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# BUREAU OF INDIAN STANDARDS

## AGENDA

**Eighteenth meeting of Fibre Optics, Fibres, Cables and Devices Sectional Committee, LITD 11**

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| **दिनांक/DATE 21 नवम्बर /November 2023**<br>**दिन / DAY : मंगलवार/Tuesday**<br>**समय / TIME : 1100 बजे h** | **स्थान / Venue**<br>**मीमांसा मानक भवन भारतीय मानक ब्यूरो**<br>**9, बहादुर शाह ज़फर मार्ग, नई दिल्ली- 110002**<br>**White Room, Manak Bhavan, Bureau of Indian Standards 9, B.S.Z. Marg Delhi -110002** |

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|---|---|---|
| **Link** | **https://bismanak.webex.com/bismanak/j.php?MTID=m7c945dee297fa40437e2245472675195** | |
| **Meeting No: 2519 432 3293** | | **Password : 12345** |

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| **Chairman: Shri Rakesh Desai** | **Member Secretary: Shri Bipin Jambholkar** |

**ITEM 0 WELCOME**

**0.1** Welcome address

**0.2** Opening Remarks by the Chairman

**ITEM 1 FORMAL CONFIRMATION OF THE MINUTES OF LAST MEETING**

**1.1** The minutes of the last meeting of LITD 11 were circulated vide BISDG letter LITD 11/2.17 dated 17 July 2023. No Comments were received.

***The Committee may formally confirm these minutes.***

**ITEM 2 REVIEW OF COMPOSITION OF SECTIONAL COMMITTEE LITD 11**

**2.1** The composition of Fibre Optics, Fibres, Cables and Devices Sectional Committee LITD 11, is given in Annex 1 (Pg 6-7). The Last two attendance of Organizations are also given.

***The Committee may note and review its composition.***

**ITEM 3 DRAFT INDIAN STANDARDS FOR FINALIZATION**

**3.1** The following Draft Standards were sent for comments under wide Circulation :

| Sl No. | Document No.<br>Title | Circular No and Date | Comments |
|---|---|---|---|
| 1 | **Doc. No. : LITD 11 (23466)**<br>**IS / IEC 60825-2: 2021**<br>**Safety of laser products –**<br>Part 2 Safety of optical fibre communication systems (OFCSs)<br>[*Superseding IS 14624(Part 2):2012]*<br>ICS 31.260; 33.180.01 | **LITD 06/ T-23466, Dt 18 Sept 2023** | No Comments were received |

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|---|---|---|---|
| **2** | **Doc. No. : LITD 11 (23467)**<br>**IS / IEC 60793-1-1: 2023**<br>**Optical Fibres** Part **1** Measurement Methods and Test Procedures Section **1** General and Guidance **(***Second Revision*)<br>ICS 33.180.10 | **LITD 06/ T-23467, Dt 18 Sept 2023** | No Comments were received |
| **3** | **Doc. No. : LITD 11 (23468)**<br>**IS / IEC 60794-1-1: 2022**<br>**Optical Fibre Cables** Part **1** Generic Specification<br>Section **1** General **(***Second Revision*)<br>ICS 33.180.10 | **LITD 06/ T-23468, Dt 18 Sept 2023** | -do- |
| **4** | **Doc. No. : LITD 11 (23469)**<br>**IS / IEC 60794-1-2: 2021**<br>**Optical Fibre Cables** Part 1 Generic Specification<br>Section 2 Basic optical cable test procedures – General guidance **(***First Revision*)<br>ICS 33.180.10 | **LITD 06/ T-23469, Dt 18 Sept 2023** | -do- |
| **5** | **Doc. No. : LITD 11 (23480)**<br>**IS /IEC 60794-2-10:2023**<br>**Optical Fibre Cables** Part 2 Indoor Optical Fibre Cables Section 10 Family specification for simplex and duplex cables (*First Revision*)<br>ICS 33.180.10 | **LITD 06/ T-23480, Dt 18 Sept 2023** | -do- |

**3.2** The Committee may consider to finalize the above mentioned wide circulation documents for printing as Indian Standards.

**ITEM 4 PRESENT POSITION OF WORK OF LITD 11**

**4.1** The present position of work of LITD 11 is given in Annex 2 (Pg 8-11)

**4.2** In accordance with BIS procedure, Indian Standards which are in existence for more than 3 years are to be reviewed for reaffirmation/revision/withdrawal.

**4.2.1** When reviewing a standard, a committee has five options available:

a) reaffirmation indicating continuing current of the standard without change;
b) amendment and reaffirmation indicating the continuing currently of standard after necessary changes to bring it upto date;
c) revision involving the routine procedure for new project and reaffirm for time being.
d) declaration of obsolescence indicating by amendment that the standard is not recommended for use in new equipment but needs to be retained to provide for the servicing of existing equipment that is expected to have a long working life;
e) withdrawal indicating that the standard is no longer needed.

**4.3** Latest status of such standards along with the status of the ISO/IEC standards, on which these are based. This list of Indian standards whose base ISO/IEC standards have been revised/withdrawn are also given below with details of Status of base International Standards. BIS/Members were circulated as Standard Review Document [Action Research Project (ARP)] to all members (All the review documents can be access after logging in BIS module), no comments received from any members

| Sl. No | IS.No. | Title | Date of Last Reaffirmation | Corresponding International Standard | Latest Position of International Standard | Remarks |
|---|---|---|---|---|---|---|
| 1 | IS 15480 (Pt 1/Sec 2018) : 2021 | Fibre Optic Interconecting Devices And Passive Components Fibre Optic Passive Power Control Devices Part 1: Generic Specification (1st Revision) | Mar 2021 | IEC 60869-1: 2018 | No Change | May reaffirm the Standard |
| 2 | IS 16180 (Pt 1) : 2014 | Fibre optic interconnecting devices and pass4e components - Fibre optic connector interfaces: Part 1 General and guidance | Dec 2020 | IEC 61754-1: 2013- | No Change | -do- |
| 3 | IS 16282 : 2014 | Fibre Optic Graphical Symbology | Sept 2020 | IEC 61930 : 1998 | No Change | -do- |
| 4 | IS 16283 : 2014 | Fibre Optic Terminology | Dec 2020 | IEC 61931 : 1998 | No Change | -do- |
| 5 | IS 16285 : 2020 | End-face Image Analysis Procedure for the Calibration of Optical Fibre Geometry Test Sets (1st Revision) | New July 2020 | IEC 61745 : 1998 | No Change | -do- |
| 6 | IS 16438 (Pt 1) : 2021 | Fibre optic interconnecting devices and passive components Performance standard Pt 1: General and guidance (1st Revision) | New March 2021 | IEC 61753-1: 2020 | No Change | -do- |
| 7 | IS/IEC 60794-2 : 2017 | Optical fibre cables Pt 2 Indoor cables Sectional specification (1st Revision) | March 2021 | IEC 60794-2 : 2017 | No Change | -do- |
| 8 | IS/IEC 60794-2-11 : 2020 | Optical fibre cables Pt 2 Indoor cables Section 11 Detailed specification for simplex and duplex cables for use in premises cabling (1st Revision) | Feb 2021 | IEC 60794-2-11 : 2020 | No Change | -do- |
| 9 | IS/IEC 61757 : 2018 | Fibre Optic Sensors - Generic Specification | July 2020 | IEC 61757 : 2018 | No Change | -do- |

**4.4** In addition to Standards due for review, the list of Indian standards whose base ISO/IEC standards have been revised/withdrawn are also given below with details of Status of base International Standards.

| Sl. No | IS.No. | Title | Corresponding International Standard | Latest Position of International Standard | Remarks |
|---|---|---|---|---|---|
| 1 | IS 14976 : 2012 | Calibration of fibre - Optic power meters (1st Revision) | IEC 61315: 2005 | IEC 61315: 2019 | |
| 2 | IS 15077 (Pt 1) : 2019 | Semiconductor Optoelectronic Devices for Fibre Optic System Applications Pt 1 Specification Template for Essential Ratings and Characteristics ( 2nd Revision ) | IEC 62007 : 2015 | Amd 1: 2022 | |
| 3 | IS 16438 (Pt 2/Sec 1) : 2019 | Fibre Optic Interconnecting Devices and Passive Components Performance Standard Pt 2 Fibre Optic Connectors Terminated on Single-Mode Fibre for Category U Section 1 Uncontrolled environment | IEC 61753-2-1 : 2000 | | |
| 4 | IS 16607 : 2018 | Fibre Optics Launch Condition Requirements for Measuring Multimode Attenuation | IEC 62614 : 2010 | Withdrawn and replaced by IEC 62614-1: 2020 | |

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|---|---|---|---|---|---|
| 5 | IS/IEC 60793-1-31 : 2010 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 31 tensile strength | IEC 60793-1-31 : 2010 | IEC 60793-1-31 : 2019 | |
| 6 | IS/IEC 60793-1-32 : 2010 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 32 coating strippABility | IEC 60793-1-32 : 2010 | IEC 60793-1-32 : 201 | |
| 7 | IS/ IEC 60793-1-34 : 2006 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 34 fibre curl | IEC 60793-1-34 : 2006 | IEC 60793-1-34 : 2021 | |
| 8 | IS/IEC 60793-1-40 : 2001 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 40 attenuation | IEC 60793-1-40 : 2001 | IEC 60793-1-40 : 2019 | |
| 9 | IS/IEC 60793-1-49 : 2006 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 49 differential mode delay | IEC 60793-1-49 : 2006 | IEC 60793-1-49 : 2018 | |
| 10 | **IS/IEC 60793-2-60 : 2008** | **Optical fibres: Pt 2 product specifications: Sec 60: Secal specification for category c single - Mode intraconnection fibres** | **IEC 60793-2-60 : 2008** | **IEC 60793-2-60 : 2017** | |
| 11 | IS/IEC 61744 : 2005 | Calibration Of Fibre Optic Chromatic Dispersion Test Sets | IEC 61744 : 2005 | IEC 61744 : 2023 | |
| 12 | IS/IEC 61746 : 2005 | Calibration Of Optical Time-Domain Reflectometers(OTDR) | IEC 61746 : 2005 | IEC 61746 : 2009 | |

4.5 Committee may consider

**ITEM 5 Research and Development Project**

**5.1 BIS has issued Guidelines for Research & Development Projects for Formulation and Review of Standards. The Objectives of this Scheme are to (Annex 3-Separately enclosed).**

**5.2 One of the proposal for R&D Project**

Term of Reference of Research and Development Project of "**Requirements for the Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres"**(Annex 4, Pg 12-15)

***The committee may please note for necessary compliance and further actions.***

## ITEM 6 INTERNATIONAL STANDARDIZATION ACTIVITIES

**6.1** Presently, LITD 11 acts as National Mirror Committee of IEC/TC 86, SC 86A, SC 86B and SC 86C
( IEC/TC 86, SC 86A, SC 86B - Participating Member and SC 86C India - Observer Member)

**6.1.1** India being Participating member on TC 86, 86 A, and 86B has obligations to vote on the document emanating from these committees.

**6.1.2 India may be upgraded as P-Member in IEC TC 86C also.**

**6.2** The list of working groups under IEC/TC 86 and its Sub-Committees are given below:

| Sr No | Title | Subcommittee/Working Groups | Expert |
|---|---|---|---|
| 1 | TC 86 Fibre optics | WG 1 Terminology and symbology | Mr. Rakesh Desai |
| | | WG 4 Fibre optic test equipment calibration | Mr Komal P Barhate |
| | | JWG 9 Optical functionality for electronic assemblies linked to TC 91 | |
| | | JAG 10 (Joint Advisory Group) Laser safety linked to TC 76 | |

| Sr No | Title | Subcommittee/Working Groups | Expert |
|---|---|---|---|
| 2 | SC 86A<br>Fibres and cables | WG 1 Fibres and associated measuring methods | Mr Sudipta Bhaumik,<br>Mr. Roshan Kumar<br>Dr. Ranjan Sen<br>Mr. Bipin Jambholkar |
| | | WG 3 Cables | Mr. Sudipta Bhaumik,<br>Dr. Ranjan Sen<br>Mr. Bipin Jambholkar |
| | | TC 18/SC 18A/JWG 3 Electrical installations in ships – Part 378: Optical fiber cables Managed by SC 18A | None |
| | | TC 46/JWG 1 Raw materials and environmental issues Managed by TC 46 | None |
| | | TC 46/SC 46C/JWG 8 62807 Managed by SC 46C | None |
| | | TC 86/SC 86B/JWG 8 with 86A - Terminated Cable Assemblies Managed by SC 86B | None |

| Sr No | Title | Subcommittee/Working Groups | Expert |
|---|---|---|---|
| 3 | SC 86B<br>Fibre optic interconnecting devices and passive components | WG 4 Standard tests and measurement methods for fibre optic interconnecting devices and passive components | Mr. Sudipta Bhaumik<br>Mr Komal P Barhate |
| | | WG 6 Standards and specifications for fibre optic interconnecting devices and related components | Mr.Rakesh Desai<br>Mr.Sudipta Bhaumik |
| | | WG 7 Standards and specifications for fibre optic passive components | Mr. Sudipta Bhaumik |
| | | Joint Working Groups; JWG 8 with 86A - Terminated Cable Assemblies | Mr. Sudipta Bhaumik |
| | | Editing Group EG 1: Editing IEC 61300-3-35/Ed2 | None |

| Sr No | Title | Subcommittee/Working Groups | Expert |
|---|---|---|---|
| 4 | SC 86C<br>Fibre optic systems and active devices (O-Member) | WG 1 Fibre optic communications systems and sub-systems | None |
| | | WG 2 Fibre optic sensors | None |
| | | WG 3 Optical amplifiers | Dr. Ranjan Sen * |
| | | WG 4 Fibre optic active components and devices | Dr. Ranjan Sen * |

**6.3 Voting on IEC Document : 86/628A/Q :** IEC TC86 Chair post.

**Committee may give preference for IEC TC 86 Chair:**
**Mr Laurent Gasca , French National Committee**
**Mr José Onécimo Valenzuela Sebastián, Mexican National Committee**

**Item 7 ANY OTHER ITEM**

**ITEM 8 DATE AND PLACE FOR THE NEXT MEETING**

**ANNEX 1**

***(Item* 2.1)**

**COMPOSITION OF**

**LITD 11 FIBRE OPTICS, FIBRES, CABLES AND DEVICES**

| S.No. | Organization | Member Name | | Last two Attendance |
|---|---|---|---|---|
| 1 | Telecom Engineering Centre, Dept. of Telecommunications, | Shri Rakesh Desai | Chairperson | 1/1 |
| 2 | Aksh Optifibre Limited, New Delhi | Shri Sam Mathew | Principal | 2/2 |
| | | Shri Anil Gupta | Alternate | |
| 3 | Bharat Sanchar Nigam Limited, New Delhi | Shri Paritosh Kr. Shah | Principal | 0/2 |
| | | Shri Kapil Rastogi | Alternate | |
| 4 | Birla Ericsson Optical Limited, New Delhi | Shri Narendra Jain | Principal | 1/2 |
| | | Shri V. P. Singh | Alternate | |
| 5 | CSIR - Central Electronics Engineering Research Institute, Pilani | Dr Suchandan Pal | Principal | 0/2 |
| | | Nomination awaited | Alternate | |
| 6 | CSIR - Central Glass and Ceramic Research Institute, Kolkata | Dr. Mukul Chandra Paul | Principal | 2/2 |
| | | Dr. Somnath Bandyopadhyay | Alternate | |
| 7 | CSIR - Central Scientific Instruments Organisation, Chandigarh | Dr Samir Mondal | Principal | 2/2 |
| | | Prof. S. Anantha Ramakrishna | Alternate | |
| 8 | Centre for Development of Telematics, New Delhi | Shri Prashant Kumar Rathore | Principal | 1/2 |
| | | Shri Atul Kumar Gupta | Alternate | |
| 9 | Consumer Electronics and Appliances Manufacturers Association, Noida | Saurabh Kumar Singh | Principal | - |
| | | Nomination awaited | Alternate | |
| 10 | Department of Science and Technology, New Mehrauli Road, New Delhi | Shri Vineet Saini | Principal | 0/2 |
| | | Nomination awaited | Alternate | |
| 11 | Directorate General of Aeronautical Quality Assurance, New Delhi | Director (E and I) | Principal | 1/2 |
| | | Shri Komal P Barhate | Alternate | |
| 12 | Directorate General of Quality Assurance, New Delhi | Brig DDG T | Principal | 1/2 |
| | | Col. Samir Kashyap | Alternate | |
| 13 | Directorate of Standardisation, Ministry of Defence, , New Delhi | Secretary,Electronics Standardization Sub | Principal | 1/2 |
| | | Lt. Col. Shobhit Srivastava | Alternate | |

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| 14 | Finolex Cables Limited, Pune | Shri Mukund Sawant<br>Shri Shaikh Sadik | Principal<br>Alternate | 2/2 |
| | | Shri Mahadev Kadam | Alternate 1 | |
| 15 | Himachal Futuristic Communications Limited, New Delhi | Shri Pramod Agrawal | Principal | 2/2 |
| | | Shri Vivek Agrawal | Alternate | |
| 16 | Indian Institute of Technology Roorkee | Prof. Vipul Rastogi | Principal | 1/1 |
| | | Dr. Rajesh Kumar | Alternate | |
| 17 | Indian Institute of Technology (ISM), Dhanbad | Dr. Vinod Kumar Singh | Principal | - |
| 18 | Indian Institute of Technology Guwahati | Dr. Debabrata Sikdar | Principal | - |
| 19 | National Institute of Technology Calicut, | Dr Raman Namboodiri C K<br>Dr Anirban Sarkar | Principal<br>Alternate | 1/1 |
| 20 | SFO Technologies Private Limited, Kochi | Shri Samuel Varghese | Principal | 2/2 |
| | | Mr. Thanuj. T. K | Alternate | |
| 21 | Sterlite Technologies Limited, Pune | Shri Sudipta Bhaumik | Principal | 2/2 |
| | | | Alternate | |
| 22 | Telecom Equipment Manufacturers Association, New Delhi | Prof N. K. Goyal | Principal | 2/2 |
| | | Ms Manisha Kumari | Alternate | |
| 23 | Telecommunication Engineering Center, New Delhi | Smt. Ghazala Faisal | Principal | 1/2 |
| | | Shri Vijay Dixit | Alternate | |
| 24 | IN PERSONAL CAPACITY | Dr Ranjan Sen | Personal Capacity | 2/2 |

## ANNEX 2

*(Item* 3.1)

### LITD 11 FIBRE OPTICS, FIBRES, CABLES AND DEVICES

**SCOPE -** To prepare Indian Standard for fibre optics systems and associated components and devices intended for use with communications equipment and devices employing similar techniques.

LIAISON WITH IEC COMMITTEES
IEC/TC 86 Fibre Optics
IEC/SC 86A Fibres and Cables
IEC/SC 86B Fibre Optic Interconnecting Devices and Passive Components
IEC/SC 86C Fibre Optic Systems and active devices

**Sl. No. IS Number/ DOC Number Title Reaffirm Date No.of Amd.**

**STANDARDS PUBLISHED**

| Sl. No. | IS No. | TITLE | Reaffirm M-Y | No. of Amds |
|---|---|---|---|---|
| 1 | IS 14624 (Pt 2) : 2012 IEC 60825-2:2005 | Safety of laser products: Pt 2 safety of optical fibre communication systems (OFCS) (First Revision) | Dec 2021 | - |
| 2 | IS 14976 : 2012 IEC 61315: 2005 | Calibration of fibre - Optic power meters (First Revision) | Dec 2021 | - |
| 3 | IS 15077 (Pt 1) : 2019 IEC 62007 : 2015 | Semiconductor Optoelectronic Devices for Fibre Optic System Applications Pt 1 Specification Template for Essential Ratings and Characteristics ( 2nd Revision ) | Jul 2022 | - |
| 4 | IS 15077 (Pt 2) : 2012 IEC 62007-2: 2009 | Semiconductor optoelectronic devices for fibre optic system applications: Pt 2 measuring methods (1st Revision) | Sep 2021 | - |
| **5** | IS 15480 (Pt 1 ): 2021 IEC 60869-1: 2018 | Fibre Optic Interconecting Devices And Passive Components Fibre Optic Passive Power Control Devices Pt 1: Generic Specification First Revision | Mar 2021 | - |
| 6 | IS 16180 (Pt 1) : 2014 IEC 61754-1: 2013 | Fibre optic interconnecting devices and pass4e components - Fibre optic connector interfaces: Pt 1 general and guidance | Dec 2020 | - |
| 7 | IS 16180 (Pt 13) : 2018 IEC 61754-13: 2006 | Fibre optic connector interfaces: Pt 13 type fc - Pc connector | Nov 2021 | - |
| 8 | IS 16282 : 2014 IEC 61930 : 1998 | Fibre Optic Graphical Symbology | Sep 2020 | - |
| 9 | IS 16283 : 2014 IEC 61931 : 1998 | Fibre Optic Terminology | Dec 2020 | - |
| 10 | IS 16285 : 2020 IEC 61745 : 2017 | End-face Image Analysis Procedure for the Calibration of Optical Fibre Geometry Test Sets ( First Revision ) | Jul 2020 | - |
| 11 | IS 16438 (Pt 1 ): 2021 IEC 61753-1: 2020 | Fibre optic interconnecting devices and passive components Performance standard Pt 1: General and guidance (First Revision) | Mar 2021 | - |

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| 12 | IS 16438 (Pt 2/Sec 1) : 2019<br>IEC 61753-2-1 : 2000 | Fibre Optic Interconnecting Devices and Passive Components Performance Standard Pt 2 Fibre Optic Connectors Terminated on Single-Mode Fibre for Category U Section 1 Uncontrolled environment | May 2022 | - |
| 13 | IS 16607 : 2018<br>IEC 62614 : 2010 | Fibre Optics Launch Condition Requirements for Measuring Multimode Attenuation | Oct 2021 | - |
| 14 | IS 16625 (Pt 1) : 2018<br>IEC 62496-1 : 2008 | Optical Circuit Boards Pt 1 General | Nov 2021 | - |
| 15 | IS 16939 : 2018 | Optical Fibre Cables for Inside Premises ( FTTX ) Application | Jun 2021 | - |
| 16 | IS 17046 : 2018 | Fibre Optic Cable for Cable TV Application | Oct 2021 | - |
| 17 | IS/IEC 60793-1-1 : 2017 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 1 general and guidance (First Revision) | Aug 2022 | - |
| 18 | IS/IEC 60793-1-20 : 2014 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 20 fibre geometry (First Revision) | Sep 2022 | - |
| 19 | IS/IEC 60793-1-21 : 2001 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 21 coating geometry | Dec 2021 | - |
| 20 | IS/IEC 60793-1-22 : 2001 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 22 length measurement | Dec 2021 | - |
| 21 | IS/IEC 60793-1-30 : 2010 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 30 fibre proof test | Apr 2022 | - |
| 22 | IS/IEC 60793-1-31 : 2010 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 31 tensile strength | Apr 2022 | - |
| 23 | IS/IEC 60793-1-32 : 2010 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 32 coating strippability | Jun 2022 | - |
| 24 | IS/IEC 60793-1-33 : 2017 | Optical Fibres Pt 1 Measurement Methods and Test Procedures Section 33 Stress corrosion susceptibility (First Revision ) | Jan 2023 | - |
| 25 | IS/IEC 60793-1-34 : 2006 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 34 fibre curl | May 2022 | - |
| 26 | IS/IEC 60793-1-40 : 2001 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 40 attenuation | Apr 2022 | - |
| 27 | IS/IEC 60793-1-41 : 2010 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 41 bandwidth | Apr 2022 | - |
| 28 | IS/IEC 60793-1-42 : 2013 | Optical fibres - Pt 1-42: Measurement methods and test procedures - Chromatic dispersion | Apr 2022 | - |
| 29 | IS/IEC 60793-1-43 : 2015 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 43 numerical aperture measurement (First Revision) | Jan 2022 | - |
| 30 | IS/IEC 60793-1-44 : 2011 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 44 cut - Off wavelength | July 2022 | - |
| 31 | IS/IEC 60793-1-45 : 2017 | Optical Fibres Pt 1 Measurement Methods and Test Procedures Section 45 Mode field diameter (First Revision ) | Feb 2023 | - |

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| 32 | IS/IEC 60793-1-46 : 2001 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 46 monitoring of changes in optical transmittance | Apr 2022 | - |
| 33 | IS/IEC 60793-1-47 : 2017 | Optical Fibres Pt 1 Measurement Methods and Test Procedures Section 47 Macrobending loss (First Revision) | Dec 2022 | - |
| 34 | IS/IEC 60793-1-48 : 2017 | Optical Fibres Pt 1 Measurement Methods and Test Procedures Section 48 Polarization mode Dispersion ( First Revision) | Dec 2022 | - |
| 35 | IS/IEC 60793-1-49 : 2006 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 49 differential mode delay | Apr 2022 | - |
| 36 | IS/IEC 60793-1-50 : 2014 | Optical Fibres Pt 1 Measurement Methods and Test Procedures Section 50 Damp heat (steady state) tests | Jul 2022 | - |
| 37 | IS/IEC 60793-1-51 : 2014 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 51 dry heat (Steady State) tests (First Revision) | Jun 2021 | - |
| 38 | IS/IEC 60793-1-52 : 2014 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 52 change of temperature tests (First Revision) | Jun 2021 | - |
| 39 | IS/IEC 60793-1-53 : 2014 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 53 water immersion tests (First Revision) | Aug 2021 | - |
| 40 | IS/IEC 60793-1-54 : 2018 | Optical fibres: Pt 1 measurement methods and test procedures: Sec 54 gamma irradiation (First Revision) | Aug 2022 | - |
| 41 | IS/IEC 60793-2-60 : 2008 | Optical fibres: Pt 2 product specifications: Sec 60: Sectional specification for category c single - Mode intra connection fibres | May 2021 | - |
| 42 | IS/IEC 60794-1-1 : 2015 | Optical Fibre Cables Pt 1 Generic Specification Section 1 General ( First Revision ) | Aug 2021 | - |
| 43 | IS/IEC 60794-1-2 : 2017 | Optical fibre cables Pt 1 Generic specification Section 2 Basic optical cable test procedures General guidance (First Revision) | Mar 2021 | - |
| 44 | IS/IEC 60794-2 : 2017 | Optical fibre cables Pt 2 Indoor cables Sectional specification First Revision | Mar 2021 | - |
| 45 | IS/IEC 60794-2-10 : 2011 | Optical Fibre Cables Pt 2 Indoor Optical Fibre Cables Section 10 Family specification for simplex and duplex cables | Oct 2021 | - |
| 46 | IS/IEC 60794-2-11 : 2020 | Optical fibre cables Pt 2 Indoor cables Section 11 Detailed specification for simplex and duplex cables for use in premises cabling First Revision | Feb 2021 | - |
| 47 | IS/IEC 60794-3-10 : 2015 | Optical Fibre Cables Pt 3 Outdoor cables Section 10 Family specification for duct directly buried or lashed aerial optical telecommunication cables | Nov 2021 | - |
| 48 | IS/IEC 60794-3-11 : 2010 | Optical Fibre Cables Pt 3 Outdoor cables Section 11 Product specification for duct directly buried and lashed Aerial single-mode optical fibre telecommunication cables | Nov 2021 | - |

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| 49 | IS/IEC 60794-3-21 : 2015 | Optical Fibre Cables Pt 3 Outdoor Cables Section 21 Product Specification For Optical Self-Supporting Aerial Telecommunication Cables For Use In Premises Cabling | Jul 2021 | - |
| 50 | IS/IEC 60794-3-30 : 2018 IEC 60794-3-30 : 2008 | Optical Fibre Cables Pt 3 Outdoor Cables Section 30 Family specification for optical telecommunication cables for lakes, river crossings and coastal applications | May 2021 | - |
| 51 | IS/IEC 60794-4-20 : 2018 | Optical Fibre Cables Pt 4 Sectional specification Section 20 Aerial optical cables along electrical power lines Family specification for ADSS all dielectric self-supported optical cables | Dec 2021 | - |
| 52 | IS/IEC 60874-1 : 2011 | Fibre Optic Interconnecting Devices and Passive Components Connectors for Optical Fibres and Cables Pt 1 Generic Specification | Aug 2021 | - |
| 53 | IS/IEC 60875-1 : 2015 | Fibre optic interconnecting devices and pass4e components - Non - Wavelength - Select4e fibre optic branching devices: Pt 1 generic specification | Aug 2021 | - |
| 54 | IS/IEC 60876-1 : 2014 | Fibre optic interconnecting devices and pass4e components - Fibre optic spatial switches: Pt 1 generic specification (First Revision) | Aug 2021 | - |
| 55 | IS/IEC 61744 : 2005 | Calibration Of Fibre Optic Chromatic Dispersion Test Sets | Nov 2021 | - |
| 56 | IS/IEC 61746 : 2005 | Calibration Of Optical Time-Domain Reflectometers(OTDR) | Apr 2021 | - |
| 57 | IS/IEC 61746-2 : 2010 | Calibration of optical time-domain reflectometers (OTDR) - Pt 2: OTDR for multimode fibres | Apr 2021 | - |
| 58 | IS/IEC 61757 : 2018 | Fibre Optic Sensors - Generic Specification | July 2020 | - |
| 59 | IS/IEC/TR 62283 : 2010 | Optical Fibres Guidance for Nuclear Radiation Test | Oct 2021 | - |
| 60 | IS/IEC 62538 : 2008 | Categorization of Optical Devices | June 2021 | - |
| 61 | IS/IEC/TR 62572-2 : 2008 | Fibre Optic Active Components and Devices - Reliability Standards Pt 2 Laser Module Degradation | June 2021 | - |

**ASPECT WISE REPORT**

| | |
|---|---|
| PRODUCT | 26 |
| METHODS OF TEST | 31 |
| CODES OF PRACTICES | 1 |
| TERMINOLOGY | 1 |
| SYMBOLS | 1 |
| OTHERS | 1 |
| **TOTAL :** | **61** |

**ANNEX 4**

*(Item **5.2**)*

**TEMPLATE FOR THE TERMS OF REFERENCE FOR THE R&D PROJECTS**

(*Refer to the Guidelines on R&D Projects issued vide note SCMD/R&D dated xx-09-23*)

**1. Title of the Project**: Requirements for the Optical fibres - Part 2-50: Product specifications - Sectional specification for class B single-mode fibres

**2. Background:**

Sectional Committee: of Fibre Optics, Fibres, Cables and Devices, LITD 11

Division Council: Electronics and Information Technology Division Council (LITDC)

Optical Fibres Cable can broadly classified into multimode and singlemode optical fibres.

Multimode fibre : optical fibre in the core of which the radiation of two or more bound modes can propagate at the wavelength of interest

Single-mode fibre: optical fibre in which the radiation of only one bound mode can propagate at the wavelength of interest

Multimode fibres has four categories of multimode fibres: A1, A2, A3, and A4 (part of the multimode fibre class A) having different requirements specific to each category.

World over class B single-mode fibres categories such as B-652, B-653, B-654, B-655, B-656 and B-657 are widely used by Industry.

Unlike multi-mode optical fiber, single-mode fiber does not exhibit modal dispersion. This is due to the fiber having such a small cross section that only the first mode is transported. Single-mode fibers are therefore better at retaining the fidelity of each light pulse over longer distances than multi-mode fibers. For these reasons, single-mode fibers can have a higher bandwidth than multi-mode fibers.

The Categories of Single Mode fibre along with their desctiption is given in next page.

| Category | Type | Description |
|---|---|---|
| **B-652** | Dispersion unshifted | Dispersion unshifted single-mode fibre.<br><br>Two sub-categories are recognized:<br>B-652.B is optimised for use in the 1 310 nm region but can be used in the 1 550 nm and 1 625 nm regions. Depending on link length and bit rates, dispersion may need accommodation in the 1 550 nm region.<br><br>B-652.D can be used over the extended wavelength range from 1 260 nm up to 1 625 nm. Chromatic dispersion in this band may impose requirements either on the maximum link length or the need for accommodation. |
| **B-653** | Dispersion shifted | This dispersion-shifted single-mode fibre is optimised for single-channel transmission in the 1 550 nm region. Multiple channels can only be transmitted if care is taken to avoid the effects of four-wave mixing by, for example, moderating the power levels or appropriate spacing or placement of the channels.<br><br>Two sub-categories are recognized (B-653.A and B-653.B) differing in chromatic dispersion characteristics. |
| **B-654** | Cut-off shifted | This category of dispersion unshifted single-mode fibre is optimised for low loss in the 1 550 nm region.<br><br>Five sub-categories are recognized (B-654.A, B-654.B, B-654.C, B-654.D and B-654.E) differing in chromatic dispersion and mode field characteristics. |
| **B-655** | Non-zero dispersion-shifted | This dispersion-shifted single-mode fibre is optimised for multiple channel transmission in the 1 550 nm region. The dispersion coefficient is required to be non-zero throughout the band from 1 530 nm to 1 565 nm, but may be either positive or negative. Depending on the dispersion characteristics, multiple channel transmission may be possible at bands either above or below the normal 1 550 nm region.<br>Three sub-categories are recognized (B-655.C, B-655.D and B-655.E), differing in chromatic dispersion characteristics. |
| **B-656** | Wideband non-zero dispersion-shifted | This wideband non-zero dispersion-shifted single-mode fibre is optimised for multiple channel transmission in the wavelength range of 1 460 nm to 1 625 nm with the positive value of the chromatic dispersion coefficient that is greater than some non-zero value. This fibre can be used for both CWDM and DWDM systems throughout the wavelength region between 1 460 nm and 1 625 nm. |
| **B-657** | Bending loss insensitive | This category of single-mode fibre is optimised for improved bending performance.<br><br>Four sub-categories are recognized:<br>B-657.A1 and B-657.A2 fibres are a subset of category B-652.D fibres and therefore are compliant with B-652.D fibres and have the same transmission properties. Sub-category B-657.A1 fibres are appropriate for a minimum bend radius of 10 mm; sub-category B-657.A2 fibres for a minimum bend radius of 7,5 mm.<br><br>B-657.B2 and B-657.B3 fibres are intended to be used for restricted distances (less than 1 000 m) at the end of access networks, in particular inside buildings or near buildings (e.g. outside building riser cabling). Application length of B-657.B fibre, however, depends on the deployment strategy of each network operator.<br>Sub-category B-657.B fibres are not necessarily compliant with category B-652.D fibres in terms of chromatic dispersion coefficient specifications. These fibres, however, are system compatible with B-657.A (and B-652.D) fibres in access networks.<br>Sub-category B-657.B2 fibres are appropriate for a minimum bend radius of 7,5 mm; sub category B-657.B3 fibres for a minimum bend radius of 5 mm. |

**3. Scope**: The Research and Development project will Study of class B single-mode fibres categories B-652, B-653, B-654, B-655, B-656 and B-657 and its applicability in sub-tropical Indian Conditions.

These fibres are used or can be incorporated in information transmission equipment and optical fibre cables.

Three types of requirements apply to these fibres:

- general requirements, as defined in IEC 60793-2;
- specific requirements common to the class B single-mode fibres
- particular requirements applicable to individual fibre categories or specific applications,

For some fibre categories (shown in the relevant family specifications), there are sub-categories that are distinguished on the basis of difference in transmission attribute specifications. The designations for these sub-categories are documented in the individual family specifications.

In some cases, as for Recommendation G.652, a given IEC designation maps to multiple categories in the ITU-T because the ITU-T categories are distinguished by cabled fibre attribute (PMDQ) performance which are not distinguished in the IEC fibre specifications.

**4. Expected Deliverables**:

The Research and development project will study the detailed Specifications of Single mode Fibre, which includes (the requirements may extended)

a) General requirement

b ) Dimensional requirements common to all category B fibres

c) Mechanical requirements common to all class B fibres

d) Transmission attributes and measurement methods

Besides common Requirements, R&D project will also study different categories of optical fibres cables as per Indian Requirement condition for following cables:

- Family specification for category B-652 Dispersion unshifted single-mode fibres
- Family specification for category B-653 Dispersion unshifted single-mode fibres
- Family specification for category B-654 cut-off shifted single-mode fibres
- Family specification for category B-655 non-zero dispersion shifted single-mode fibres
- Family specification for category B-656 Wideband non-zero dispersion shifted single-mode fibres

**5. Research Methodology**:

The entire project shall consist of detail study and research of different types of single-mode fibres categories used in India.

Experts who are in the design and development of optical fibre in general, including technical contributors, shall be part of the studies and research. Along with other Indian Manufactures, experts and Laboratories testing shall be invited to be part of the research and discussions, through various meetings, workshops etc.

Research may Focus group discussions, visits to the relevant Manufacturing Units and Labs.

**6. Requirement for the CVs:**

Person should be working in optical fibre industry for at least 10 years at Senior level looking after both testing and selling the project

**7. Timeline and Method of Progress Review:**

**Time line for the Project 6 months**

| | |
|---|---|
| Study, and gap analysis | One month |
| Brainstorming, Discussions | One month |
| Drafting | One Month |
| Testing | Two Month |
| Final Document preparation | One Month |

**8. Support BIS will Provide:**

**BIS will provide budgetary support for**

**a) Meetings: Monthly meetings with the experts**

**b) Manufacturing and Laboratory visits**

**c) Testing of Different variety**

**d) Consumables and Stationary**