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INTERNATIONAL STANDARD



Fibre optic interconnecting devices and passive components – Basic test and measurement procedures

**Part 3-53: Examinations and measurements – Encircled angular flux (EAF)
measurement method based on two-dimensional far field data from ~~step-index~~
multimode waveguide (including fibre)**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

**Part 3-53: Examinations and measurements – Encircled angular
flux (EAF) measurement method based on two-dimensional
far field data from ~~step-index~~ multimode waveguide (including fibre)**

FOREWORD

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International Standard IEC 61300-3-53 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86:Fibre optics.

This second edition cancels and replaces the first edition in 2015. This edition constitutes a technical revision.

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

- a) the scope of the applicable wave guides, and graded index multimode optical wave guide and fibre have been included;
- b) the structure of 5.3 has been rearranged;
- c) Annex C and Annex D have been added.

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

FDIS	Report on voting
86B/4343/FDIS	86B/4373/RVD

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 61300, published under the general title *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures*, can be found on the IEC website.

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

Part 3-53: Examinations and measurements – Encircled angular flux (EAF) measurement method based on two-dimensional far field data from ~~step index~~ multimode waveguide (including fibre)

1 Scope

This part of IEC 61300 ~~is intended to characterize~~ defines the encircled angular flux ~~of~~ measurement ~~step index~~ of multimode waveguide light sources, in which most of the transverse modes are excited. The term "waveguide" is understood to include both channel waveguides and optical fibres but not slab waveguides ~~in this standard~~.

~~Encircled angular flux (EAF) is the fraction of the total optical power radiating from a step index multimode waveguide's core within a certain solid angle. The EAF is measured as a function of the numerical aperture full angle. The basic approach is to collect, for every measurement, two dimensional far field data using a calibrated camera and to convert them mathematically into encircled angular flux.~~

The applicable fibre types are the followings:

- A1 specified in IEC 60793-2-10;
- A3 specified in IEC 60793-2-30;
- A4 specified in IEC 60793-2-40.

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 60793-2-10, *Optical fibres – Part 2-10: Product specifications – Sectional specification for category A1 multimode fibres*

IEC 60793-2-30, *Optical fibres – Part 2-30: Product specifications – Sectional specification for category A3 multimode fibres*

IEC 60793-2-40, *Optical fibres – Part 2-40: Product specifications – Sectional specification for category A4 multimode fibres*

IEC 60825-1, *Safety of laser products – Part 1: Equipment classification and requirements*

IEC 61300-1:2016, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 1: General and guidance*

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Fibre optic interconnecting devices and passive components – Basic test and measurement procedures

Part 3-53: Examinations and measurements – Encircled angular flux (EAF) measurement method based on two-dimensional far field data from multimode waveguide (including fibre)

Dispositifs d'interconnexion et composants passifs fibroniques – Procédures fondamentales d'essais et de mesures –

Partie 3-53: Examens et mesures – Méthode de mesure du flux angulaire inscrit (EAF) fondée sur les données bidimensionnelles de champ lointain d'un guide d'ondes multimodal (fibre incluse)



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3-53: Examinations and measurements – Encircled angular flux (EAF) measurement method based on two-dimensional far field data from multimode waveguide (including fibre)

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1 Scope

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The applicable fibre types are the followings:

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

DISPOSITIFS D'INTERCONNEXION ET COMPOSANTS PASSIFS FIBRONIQUES – PROCÉDURES FONDAMENTALES D'ESSAIS ET DE MESURES –

Partie 3-53: Examens et mesures – Méthode de mesure du flux angulaire inscrit (EAF) fondée sur les données bidimensionnelles de champ lointain d'un guide d'ondes multimodal (fibre incluse)

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La Norme internationale IEC 61300-3-53 a été établie par le sous-comité 86B: Dispositifs d'interconnexion et composants passifs à fibres optiques, du comité d'études 86 de l'IEC: Fibres optiques

Cette deuxième édition annule et remplace la première édition parue en 2015. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) la portée des guides d'ondes applicables, ainsi que la fibre et le guide d'ondes optiques multimodaux à gradient d'indice ont été inclus;
- b) restructuration de 5.3;
- c) ajout de l'Annexe C et de l'Annexe D.

Le texte de cette Norme internationale est issu des documents suivants:

FDIS	Rapport de vote
86B/4343/FDIS	86B/4373/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette Norme internationale.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 61300, publiées sous le titre général, *Dispositifs d'interconnexion et composants passifs fibroniques – Procédures fondamentales d'essais et de mesures* peut être consultée sur le site web de l'IEC.

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- remplacé par une édition révisée, ou
- amendé.

IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de cette publication indique qu'elle contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer cette publication en utilisant une imprimante couleur.

Le contenu du corrigendum 1 (2023-06) a été pris en considération dans cet exemplaire.

**DISPOSITIFS D'INTERCONNEXION
ET COMPOSANTS PASSIFS FIBRONIQUES –
PROCÉDURES FONDAMENTALES D'ESSAIS ET DE MESURES –**

Partie 3-53: Examens et mesures – Méthode de mesure du flux angulaire inscrit (EAF) fondée sur les données bidimensionnelles de champ lointain d'un guide d'ondes multimodal (fibre incluse)

1 Domaine d'application

La présente partie de l'IEC 61300 définit la mesure du flux angulaire inscrit de sources de rayonnement lumineux dotées d'un guide d'ondes multimodal, pour lequel la plupart des modes transversaux sont excités. On considère que le terme "guide d'ondes" inclut à la fois des guides d'ondes de canal et des fibres optiques, mais pas des guides d'ondes rectangulaires rigides.

Les types de fibres applicables sont les suivants:

- A1 spécifié dans l'IEC 60793-2-10;
- A3 spécifié dans l'IEC 60793-2-30;
- A4 spécifié dans l'IEC 60793-2-40.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60793-2-10, *Fibres optiques – Partie 2-10: Spécifications de produits – Spécification intermédiaire pour les fibres multimodales de catégorie A1*

IEC 60793-2-30, *Optical fibres – Part 2-30: Product specifications – Sectional specification for category A3 multimode fibres* (Disponible en anglais seulement)

IEC 60793-2-40, *Fibres optiques – Partie 2-40: Spécifications de produits – Spécification intermédiaire pour les fibres multimodales de catégorie A4*

IEC 60825-1, *Sécurité des appareils à laser – Partie 1: Classification des matériels et exigences*

IEC 61300-1:2016, *Dispositifs d'interconnexion et composants passifs fibroniques – Procédures fondamentales d'essais et de mesures – Partie 1: Généralités et lignes directrices*