No.
	for	Characteristics	Fibre aged for 30 days at 85°C	TEC89010:2021
	Manufacturing		temperature with 95% Humidity and	
	of Optical Fibre		then 20 days in 85°C dry heat	
	Cable- (Optical		IEC 60793-1-51	TEG CD M
	Fibre –ITU-T	Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC GR No.
	G.652.D)	qualification	IEC 60794-1-219	TEC89010:2021
	Raw Material	Geometrical	Mode Field Diameter at 1550 nm	TEC GR No.
	for	Characteristics	IEC 60793-1-45	TEC89010:2021
	Manufacturing		Cladding Diameter	TEC GR No.
	of Optical Fibre		IEC 60793-1-20	TEC89010:2021
	Cable- (Optical		Cladding non-circularity	TEC GR No.
	Fibre –ITU-T		IEC 60793-1-20	TEC89010:2021
	G.655)		Core Clad Concentricity error	TEC GR No.
			IEC 60793-1-20	TEC89010:2021
			Coating Diameter	TEC GR No.
			IEC 60793-1-21	TEC89010:2021
			Coating /Cladding Concentricity	TEC GR No.
			IEC 60793-1-21	TEC89010:2021
		Transmission	At 1550 nm	TEC GR No.
		Characteristics	IEC 60793-1-40	TEC89010:2021
		(Attenuation of		
		uncabled Fibre)		TEC GR No.
			IEC 60793-1-40	TEC89010:2021
			Sudden irregularity in attenuation	TEC GR No.
			IEC 60793-1-40	TEC89010:2021
			ILC 00173-1- 1 0	12000010.2021

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

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

No.	Telecom Equipment/ Product	Test Parameter	Standard/ Specification	
R	Raw Material	Transmission	At1530 nm to 1565 nm	TEC GR No.
fo	or	Characteristics	IEC 60793-1-42	TEC89010:2021
\mathbf{N}	Ianufacturing	(Chromatic	At 1565 nm to 1625 nm	TEC GR No.
of	f Optical	Dispersion)	IEC 60793-1-42	TEC89010:2021
F	ibre Cable-		Dispersion Slope at 1550 nm	TEC GR No.
((Optical Fibre			TEC89010:2021
-	ITU-T G.655)	Transmission	for Uncabled Fiber	TEC GR No.
		Characteristics	IEC 60793-1-48	TEC89010:2021
		(Polarization	Link design value for Un-cabled Fibre	TEC GR No.
		Mode	IEC 60793-1-48	TEC89010:2021
		Dispersion)		
		Transmission	Cable Cut-off Wavelength	TEC GR No.
		Characteristics	IEC 60793-1-44	TEC89010:2021
		(Cutoff		
		Wavelength)		
		Transmission	Change in attenuation when fiber is coil	
		Characteristics	ed with 100 turns on 60 ± 1.0 mm diame	TEC89010:2021
		(Fibre Macro	ter mandrel	
		bend loss)	IEC 60793-1-47	
			Change in attenuation when fiber is coil	
			ed with 1 turn around 32 ± 0.5 mm diam	TEC89010:2021
			eter mandrel	
			IEC 60793-1-47	
		Mechanical		TEC GR No.
		Characteristics		TEC89010:2021
			Peak Stripability Force to remove Primar	
			8	TEC89010:2021
			(Unaged, Water aged, Damp Heat aged)	
			IEC 60793-1-32	

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Plot No's.: L-62 to l-64, Verna Industrial Estate,

Verna, South Goa, – 403 722

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 37 of 55

Test Parameter or Type of Testing

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

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Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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Verna, South Goa, – 403 722

Sl. Telecom

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 38 of 55

Test Parameter or Type of Testing

	quipment/ oduct		J1	Specification
for Ma of (nufacturing	Environmental Characteristics of Fiber for both color and		TEC GR No. TEC89010:2021
Cable- (Op Fibre –ITU G.655)	re –ITU-T	Uncolor fibres	High Temperature and High Humidity	TEC GR No. TEC89010:2021
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone)	TEC GR No. TEC89010:2021
for Ma of (Geometrical Characteristics	IEC 60793-1-45 Cladding Diameter IEC 60793-1-20	TEC GR No. TEC89010:2021 TEC GR No. TEC89010:2021
(Op	otical Fibre TU-T G.656)		IEC 60793-1-20 Core Clad Concentricity Error IEC 60793-1-20	TEC GR No. TEC89010:2021 TEC GR No. TEC89010:2021
			IEC 60793-1-21 Coating /Cladding Concentricity	TEC GR No. TEC89010:2021 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 39 of 55

Sl. Telecom No. Equipment/ Product	Test Parameter	Standard/ Specification	
Raw Material	Transmission	At 1460 nm	TEC GR No.
for	Characteristics	IEC 60793-1-40	TEC89010:2021
Manufacturing	(Attenuation of	At 1550 nm	TEC GR No.
of Optical	Uncabled Fibre)	IEC 60793-1-40	TEC89010:2021
Fibre Cable-	(1.04.00	At 1625 nm	TEC GR No.
(Optical Fibre		IEC 60793-1-40	TEC89010:2021
-ITU-T G.656)		At 1383 nm	TEC GR No.
		IEC 60793-1-40	TEC89010:2021
		Sudden irregularity in attenuation	TEC GR No.
		IEC 60793-1-40	TEC89010:2021
	Transmission	At 1460 nm to 1550 nm	TEC GR No.
	Characteristics	IEC 60793-1-42	TEC89010:2021
	(Chromatic	At 1550 nm to 1625 nm	TEC GR No.
	Dispersion)	IEC 60793-1-42	TEC89010:2021
	Dispersion)	Dispersion Slope at 1550 nm	TEC GR No.
		IEC 60793-1-42	TEC89010:2021
	Transmission	For Uncabled Fiber	TEC GR No.
	Characteristics	IEC 60793-1-48	TEC89010:2021
	(Polarization	Link Design Value for Un-cabled Fibre	TEC GR No.
	Mode	IEC 60793-1-48	TEC89010:2021
	Dispersion)		
	Transmission	Cable Cut-off wavelength	TEC GR No.
	Characteristics	IEC 60793-1-44	TEC89010:2021
	(Cutoff		
	Wavelength)		
	Transmission	Change in attenuation when fiber is coil	
		ed with 100 turns on 60 ± 1.0 mm diame	TEC89010:2021
	`	ter mandrel	
	Bend Loss)	IEC 60793-1-47	

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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



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SCOPE OF DESIGNATION (ANNEXURE)

Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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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 40 of 55

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

Raw Material	Transmission	Change in attenuation when fiber is coil	TEC GR No.
for	Characteristics	ed with 1 turn around 32 ± 0.5 mm diam	
Manufacturing	(Fibre Macro	eter mandrel	
of Optical	Bend Loss)	IEC 60793-1-47	
Fibre Cable-	Mechanical	Proof Test for Minimum Strain Level	TEC GR No.
(Optical Fibre	Characteristics	IEC 60793-1-30	TEC89010:2021
-ITU-T G.656)		Peak Stripability force to remove Prima	TEC GR No.
		ry coating of the fiber (Unaged, Water a	
		ged, Damp Heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength (Un aged)	TEC GR No.
		IEC 60793-1-31	TEC89010:2021
		Dynamic Tensile Strength- Aged	TEC GR No.
		(Damp Heat aged)	TEC89010:2021
		IEC 60793-1-31	
		Dynamic Fatigue	TEC GR No.
		(Unaged and Damp Heat aged)	TEC89010:2021
		IEC 60793-1-33	
		Fiber Curl	TEC GR No.
		IEC 60793-1-34	TEC89010:2021
	Environmental	r · · · · · · · · · · · · · · · · · · ·	TEC GR No.
	Characteristics	1	TEC89010:2021
	of Fiber for	Attenuation at 1550 nm and 1625 nm at	
	both color and	-60°C to +85°C	
	Uncolor fibres	IEC 60793-1-52	
	Chedioi hibites		

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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



Standard/

TEC GR No.

TEC89010:2021

Specification

Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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

Telecom

Product

No.

Equipment/

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 41 of 55

Test Parameter or Type of Testing

Product			
Raw Material	Environmental	Temperature-Humidity Cycle Test:	TEC GR No.
Kaw Materiai for	Characteristics	Induced attenuation at 1550 nm and	
=			TEC89010:202
Manufacturing		1625 nm at -10°C to +85°C and 95%	
of Optical	both color and	relative humidity	
Fibre Cable-	Uncolor fibres	EIA/TIA 455-73	
Optical Fibre		Water Immersion Test: Induced	TEC GR No.
-ITU-T G.656)		attenuation at 1550 nm and 1625 nm	TEC89010:202
		due to water immersion at $23 \pm 2^{\circ}$ C	
		IEC 60793-1-53	
		Accelerated Aging (Dry Heat) Test:	TEC GR No.
		Induced attenuation at 1550 nm and	TEC89010:202
		1625 nm due to Temperature aging at	
		85 ± 2° C	
		IEC 60793-1-51	
		Retention of Coating Color: Coated	TEC GR No.
		Fibre aged for 30 days at 85°C	TEC89010:202
		temperature with 95% Humidity and	
		then 20 days in 85°C dry heat	
		IEC 60793-1-51	
		High Temperature and High Humidity	TEC GR No.
		(Damp Heat) Test: Induced attenuation	TEC89010:202
		at 1550 nm & 1625 nm at 85°C	1200,010.20
		temperature and 85% Relative	
		Humidity for 30 days	
		IEC 60793-1-50	
		ILC 00/33-1-30	

IEC 60794-1-219

MEK RUB Test (Methyl Ethyl Ketone)

Colour

qualification

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Verna, South Goa, -403 722

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 42 of 55

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

b 35 / 13	la	h		TEG CD M
		Mode Field Diameter at 1310) nm	TEC GR No.
for	Characteristics	IEC 60793-1-45		TEC89010:2021
Manufacturing		Cladding Diameter		TEC GR No.
of Optical Fibre		IEC 60793-1-20		TEC89010:2021
Cable- (Optical		Cladding Non-circularity		TEC GR No.
Fibre –ITU-T		IEC 60793-1-20		TEC89010:2021
G.657.A1)		Core Clad concentricity error		TEC GR No.
		IEC 60793-1-20		TEC89010:2021
		Coating diameter		TEC GR No.
		a) 250µm fibre		TEC89010:2021
		b) 200µm fibre		
		IEC 60793-1-21		
		Coating /Cladding concentricity		TEC GR No.
		a) 250µm fibre		TEC89010:2021
		b) 200µm fibre		
		IEC 60793-1-21		
	Transmission	At 1310 nm		TEC GR No.
	Characteristics	IEC 60793-1-40		TEC89010:2021
	(Attenuation of			TEC GR No.
	Uncabled fibres)	IEC 60793-1-40		TEC89010:2021
		At 1490		TEC GR No.
		nm 1	IEC	TEC89010:2021
		60793-1-40		
		At 1270 nm		TEC GR No.
		IEC 60793-1-40		TEC89010:2021
		At 1625 nm		TEC GR No.
		IEC 60793-1-40		TEC89010:2021

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Verna, South Goa, -403 722

Sl. Telecom

Certificate Number: TEC/MRA/CAB/IND-D/105 Page 43 of 55

Test Parameter or Type of Testing

No.	Equipment/ Product			Specification
	for	C	1390 nm	TEC GR No. TEC89010:2021
	Manufacturing of Optical Fibre Cable-(Optical Fibre	Uncabled fibres) Transmission Characteristics	Sudden irregularity in attenuation IEC60793-1-40	TEC GR No. TEC89010:2021
	-ITU-T C (() () () () () () () () () () () () ()		At 1625 nm	TEC GR No. TEC89010:2021 TEC GR No.
		Dispersion)	IEC 60793-1-42	TEC89010:2021 TEC GR No. TEC89010:2021 TEC GR No.
			IEC 60793-1-42 Zero Dispersion slope	TEC89010:2021 TEC GR No. TEC89010:2021
			IEC 60793-1-42	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization	IEC 60793-1-48	TEC GR No. TEC89010:2021
		Mode Dispersion)	IEC 60793-1-48	TEC GR No. TEC89010:2021
		(Cut-off	Fiber Cut off wavelength for fibre used in Patch cords & Pig-tails(2m sample) IEC 60793-1-44	
		wavelength)	\mathcal{E}	TEC GR No. TEC89010:2021

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Plot No's.: L-62 to l-64, Verna Industrial Estate,

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 44 of 55

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

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

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 45 of 55

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

Raw Material	Environmental	Temperature Cycle Test: Temperature	TEC GR No.
for	Characteristics	Dependence of Attenuation: Induced	TEC89010:2021
Manufacturing	of Fiber for	Attenuation at 1550 nm and 1625 nm at -	
of Optical Fibre	both color and	60°C to $+85^{\circ}\text{C}$	
Cable- (Optical	uncolor fibres	IEC 60793-1-52	
Fibre –ITU-T		Temperature-Humidity Cycle Test:	TEC GR No.
G.657.A1)		Induced attenuation at 1550 nm and	TEC89010:2021
		1625 nm at -10°C TO +85°C and 95%	
		relative humidity	
		EIA/TIA 455-73	
		Water Immersion Test: Induced	TEC GR No.
		attenuation at 1550 nm and 1625 nm due	TEC89010:2021
		to water immersion at 23 ± 2 °C	
		IEC 60793-1-53	
		Accelerated Aging (Dry Heat) Test:	TEC GR No.
			TEC89010:2021
		1625 nm due to Temperature aging at 85	
		± 2 °C	
		IEC 60793-1-51	
		Retention of Coating Color: Coated fibre	TEC GR No.
		_	TEC89010:2021
		with 95% Humidity and then 20 days in	12000010.2021
		85°C dry heat	
		IEC 60793-1-51	
		100000000000000000000000000000000000000	

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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



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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 46 of 55

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		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
	G.657.A1)	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 Cladding Diameter IEC 60793-1-20 Cladding Non-circularity IEC 60793-1-20 Core Clad concentricity error IEC 60793-1-20 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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GOVERNMENT OF INDIA MINISTRY OF COMMUNICATIONS DEPARTMENT OF TELECOMMUNICATIONS TELECOMMUNICATION ENGINEERING CENTRE



Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

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Laboratory Name: M/s Birla Furukawa Fibre Optics Private Limited

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Sl. No.	Telecom Equipment/ Product	Test Parameter or Type of Testing		Standard/ Specification
	Manufacturing	Characteristics (Attenuation of	At 1310 nm IEC 60793-1-40 At 1550 nm	TEC GR No. TEC89010:2021 TEC GR No.
	of Optical Fibre Cable- (Optical Fibre –ITU-T G.657.A2)	uncabled fibre)	IEC 60793-1-40 At 1490 nm IEC 60793-1-40	TEC89010:2021 TEC GR No. TEC89010:2021
			At 1270 nm IEC 60793-1-40 At 1625 nm IEC 60793-1-40	TEC GR No. TEC89010:2021 TEC GR No. TEC89010:2021
			Water peak attenuation at 1380 nm to 1390 nm IEC 60793-1-40	TEC GR No. TEC89010:2021
		Transmission	Sudden irregularity in attenuation IEC60793-1-40 At 1550 nm	TEC GR No. TEC89010:2021 TEC GR No.
		Characteristics (Chromatic Dispersion)	IEC 60793-1-42 At 1625 nm IEC 60793-1-42 In 1285 nm-1330 nm band	TEC89010:2021 TEC GR No. TEC89010:2021 TEC GR No.
			In 1283 nm-1330 nm band IEC 60793-1-42 In 1270 nm – 1340 nm band IEC 60793-1-42	TEC GR No. TEC GR No. TEC89010:2021
			Zero Dispersion Slope IEC 60793-1-42 Zero Dispersion Wavelength range IEC 60793-1-42	TEC GR No. TEC89010:2021 TEC GR No. TEC89010:2021

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

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

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 49 of 55

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

D 3/1 1 1		D 1 C 1 1111 C	TEC OD N
		Peak Stripability force to remove	TEC GR No.
	Characteristics	printed y counting or the free (chages,	TEC89010:2021
Manufacturing		Water aged, Damp heat aged)	
of Optical		a) 250µm fibre	
Fibre Cable-		b) 200µm fibre	
(Optical Fibre		IEC 60793-1-32	
-ITU-T		Dynamic Tensile Strength (Un aged)	TEC GR No.
G.657.A2)		IEC 60793-1-31	TEC89010:2021
		Dynamic Tensile Strength	TEC GR No.
		Aged (Damp heat aged)	TEC89010:2021
		IEC 60793-1-31	
		Dynamic Fatigue	TEC GR No.
		Unaged and Damp heat aged	TEC89010:2021
		IEC 60793-1-33	
		Fiber Curl	TEC GR No.
		IEC 60793-1-34	TEC89010:2021
	Environmental	Temperature Cycle Test: Temperature	TEC GR No.
	Characteristics	Dependence of Attenuation: Induced	TEC89010:2021
	of Fiber for	Attenuation at 1550 nm and 1625 nm at	
	both color and	-60° C to $+85^{\circ}$ C	
	uncolor fibres	IEC 60793-1-52	
		Temperature-Humidity Cycle Test:	TEC GR No.
		Induced attenuation at 1550 nm and	TEC89010:2021
		1625 nm at -10°C TO +85°C and 95%	
		relative humidity	
		EIA/TIA 455-73	

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(Optical Fibre Testing Laboratory), Goa

Plot No's.: L-62 to l-64, Verna Industrial Estate,

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 50 of 55

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

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

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Plot No's.: L-62 to l-64, Verna Industrial Estate,

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 51 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.657.B3)	Geometrical Characteristics	Mode Field Diameter at 1310 nm IEC 60793-1-45 Cladding Diameter IEC 60793-1-20 Cladding Non-circularity IEC 60793-1-20 Core Clad concentricity error IEC 60793-1-20 Coating diameter IEC 60793-1-21 Coating /Cladding concentricity	TEC GR No. TEC89010:2021
		Transmission Characteristics (Attenuation of uncabled Fibre)		TEC89010:2021 TEC GR No. TEC89010:2021

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Sl. No		Test Parameter or Type of Testing		Standard/ Specification
	for Manufacturing	Transmission Characteristics (Chromatic Dispersion)	At 1550 nm IEC 60793-1-42 At 1625 nm IEC 60793-1-42 In 1285 nm-1330 nm band IEC 60793-1-42 In 1270 nm-1340 nm band IEC 60793-1-42 Zero Dispersion Slope IEC 60793-1-42 Zero Dispersion Wavelength range	TEC GR No. TEC89010:2021
		Transmission Characteristics (Polarization Mode Dispersion)	IEC 60793-1-42 Uncabled Fiber IEC 60793-1-48 Link design value for un-cabled fibre IEC 60793-1-48	TEC89010:2021 TEC GR No. TEC89010:2021 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 Cable Cutoff Wavelength IEC 60793-1-44	TEC GR No. TEC89010:2021 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	

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 53 of 55

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

D 1/4 1 1	hr	C1	TEG OD N
	Transmission	Change in attenuation when fibre is	
	Characteristics	coiled with 1 turn on 7.5 mm radius	TEC89010:2021
	(Fibre Macro	mandrel	
of Optical	bend loss)	IEC 60793-1-47	
Fibre Cable-		Change in attenuation when fibre is	TEC GR No.
(Optical Fibre		coiled with 1 turn on 5 mm radius	TEC89010:2021
-ITU-T		mandrel	
G.657.B3)		IEC 60793-1-47	
	Mechanical	Proof test for minimum strain level	TEC GR No.
	Characteristics	IEC 60793-1-30	TEC89010:2021
		Peak Stripability force to remove	TEC GR No.
		primary coating of the fiber (Unaged,	TEC89010:2021
		Water aged, Damp heat aged)	
		IEC 60793-1-32	
		Dynamic Tensile Strength (Un aged)	TEC GR No.
		IEC 60793-1-31	TEC89010:2021
		Dynamic Tensile Strength Aged	TEC GR No.
		(Damp heat aged)	TEC89010:2021
		IEC 60793-1-31	
		Dynamic Fatigue (Unaged and Damp	TEC GR No.
		heat aged)	TEC89010:2021
		IEC 60793-1-33	
		Fiber Curl	TEC GR No.
		IEC 60793-1-34	TEC89010:2021
	Environmental	Temperature Cycle Test: Temperature	TEC GR No.
	Characteristics	Dependence of Attenuation: Induced	TEC89010:2021
	of Fiber for	Attenuation at 1550 nm and 1625 nm	
	both color and	at -60°C to +85°C	
	uncolor fibres	IEC 60793-1-52	

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Certificate Number: TEC/MRA/CAB/IND-D/105 Page 54 of 55

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

Raw Material	Environmental	Temperature-Humidity Cycle Test:	TEC GR No.
for		Induced attenuation at 1550 nm and	TEC89010:2021
Manufacturing	of Fiber for	1625 nm at -10°C TO +85°C and 95%	
of Optical	both color and	relative humidity	
Fibre Cable-	uncolor fibres	EIA/ TIA 455-73	
(Optical Fibre		Water Immersion Test: Induced	TEC GR No.
-ITU-T		attenuation at 1550 nm and 1625 nm	TEC89010:2021
G.657.B3)		due to water immersion at $23 \pm 2^{\circ}$ C	
		IEC 60793-1-53	
		Accelerated Aging (Dry Heat) Test:	TEC GR No.
		Induced attenuation at 1550 nm and	TEC89010:2021
		1625 nm due to Temperature aging at	
		85± 2°C	
		IEC 60793-1-51	
		Retention of Coating Color: Coated	TEC GR No.
		fibre aged for 30 days at 85°C	TEC89010:2021
		temperature with 95% Humidity and	1200,010,2021
		then 20 days in 85°C dry heat	
		IEC 60793-1-51	
		High Temperature and High Humidity	TEC GR No.
		(Damp Heat) Test: Induced attenuation	TEC89010:2021
		at 1550 nm & 1625 nm at 85°C	
		temperature and 85% Relative	
		Humidity for 30 days	
		IEC 60793-1-50	

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

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

Raw Material	Colour	MEK RUB Test (Methyl Ethyl Ketone)	TEC GR No.
for	qualification	IEC 60794-1-219	TEC89010:2021
Manufacturing			
of Optical			
Fibre Cable-			
(Optical Fibre			
-ITU-T			
G.657.B3)			

AD (CA), TEC

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