

This is a preview - click here to buy the full publication



IEC 61300-3-43

Edition 1.0 2009-01

INTERNATIONAL STANDARD

**Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –
Part 3-43: Examinations and measurements – Mode transfer function measurement for fibre optic sources**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

R

ICS 33.180.20

ISBN 978-2-88910-501-4

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references	5
3 General description	5
4 Theory.....	5
4.1 Alternative method	7
4.2 Mode power distribution	7
4.3 Constraints.....	8
5 Apparatus.....	9
5.1 General.....	9
5.2 Test sample	9
5.3 Sample positioning device.....	9
5.4 Optical system.....	10
5.5 Camera	10
5.6 Video digitiser	10
5.7 Calibration.....	10
6 Procedure	11
6.1 Mounting and aligning the sample	11
6.2 Optimisation	11
6.3 Acquiring the data	11
7 Calculations	11
7.1 Background level subtraction.....	11
7.2 Location of centroid of intensity profile	12
7.3 Differentiating the intensity profile	12
7.4 Computing the MTF.....	13
8 Results	14
Annex A (informative)	16
Bibliography.....	18
Figure 1 – Example of normalised MTF.....	7
Figure 2 – Example of normalised MPD	8
Figure 3 – Schematic of measurement apparatus.....	9
Figure 4 – Location of fibre centre using symmetry computation	13
Figure A.1 – Sensitivity of MTF and MPD to core diameter.....	16
Figure A.2 – Sensitivity of MTF and MPD to profile factor	17

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC INTERCONNECTING DEVICES
AND PASSIVE COMPONENTS –
BASIC TEST AND MEASUREMENT PROCEDURES –**

**Part 3-43: Examinations and measurements –
Mode transfer function measurement for fibre optic sources**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61300-3-43 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This standard cancels and replaces IEC/PAS 61300-3-43, published in 2006. This first edition constitutes a technical revision.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/2780/FDIS	86B/2810/RVD

Full information on the voting for the approval of this standard 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 maintenance result 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 standard may be issued at a later date.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 3-43: Examinations and measurements – Mode transfer function measurement for fibre optic sources

1 Scope

This part of IEC 61300 describes the method for measuring the mode transfer function (MTF) to be used in characterising the launch conditions for measurements of attenuation and or return loss of multimode passive components. The MTF may be measured at the operational wavelengths.

2 Normative references

The following referenced documents are indispensable for the application 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 61300-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

IEC 61300-3-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-4: Examination and measurements – Attenuation*

IEC 60793-1-20, *Optical fibres – Part 1-20: Measurement methods and test procedures – Fibre geometry*