IEC 61300-3-43

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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

Dispositifs d'interconnexion et composants passifs fibroniques – Procédures fondamentales d'essais et de mesures –
Partie 3-43: Examens et mesures – Mesure de la fonction de transfert modal pour sources fibroniques

IEC 61300-3-43:2009 (en-fr)

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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.

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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*

3 General description

The modal distribution launched into multimode fibre can vary widely with different light sources. This variation in launched modal distribution can result in significant differences in measured attenuation in the same component. The MTF test method gives information about the launched modal distribution (LMD) condition in a measured component. The MTF test method is based on a measurement of the near-field intensity distribution in the fibre [1], [2][1].

4 Theory

For a fibre with a power-law index profile $n(r)$, given by,

$$n(r) = n_1\left[1 - 2\Delta\left(\frac{r}{a}\right)^{\alpha}\right]^{0,5} \quad \left(\frac{r}{a}\right) \leq 1 \qquad (1)$$

where

a is the fibre core radius;

α is the profile factor (α = 2 for a parabolic profile);

[1] Figures in square brackets refer to the Bibliography.