

<b>STN</b>	<b>Optické vlákna. Časť 1-43: Metódy merania a skúšobné postupy. Meranie numerickej apertúry.</b>	<b>STN EN 60793-1-43</b>  35 9213
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Optical fibres - Part 1-43: Measurement methods and test procedures - Numerical aperture measurement

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/15

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**Optical fibres - Part 1-43: Measurement methods and test procedures - Numerical aperture measurement (IEC 60793-1-43:2015)**

Fibres optiques - Partie 1-43 : Méthodes de mesure et procédures d'essai - Mesure de l'ouverture numérique (IEC 60793-1-43:2015)

Lichtwellenleiter - Teil 1-43: Messmethoden und Prüfverfahren - Numerische Apertur (IEC 60793-1-43:2015)

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## Foreword

The text of document 86A/1566/CDV, future edition 2 of IEC 60793-1-43, prepared by SC 86A "Fibres and cables" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60793-1-43:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-02-01
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-05-01

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60793-1-1	-	Optical fibres - Part 1-1: Measurement methods and test procedures - General and guidance	EN 60793-1-1	-
IEC 60793-1-21	-	Optical fibres - Part 1-21: Measurement methods and test procedures - Coating geometry	EN 60793-1-21	-
IEC 60793-1-22	-	Optical fibres - Part 1-22: Measurement methods and test procedures - Length measurement	EN 60793-1-22	-
IEC 60793-2-10	-	Optical fibres - Part 2-10: Product specifications - Sectional specification for category A1 multimode fibres	EN 60793-2-10	-
IEC 60793-2-20	-	Optical fibres - Part 2-20: Product specifications - Sectional specification for category A2 multimode fibres	EN 60793-2-20	-
IEC 60793-2-30	-	Optical fibres - Part 2-30: Product specifications - Sectional specification for category A3 multimode fibres	EN 60793-2-30	-
IEC 60793-2-40	-	Optical fibres - Part 2-40: Product specifications - Sectional specification for category A4 multimode fibres	EN 60793-2-40	-



# INTERNATIONAL STANDARD



**Optical fibres –  
Part 1–43: Measurement methods and test procedures– Numerical aperture  
measurement**





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# INTERNATIONAL STANDARD



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**Optical fibres –  
Part 1–43: Measurement methods and test procedures– Numerical aperture  
measurement**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references.....	6
3 Overview of method.....	6
4 Reference test method.....	7
5 Apparatus.....	8
5.1 Input system .....	8
5.1.1 Light source.....	8
5.1.2 Input optics .....	8
5.1.3 Fibre input end support and alignment.....	8
5.1.4 Cladding mode stripper .....	8
5.2 Output system and detection .....	8
5.2.1 General .....	8
5.2.2 Technique 1 – Angular scan (see Figure 2).....	9
5.2.3 Technique 2 – Angular scan (see Figure 3).....	10
5.2.4 Technique 3 – Scan of the spatial field pattern (see Figure 4) .....	10
5.2.5 Technique 4 – Inverse far-field measurement (see Figure 5, applicable to subcategory A4d fibres).....	12
6 Sampling and specimens .....	13
6.1 Specimen length .....	13
6.2 Specimen endface.....	13
7 Procedure .....	13
8 Calculations .....	13
8.1 Far-field versus maximum theoretical value .....	13
8.2 Threshold intensity angle, $\theta_k$ .....	14
8.3 Numerical aperture, $NA_{ff}$ .....	14
8.4 Calculating far-field intensity pattern when using Technique 3.....	15
8.5 Calculating NA when using Technique 4 .....	15
9 Results.....	15
9.1 Information available with each measurement.....	15
9.2 Information available upon request .....	16
10 Specification information.....	16
Annex A (informative) Mapping NA measurement to alternative lengths .....	17
A.1 Introductory remark .....	17
A.2 Mapping long length $NA_{ff}$ measurement to short length $NA_{ff}$ measurement.....	17
Annex B (normative) Product specific default values for NA measurement.....	18
B.1 Introductory remark .....	18
B.2 Table of default values used in NA measurement for multimode products .....	18
Figure 1 – Representative refractive index profile for a graded index multimode fibre .....	7
Figure 2 – Technique 1 – Angular scan .....	9
Figure 3 – Technique 2 – Angular scan .....	10
Figure 4 – Technique 3 – Scan of the spatial field pattern.....	11



Figure 5 – Technique 4 – Inverse far-field method .....	13
Figure 6 – Example of a far-field NA measurement .....	14
Figure 7 – Sample output of an A4d fibre measured using Technique 4 .....	15
Table B.1 – Default values for parameters used in the far-field NA measurement of multimode fibres .....	18

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## OPTICAL FIBRES –

**Part 1–43: Measurement methods and test procedures–  
Numerical aperture measurement**

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International Standard IEC 60793-1-43 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 revision.

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

- expansion of the scope to include A1, A2, A3 and A4 multimode fibre categories;
- addition of measurement parameters of sample length and threshold values, product specific to the variables that are now found in the product specifications;
- a new Annex B entitled "Product specific default values for NA measurement";
- addition of a new Technique 4 for measuring NA of A4d fibres;

- a new Annex A entitled "Mapping NA measurement to alternative lengths" that gives a mapping function to correlate shorter sample length measurements to the length suggested in the reference test method  $N_{a_{ff}}$ .

This International Standard is to be used in conjunction with IEC 60793-1-1, IEC 60793-1-21 and IEC 60793-1-22.

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

CDV	Report on voting
86A/1566/CDV	86A/1622/RVC

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.

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

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- withdrawn,
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## OPTICAL FIBRES –

### Part 1–43: Measurement methods and test procedures– Numerical aperture measurement

#### 1 Scope

This part of IEC 60793 establishes uniform requirements for measuring the numerical aperture of optical fibre, thereby assisting in the inspection of fibres and cables for commercial purposes.

The numerical aperture (NA) of categories A1, A2, A3 and A4 multimode fibre is an important parameter that describes a fibre's light-gathering ability. It is used to predict launching efficiency, joint loss at splices, and micro/macrobending performance.

The numerical aperture is defined by measuring the far-field pattern ( $NA_{ff}$ ). In some cases the theoretical numerical aperture ( $NA_{th}$ ) is used in the literature, which can be determined from measuring the difference in refractive indexes between the core and cladding. Ideally these two methods should produce the same value.

#### 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.

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

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