

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Optical fibres –
Part 1-45: Measurement methods and test procedures – Mode field diameter**

**Fibres optiques –
Partie 1-45: Méthodes de mesure et procédures d'essai – Diamètre du champ de mode**





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Part 1-45: Measurement methods and test procedures – Mode field diameter

Fibres optiques –

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**OPTICAL FIBRES –
Part 1-45: Measurement methods and test procedures –
Mode field diameter**

FOREWORD

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International Standard IEC 60793-1-45 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2001. This edition constitutes a technical revision.

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

- a) improvement of the description of measurement details for B6 fibre;
- b) correction of Equations (1), (2), (5) and (6);
- c) correction of Table E.1, Table E.2 and Table E.3.

The text of this International Standard is based on the following documents:

CDV	Report on voting
86A/1758/CDV	86A/1802/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

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

A list of all parts in the IEC 60793 series, published under the general title *Optical fibres*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

OPTICAL FIBRES –

Part 1-45: Measurement methods and test procedures – Mode field diameter

1 Scope

This part of IEC 60793 establishes uniform requirements for measuring the mode field diameter (MFD) of single-mode optical fibre, thereby assisting in the inspection of fibres and cables for commercial purposes.

2 Normative references

The following documents are referred to in the text in such a way that none 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 60793-1-40:2001, *Optical fibres – Part 1-40: Measurement methods and test procedures – Attenuation*

IEC 60793-2, *Optical fibres – Part 2: Product specifications – General*

3 Terms and definitions

No terms and definitions are listed in this document.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 General consideration about mode field diameter

The mode field diameter measurement represents a measure of the transverse extent of the electromagnetic field intensity of the guided mode in a fibre cross section, and it is defined from the far field intensity distribution as a ratio of integrals known as the Petermann II definition. See Equation (1).

The definitions of mode field diameter are strictly related to the measurement configurations. The mathematical equivalence of these definitions results from transform relationships between measurement results obtained by different implementations summarized in Figure 1 as follows.