

Optical fibres - Part 1-44: Measurement methods and test procedures - Cut-off wavelength

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English version

**Optical fibres -
Part 1-44: Measurement methods and test procedures -
Cut-off wavelength
(IEC 60793-1-44:2011)**

Fibres optiques -
Partie 1-44: Méthodes de mesure et
procédures d'essai -
Longueur d'onde de coupure
(CEI 60793-1-44:2011)

Lichtwellenleiter -
Messmethoden und Prüfverfahren -
Teil 1-44: Grenzwellenlänge
(IEC 60793-1-44:2011)

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 86A/1369/FDIS, future edition 2 of IEC 60793-1-44, prepared by SC 86A, Fibres and cables, of IEC TC 86, Fibre optics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60793-1-44 on 2011-05-25.

This European Standard supersedes EN 60793-1-44:2002.

The main change with respect to EN 60793-1-44:2002 is the withdrawal of Annex D.

Annexes A, B and C form an integral part of EN 60793-1-44:2011.

This standard should be read in conjunction with EN 60793-1-1.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

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|--|-------|------------|
| – latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement | (dop) | 2012-02-25 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2014-05-25 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60793-1-44:2011 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60793-2-10	NOTE	Harmonized as EN 60793-2-10.
IEC 60793-2-50	NOTE	Harmonized as EN 60793-2-50.
IEC 60793-2-60	NOTE	Harmonized as EN 60793-2-60.

Annex ZA
(normative)

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

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.

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

<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 60793-1-40 (mod)	-	Optical fibres - Part 1-40: Measurement methods and test procedures - Attenuation	EN 60793-1-40	-

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OPTICAL FIBRES –

Part 1-44: Measurement methods and test procedures – Cut-off wavelength

1 Scope

This part of IEC 60793 establishes uniform requirements for measuring the cut-off wavelength of single-mode optical fibre, thereby assisting in the inspection of fibres and cables for commercial purposes.

This standard gives the methods for measuring the cut-off wavelength of fibre and cable

There are two methods for measuring cable cut-off wavelength, λ_{CC} :

- Method A: using uncabled fibre;
- Method B: using cabled fibre.

There is only one method (Method C) for measuring fibre cut-off wavelength, λ_c .

The test method in this standard describes procedures for determining the cut-off wavelength of a sample fibre in either an uncabled condition (λ_c) or in a cable (λ_{CC}). Three default configurations are given here: any different configuration will be given in a detail specification. These procedures apply to all category B and C fibre types (see Normative references).

All methods require a reference measurement. There are two reference-scan techniques, either or both of which may be used with all methods:

- bend-reference technique;
- multimode-reference technique using category A1 multimode fibre.

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

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

3 Background

Theoretical cut-off wavelength is the shortest wavelength at which only the fundamental mode can propagate in a single-mode fibre, as computed from the refractive index profile of the fibre.

In optical fibres, the change from multimode to single-mode behaviour does not occur at an isolated wavelength, but rather smoothly over a range of wavelengths. For purposes of