

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Fibre-optic communication subsystem test procedures –  
Part 4-1: Installed cabling plant – Multimode attenuation measurement**

**Procédures d'essai des sous-systèmes de télécommunication fibroniques –  
Partie 4-1: Installation câblée – Mesure de l'affaiblissement en multimodal**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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### **FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –**

#### **Part 4-1: Installed cabling plant – Multimode attenuation measurement**

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**IEC 61280-4-1 edition 3.1 contains the third edition (2019-05) [documents 86C/1575/FDIS and 86C/1592/RVD], its corrigendum (2020-04) and its amendment 1 (2021-12) [documents 86C/1720/CDV and 86C/1592/RVD].**

**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.**

International Standard IEC 61280-4-1 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This third edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) changes to Annex F on encircled flux to harmonise with IEC TR 62614-2, but keeping the encircled flux limits defined in Tables F.2 to F.5 unchanged;
- b) addition of an equipment cord method in Annex D;
- c) inclusion of testing bend insensitive multimode optical fibre;
- d) updates to measurement uncertainty;
- e) definition of additional cabling configurations;
- f) changes to Table 5 on spectral requirements.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61280 series, published under the general title *Fibre optic communication subsystem test procedures*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific publication. At this date, the publication will be

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## **FIBRE-OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –**

### **Part 4-1: Installed cabling plant – Multimode attenuation measurement**

#### **1 Scope**

This part of IEC 61280 is applicable to the measurement of attenuation of installed optical fibre cabling plant using multimode optical fibre. This cabling plant can include multimode optical fibres, connectors, adapters, splices, and other passive devices. The cabling can be installed in a variety of environments including residential, commercial, industrial, and data centre premises, as well as outside plant environments. The test equipment used in this document has one single fibre connector interface or two single fibre connector interfaces.

In this document, the optical fibres that are addressed include sub-categories A1-OM $x$ , where  $x = 2, 3, 4$  and  $5$  (50/125  $\mu\text{m}$ ) and A1-OM1 (62,5/125  $\mu\text{m}$ ) multimode optical fibres, as specified in IEC 60793-2-10. The attenuation measurements of the other multimode categories can be made using the approaches of this document, but the source conditions for the other categories have not been defined.

#### **2 Normative references**

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60825-2, *Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCS)*

IEC 61280-1-3, *Fibre optic communication subsystem test procedures – Part 1-3: General communication subsystems – Central wavelength and spectral width measurement*

IEC 61280-1-4, *Fibre optic communication subsystem test procedures – Part 1-4: General communication subsystems – Light source encircled flux measurement method*

IEC 61300-3-35, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-35: Examinations and measurements – Visual inspection of fibre optic connectors and fibre-stub transceivers*

IEC 61315, *Calibration of fibre-optic power meters*

IEC 61746-2, *Calibration of optical time-domain reflectometers (OTDR) – Part 2: OTDR for multimode fibres*

#### **3 Terms, definitions, graphical symbols and abbreviated terms**

For the purposes of this document, the following terms, definitions, graphical symbols and abbreviated terms apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses: