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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 HFCL LTD. (OFC TEST LAB), TELANGANA

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

PLOT NO-S-9, SURVEY NO.-26P, 62P, 88P, ELECTRONIC CITY, RAVIRYALA, MAHESHWARAM (M), RANGAREDDY DISTRICT, TELANGANA – 501 359

In the field of Testing

Certificate No. TEC/MRA/CAB/IND-D/92

Issue Date: 04/04/2024 **Validity: 04/04/2024 to 03/04/2027**

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

Signed by Vijay Dixit
Date: 04-04-2024 11:46:28

Vijay Dixit
Director (CA)
For Designating Authority
TEC

Certificate No: TEC/MRA/CAB/IND-D/92 dated 04/04/2024 issued to
M/S HFCL Ltd. (OFC Test Lab), Telangana
Plot No-S-9, Survey No.-26P, 62P, 88P, Electronic City,
Raviryala, Maheshwaram (M), Rangareddy District,
Telangana – 501 359

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Validity: - 04/04/2024 to 03/04/2027

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 HFCL Ltd. (OFC Test Lab), Telangana**
Plot No-S-9, Survey No.-26P, 62P, 88P, Electronic City,
Raviryala, Maheshwaram (M), Rangareddy District,
Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 1 of 36**

Validity: 04/04/2024 to 03/04/2027 **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 Cable-Duct	Transmission Characteristics	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401

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SCOPE OF DESIGNATION
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Laboratory Name: **M/S HFCL Ltd. (OFC Test Lab), Telangana**
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Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 2 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Duct	**Environmental Characteristics**	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Electrical Continuity Test IEC 60794-1-403	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
	Optical Fibre Cable-Micro Duct	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401

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Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 3 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Micro Duct	**Mechanical Characteristics**	Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401

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Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 4 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Direct Buried	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401

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Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 5 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Direct Buried	**Environmental Characteristics**	Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Electrical Continuity Test IEC 60794-1-403	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
	Optical Fibre Cable-ADSS along Power Line	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401

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Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 6 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-ADSS along Power Line	**Mechanical Characteristics**	Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Galloping Test IEC 60794-1-21, IEEE 1222	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401

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Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 7 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable- ADSS on Aerial alignment	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401

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SCOPE OF DESIGNATION
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Laboratory Name: **M/S HFCL Ltd. (OFC Test Lab), Telangana**
Plot No-S-9, Survey No.-26P, 62P, 88P, Electronic City,
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Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 8 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable- ADSS on Aerial alignment	**Mechanical Characteristics**	Galloping Test IEC 60794-1-21, IEEE 1222	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
	Optical Fibre Cable- Indoor	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401

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Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 9 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Indoor	**Mechanical Characteristics**	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401

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Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 10 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Indoor	**Characteristics of Cable Elements (Buffer Tube)**	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
	Optical Fibre Cable-Access Outdoor	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401

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Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 11 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Access Outdoor	**Mechanical Characteristics**	Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
	Optical Fibre Cable-Indoor-Outdoor	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401

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SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: **M/S HFCL Ltd. (OFC Test Lab), Telangana**
Plot No-S-9, Survey No.-26P, 62P, 88P, Electronic City,
Raviryala, Maheshwaram (M), Rangareddy District,
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Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Indoor-Outdoor	**Transmission Characteristics**	PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401

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Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Indoor-Outdoor	**Characteristics of Cable Elements (Buffer Tube)**	Kink Resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
	Optical Fibre Cable-In Home	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401 TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21, ITU-T Rec. L.111	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21, ITU-T Rec. L.111	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21, ITU-T Rec. L.111	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21, ITU-T Rec. L.111	TEC ER No. TEC 70022401
			Repeated Bend Test IEC 60794-1-21, ITU-T Rec. L.111	TEC ER No. TEC 70022401

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Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-In Home	**Mechanical Characteristics**	Torsion Test IEC 60794-1-21, ITU-T Rec. L.111	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22, ITU-T Rec. L.111	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22, ITU-T Rec. L.111	TEC ER No. TEC 70022401
	Optical Fibre Cable-Direct Surface Application (DSA)	**Transmission Characteristics**	Attenuation at 1310 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1550 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			Attenuation at 1625 nm IEC 60793-1-40	TEC ER No. TEC 70022401
			PMD Cabled Loose Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
			PMD Cabled Ribbon Fibre IEC 60793-1-48	TEC ER No. TEC 70022401
		Mechanical Characteristics	Tensile Strength IEC 60794-1-21	TEC ER No. TEC 70022401
			Crush Resistance IEC 60794-1-21	TEC ER No. TEC 70022401
			Impact IEC 60794-1-21	TEC ER No. TEC 70022401
			Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401

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Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing		Standard/ Specification
	Optical Fibre Cable-Direct Surface Application (DSA)	**Mechanical Characteristics**	Repeated Bend Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Torsion Test IEC 60794-1-21	TEC ER No. TEC 70022401
			Cable Drip Test IEC 60794-1-22	TEC ER No. TEC 70022401
		Environmental Characteristics	Temperature Cycling IEC 60794-1-22	TEC ER No. TEC 70022401
			Cable Aging Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Water Blocking Test/ Water penetration Test IEC 60794-1-22	TEC ER No. TEC 70022401
			Electrical Continuity Test IEC 60794-1-403	TEC ER No. TEC 70022401
		Characteristics of Cable Elements (Buffer Tube)	Kink resistance Test IEC 60794-1-23	TEC ER No. TEC 70022401
2.	**Optical Fibre-Single Mode ITU-T G.652.D**	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-45	TEC ER No. TEC 70112401
			Cladding Diameter ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401

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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	**Geometrical Characteristics**	Cladding non-circularity ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Core Clad concentricity error ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Coating diameter IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
			Coating /Cladding concentricity IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1310 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1550 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1490 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1270 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1625 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401

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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	**Transmission Characteristics (Attenuation of uncabled Fibre)**	Water Peak attenuation at 1380 to 1390 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			Sudden irregularity in attenuation Telcordia GR-20-CORE,2013 and IEC 60793-1-40	TEC ER No. TEC 70112401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			At 1625 nm ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			In 1285-1330 nm band ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			In 1270-1340 nm band ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			Zero Dispersion Slope ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			Zero Dispersion wavelength range ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401

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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	**Transmission Characteristics (Polarization mode dispersion)**	Uncabled Fiber ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
			Link design value for un-cabled fibre ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
		Transmission Characteristics (Cutoff wavelength)	Cable cut-off wavelength ITU-T G.652 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-44	TEC ER No. TEC 70112401
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel ITU-T G.652, ITU-T G.650.1, IEC 60793- 2-50 and IEC 60793-1-47	TEC ER No. TEC 70112401
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel ITU-T G.652, ITU-T G.650.1, IEC 60793-2-50 and IEC 60793-1-47	TEC ER No. TEC 70112401
			Change in attenuation when fiber is coiled with 100 turns on 50 ± 0.5 mm diameter mandrel ITU-T G.652, ITU-T G.650.1, IEC 60793-2-50 and IEC 60793-1-47	TEC ER No. TEC 70112401

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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	**Mechanical Characteristics**	Peak Stripability force to remove primary coating of the fiber (Unaged, Water aged, Damp heat aged) IEC 60793-2-50, IEC 60793-1-32	TEC ER No. TEC 70112401
			Dynamic Tensile Strength (Un aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Tensile Strength Aged (Damp Heat aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Fatigue (Unaged and Damp heat aged) IEC 60793-2-50 and IEC 60793-1-33	TEC ER No. TEC 70112401
			Fiber Curl IEC 60793-2-50, 60793-1-34	TEC ER No. TEC 70112401
		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 60793-2-50 and IEC 60793-1-52	TEC ER No. TEC 70112401
			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 70112401

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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**	Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-2-50 and IEC 60793-1-53	TEC ER No. TEC 70112401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2°C IEC 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			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 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			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 60793-2-50 and IEC 60793-1-50	TEC ER No. TEC 70112401
			Cable Material Compatibility test for fibre: Fibre to be aged with filling compound for 30 days at 85°C temperature and 85% Relative Humidity Telcordia GR-20-CORE,2013; IEC 60794-1-219	TEC ER No. TEC 70112401

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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	**Colour qualification for color fibres**	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC 70112401
	Optical Fibre- Single Mode ITU-T G.655	**Geometrical Characteristics**	Mode Field Diameter at 1550 nm ITU-T G.655 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-45	TEC ER No. TEC 70112401
			Cladding Diameter ITU-T G.655 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Cladding non-circularity ITU-T G.655 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Core Clad concentricity error ITU-T G.655 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Coating diameter IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
			Coating /Cladding concentricity IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1550 nm ITU-T G.655 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401

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	Optical Fibre- Single Mode ITU-T G.655	**Transmission Characteristics (Attenuation of uncabled Fibre)**	At 1625 nm ITU-T G.655 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			Sudden irregularity in attenuation Telcordia GR-20-CORE,2013 and IEC 60793-1-40	TEC ER No. TEC 70112401
		Transmission Characteristics (Chromatic Dispersion)	At 1530 to 1565 nm ITU-T G.655, G.650.1 and IEC 60793-2-50, IEC 60793-1-42	TEC ER No. TEC 70112401
			At 1565 to 1625 nm ITU-T G.655, G.650.1 and IEC 60793-2-50, IEC 60793-1-42	TEC ER No. TEC 70112401
			Dispersion slope at 1550 nm ITU-T G.655, G.650.1 and IEC 60793-2-50, IEC 60793-1-42	TEC ER No. TEC 70112401
		Transmission Characteristics (Polarization mode dispersion)	Uncabled Fiber ITU-T G.655 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
			Link design value for un-cabled fibre ITU-T G.655 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
		Transmission Characteristics (Cutoff wavelength)	Cable cut off wavelength ITU-T G.655 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-44	TEC ER No. TEC 70112401

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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 (Fibre Macro bend loss)**	Change in attenuation when fiber is coiled with 100 turns on 60 ± 1.0 mm diameter mandrel ITU-T G.655, ITU-T G.650.1, IEC 60793-2-50 and IEC 60793-1-47	TEC ER No. TEC 70112401
			Change in attenuation when fiber is coiled with 1 turn around 32 ± 0.5 mm diameter mandrel ITU-T G.655, ITU-T G.650.1, IEC 60793-2-50 and IEC 60793-1-47	TEC ER No. TEC 70112401
		Mechanical Characteristics	Peak Stripability force to remove primary coating of the fiber (Unaged, Water aged, Damp heat aged) IEC 60793-2-50, 60793-1-32	TEC ER No. TEC 70112401
			Dynamic Tensile Strength (Un aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Tensile Strength Aged (Damp heat aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Fatigue (Unaged and Damp heat aged) IEC 60793-2-50 and IEC 60793-1-33	TEC ER No. TEC 70112401
			Fiber Curl IEC 60793-2-50, IEC 60793-1-34	TEC ER No. TEC 70112401

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ISO 9001:2015

SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: **M/S HFCL Ltd. (OFC Test Lab), Telangana**
Plot No-S-9, Survey No.-26P, 62P, 88P, Electronic City,
Raviryala, Maheshwaram (M), Rangareddy District,
Telangana –501 359

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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	**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. TEC 70112401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2°C IEC 60793-2-50 and IEC 60793-1-53	TEC ER No. TEC 70112401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2 °C IEC 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			Retention of Coating Color: Coated fibre aged for 30 days at 85ºC temperature with 95% Humidity and then 20 days in 85°C dry heat IEC 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			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 60793-2-50 and IEC 60793-1-50	TEC ER No. TEC 70112401

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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	**Environmental Characteristics of Fiber for both color and uncolor fibres**	Cable Material Compatibility test for fibre: Fibre to be aged with filling compound for 30 days at 85°C temperature and 85% Relative Humidity Telcordia GR-20-CORE,2013; IEC 60794-1-219	TEC ER No. TEC 70112401
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC 70112401
	Optical Fibre- Single Mode ITU-T G.657.A1	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-45	TEC ER No. TEC 70112401
			Cladding Diameter ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Cladding non-circularity ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Core Clad concentricity error ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Coating diameter a) 250µm fibre b) 200µm fibre IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401

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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	**Geometrical Characteristics**	Coating /Cladding concentricity a) 250µm fibre b) 200µm fibre IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1310 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1550 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1490 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1270 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1625 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			Water Peak attenuation at 1380 to 1390 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			Sudden irregularity in attenuation Telcordia GR-20-CORE,2013 and IEC 60793-1-40	TEC ER No. TEC 70112401

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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 (Chromatic Dispersion)**	At 1550 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			At 1625 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			In 1285-1330 nm band ITU-T G.657 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			In 1270-1340 nm band ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			Zero Dispersion slope ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			Zero Dispersion wavelength range ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
		Transmission Characteristics (Polarization mode dispersion)	Un-cabled Fiber ITU-T G.657 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
			Link design value for un-cabled fibre ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401

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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 (Cutoff wavelength)**	Fiber cut off wavelength for fibre used in Patch cords & Pig-tails (2m sample) ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-44	TEC ER No. TEC 70112401
			Cable cut off wavelength ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-44	TEC ER No. TEC 70112401
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fibre is coiled with 10 turns on 15 mm radius mandrel ITU-T G.657, G.650.1 and IEC 60793-2-50, IEC 60793-1-47	TEC ER No. TEC 70112401
			Change in attenuation when fibre is coiled with 1 turn on 10 mm radius mandrel ITU-T G.657, G.650.1 and IEC 60793-2-50, IEC 60793-1-47	TEC ER No. TEC 70112401
		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 60793-2-50, 60793-1-32	TEC ER No. TEC 70112401
			Dynamic Tensile Strength (Un aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401

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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 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Fatigue (Unaged and Damp heat aged) IEC 60793-2-50 and IEC 60793-1-33	TEC ER No. TEC 70112401
			Fiber Curl IEC 60793-2-50, IEC 60793-1-34	TEC ER No. TEC 70112401
		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. TEC 70112401
			Water Immersion Test: Induced attenuation at 1550 nm and 1625 nm due to water immersion at 23 ± 2 °C IEC 60793-2-50 and IEC 60793-1-53	TEC ER No. TEC 70112401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85 ± 2 °C IEC 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			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 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401

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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**	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 60793-2-50 and IEC 60793-1-50	TEC ER No. TEC 70112401
			Cable Material Compatibility test for fibre: Fibre to be aged with filling compound for 30 days at 85°C temperature and 85% Relative Humidity Telcordia GR-20-CORE,2013; IEC 60794-1-219	TEC ER No. TEC 70112401
		Colour qualification	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC 70112401
	Optical Fibre-Single Mode ITU-T G.657 A2	**Geometrical Characteristics**	Mode Field Diameter at 1310 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-45	TEC ER No. TEC 70112401
			Cladding Diameter ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Cladding non-circularity ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401

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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**	Core Clad concentricity error ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-20	TEC ER No. TEC 70112401
			Coating diameter a) 250µm fibre b) 200µm fibre IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
			Coating /Cladding concentricity a) 250µm fibre b) 200µm fibre IEC 60793-2-50 and IEC 60793-1-21	TEC ER No. TEC 70112401
		Transmission Characteristics (Attenuation of uncabled Fibre)	At 1310 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1550 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1490 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1270 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			At 1625 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793- 2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401

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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 (Attenuation of uncabled Fibre)**	Water peak attenuation at 1380 to 1390 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-40	TEC ER No. TEC 70112401
			Sudden irregularity in attenuation Telcordia GR-20-CORE,2013 and IEC 60793-1-40	TEC ER No. TEC 70112401
		Transmission Characteristics (Chromatic Dispersion)	At 1550 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			At 1625 nm ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			In 1270 – 1340 nm band ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			In 1285-1330 nm band ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			Zero Dispersion slope ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401
			Zero Dispersion wavelength range ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-42	TEC ER No. TEC 70112401

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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 (Polarization mode dispersion)**	Uncabled Fiber ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
			Link design value for un-cabled fibre ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-48	TEC ER No. TEC 70112401
		Transmission Characteristics (Cutoff wavelength)	Fiber cut off wavelength for fibre used in Patch cords & Pig-tails (2m sample) ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-44	TEC ER No. TEC 70112401
			Cable cut off wavelength ITU-T G.657 and ITU-T G.650.1; IEC 60793-2-50 and IEC 60793-1-44	TEC ER No. TEC 70112401
		Transmission Characteristics (Fibre Macro bend loss)	Change in attenuation when fibre is coiled with 1 turn on 10 mm radius mandrel ITU-T G.657, G.650.1 and IEC 60793-2-50, IEC 60793-1-47	TEC ER No. TEC 70112401
			Change in attenuation when fibre is coiled with 1 turn on 7.5 mm radius mandrel ITU-T G.657, G.650.1 and IEC 60793-2-50, IEC 60793-1-47	TEC ER No. TEC 70112401

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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 (Fibre Macro bend loss)**	Change in attenuation when fibre is coiled with 10 turns on 15 mm radius mandrel ITU-T G.657, G.650.1 and IEC 60793-2-50, IEC 60793-1-47	TEC ER No. TEC 70112401
		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 60793-2-50, IEC 60793-1-32	TEC ER No. TEC 70112401
			Dynamic Tensile Strength (Un aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Tensile Strength Aged (Damp heat aged) IEC 60793-2-50 and IEC 60793-1-31	TEC ER No. TEC 70112401
			Dynamic Fatigue Unaged and Damp heat aged IEC 60793-2-50 and IEC 60793-1-33	TEC ER No. TEC 70112401
			Fiber Curl IEC 60793-2-50, IEC 60793-1-34	TEC ER No. TEC 70112401
		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. TEC 70112401

***The validity of Certificate is up to 03/04/2027 or the continued validity of NABL Accreditation, whichever is earlier.**

GOVERNMENT OF INDIA
MINISTRY OF COMMUNICATIONS
DEPARTMENT OF TELECOMMUNICATIONS
TELECOMMUNICATION ENGINEERING CENTRE
Gate No. 5, Khurshid Lal Bhawan, Janpath, New Delhi - 110 001

ISO 9001:2015

SCOPE OF DESIGNATION
(ANNEXURE)

Laboratory Name: **M/S HFCL Ltd. (OFC Test Lab), Telangana**
Plot No-S-9, Survey No.-26P, 62P, 88P, Electronic City,
Raviryala, Maheshwaram (M), Rangareddy District,
Telangana –501 359

Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 35 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

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 60793-2-50 and IEC 60793-1-53	TEC ER No. TEC 70112401
			Accelerated Aging (Dry Heat) Test: Induced attenuation at 1550 nm and 1625 nm due to Temperature aging at 85±2°C IEC 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			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 60793-2-50 and IEC 60793-1-51	TEC ER No. TEC 70112401
			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 60793-2-50 and IEC 60793-1-50	TEC ER No. TEC 70112401
			Cable Material Compatibility test for fibre: Fibre to be aged with filling compound for 30 days at 85°C temperature and 85% Relative Humidity Telcordia GR-20-CORE,2013; IEC 60794-1-219	TEC ER No. TEC 70112401

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Certificate Number: TEC/MRA/CAB/IND-D/92 **Page 36 of 36**

Validity: 04/04/2024 to 03/04/2027 **Last Amended on: ----**

Sl. No.	Telecom Equipment / Product	Test Parameter or Type of Testing	Standard/ Specification
	Optical Fibre- Single Mode ITU-T G.657 A2	**Colour qualification**	MEK RUB Test (Methyl Ethyl Ketone) IEC 60794-1-219	TEC ER No. TEC 70112401

Signed by Sanjay Bhardwaj
Date: 04-04-2024 12:24:11

AD (CA), TEC

***The validity of Certificate is up to 03/04/2027 or the continued validity of NABL Accreditation, whichever is earlier.**