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Optical fibres – Measurement methods – Microbending sensitivity

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRES – MEASUREMENT METHODS – MICROBENDING SENSITIVITY

FOREWORD

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IEC 62221, which is a technical report, 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, and constitutes a technical and editorial revision.

The main changes with respect to the previous edition are listed below:

a) updates related to B6 (bend-insensitive) category single-mode fibres;
b) inclusion of a definition for microbending and general properties;
c) expansion of general considerations;

d) more details given for each method;

e) addition of an Annex A.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
86A/1460/DTR	86A/1470/RVC

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

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

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

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- withdrawn,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

A bilingual version of this publication may be issued at a later date.

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OPTICAL FIBRES – MEASUREMENT METHODS – MICROBENDING SENSITIVITY

1 Scope

IEC 62221, which is a technical report, describes four methods (A, B, C and D) for the measurement of microbending sensitivity of optical fibres.

These four methods are distinguished by the equipment being used for measurements and their applications:

- method A using an expandable drum and applies to category A1 and class B fibres;
- method B using a fixed diameter drum and applies to category A1 and class B fibres;
- method C using a plate and applied loads and applies to category A1 and class B fibres;
- method D using a "basketweave" wrap on a fixed diameter drum, and applies to category A1 and class B fibres

Methods A and B may also be used to measure the microbending sensitivity of optical fibre ribbons.

Methods A and C offer the capability to measure the microbending sensitivity over a wide range of applied linear pressure or loads. Method B may be used to determine the microbending sensitivity for a fixed linear pressure.

Methods A, B and D can also be used at different temperatures (temperature cycling) provided special low thermal expansion materials (e.g. quartz drums) are used.

The results from the four methods can only be compared qualitatively. These methods are considered characterization type tests.

It shall be understood that the microbend results from any method, could have significant variation between laboratories.

These methods do not constitute a routine test used in the general evaluation of optical fibre. This parameter is not generally specified within a detail specification.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60793-1-1:2008, *Optical fibres – Part 1-1: Measurement methods and test procedures – General and guidance*

IEC 60793-1-22:2001, *Optical fibres – Part 1-22: Measurement methods and test procedures – Length measurement*

IEC 60793-1-40:2001, *Optical fibres – Part 1-40: Measurement methods and test procedures – Attenuation*

IEC 60793-1-46:2001, *Optical fibres – Part 1-46: Measurement and test procedures – Monitoring of changes in optical transmittance*

IEC 62614, *Fibre optics – Launch condition requirements for measuring multimode attenuation*