IEC 60793-1-46

Edition 2.0 2024-06
COMMENTED VERSION

INTERNATIONAL STANDARD

colour inside

Optical fibres –
Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation

IEC 60793-1-46:2024-06 CMV(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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OPTICAL FIBRES –

Part 1-46: Measurement methods and test procedures – Monitoring of changes in ~~optical transmittance~~ attenuation

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.
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This commented version (CMV) of the official standard IEC 60793-1-46:2024 edition 2.0 allows the user to identify the changes made to the previous IEC 60793-1-46:2001 edition 1.0. Furthermore, comments from IEC SC 86A experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 60793-1-46 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This second edition cancels and replaces the first edition published in 2001. This edition constitutes a technical revision.

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

a) inclusion of class C single mode intraconnection fibre;
b) replacement of 'optical transmittance' by 'attenuation'.

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

Draft	Report on voting
86A/2442/FDIS	86A/2475/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

IEC 60793-1-1 and IEC 60793-1-2 cover generic specifications.

IEC 60793-1-4X consists of the following parts, under the general title: *Optical fibres*:

– *Part 1-40: Measurement methods and test procedures – Attenuation*
– *Part 1-41: Measurement methods and test procedures – Bandwidth*
– *Part 1-42: Measurement methods and test procedures – Chromatic dispersion*
– *Part 1-43: Measurement methods and test procedures – Numerical aperture*
– *Part 1-44: Measurement methods and test procedures – Cut-off wavelength*
– *Part 1-45: Measurement methods and test procedures – Mode field diameter*
– *Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation*
– *Part 1-47: Measurement methods and test procedures – Macrobending loss*
– *Part 1-48: Measurement methods and test procedures – Polarization mode dispersion*
– *Part 1-49: Measurement methods and test procedures – Differential mode delay*

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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- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

Publications in the IEC 60793-1 series concern measurement methods and test procedures as they apply to optical fibres.

Within the same series several different areas are grouped, as follows:

- ~~parts 1-10 to 1-19: General~~
- IEC 60793-1-20 to IEC 60793-1-29: *Measurement methods and test procedures for dimensions*
- IEC 60793-1-30 to IEC 60793-1-39: *Measurement methods and test procedures for mechanical characteristics*
- IEC 60793-1-40 to IEC 60793-1-49: *Measurement methods and test procedures for transmission and optical characteristics*
- IEC 60793-1-50 to IEC 60793-1-59: *Measurement methods and test procedures for environmental characteristics*
- IEC 60793-1-60 to IEC 60793-1-69: *Measurement methods and test procedures for polarization-maintaining fibres*

OPTICAL FIBRES –

Part 1-46: Measurement methods and test procedures – Monitoring of changes in ~~optical transmittance~~ attenuation 1

1 Scope

This part of IEC 60793 establishes uniform requirements for the monitoring of changes in ~~optical transmittance~~ attenuation, thereby assisting in the inspection of fibres and cables for commercial purposes.

This document gives two methods for monitoring the changes in ~~optical transmittance~~ attenuation of optical fibres and cables that occur during mechanical or environmental testing, or both. It provides a monitor in the change of ~~optical transmission~~ attenuation characteristics arising from optical discontinuity, physical defects and modifications of the attenuation slope:

– method A: change in ~~transmittance~~ attenuation by transmitted power;

– method B: change in ~~transmittance~~ attenuation by backscattering.

Methods A and B apply to the monitoring of all categories of the following fibres:

– class A: multimode fibres;

– class B: single-mode fibres;

– class C: single-mode intraconnection fibres. 2

Information common to both measurements is contained in Clause 1 to Clause 10, and information pertaining to each individual method appears in Annex A, and Annex B respectively.

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

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

4 Reference test method

~~Under consideration.~~

There are no reference test methods indicated in this document. 3

5 Apparatus

Annex A and Annex B include layout drawings and other equipment requirements that individually apply for each of the methods, respectively.

6 Sampling ~~and specimens~~ 4

6.1 ~~Specimen~~ Sample length

The minimum length of the ~~specimen~~ sample shall be such that the changes in attenuation are compatible with the resolution of the applicable test method (method A or method B), measurement apparatus, and the non-linearities at the beginning and end of it shall not affect the results.

6.2 ~~Specimen~~ Sample end face

Prepare a flat end face, orthogonal to the fibre axis, at the input and output ends of each ~~specimen~~ sample.

6.3 ~~Specimen~~ Sample preparation

Prepare the ~~specimen~~ sample as described in the appropriate mechanical, environmental, or other test method specified.

6.4 Reference ~~specimen~~ sample

In methods where a reference ~~specimen~~ sample is used, it shall comprise an identical kind of optical fibre or cable to the ~~specimen~~ sample and shall be linked between the optical divider and detector, as shown in Figure A.1. It ~~may~~ can be a short length of fibre. The condition of the reference ~~specimen~~ sample shall be constant during the whole test.

7 Procedure

For individual procedures, see appropriate annex: Annex A and Annex B, respectively.

8 Calculations

For calculation procedures, see the appropriate annex: Annex A and Annex B, respectively.

9 Results

9.1 Information to be provided with each measurement

Report the following information with each measurement:

– date and title of measurement;
– identification of ~~specimen~~ sample;
– optical source wavelength, λ;
– ~~specimen~~ sample length;
– conditions of the environment and measurement equipment;

– changes in ~~optical transmittance, D_n~~ attenuation, A_n; n = 1,2,3, … preferably plotted in a graph versus test parameters.

9.2 Information available upon request

The following information shall be available upon request:

– measurement method used: A or B;
– type of optical source used and its spectral width (FWHM);
– launching technique used;
– description of all key equipment;
– details of computation technique;
– date of latest calibration of measurement equipment.

10 Specification information

The detail specification shall specify the following information:

– type of fibre to be measured;
– failure or acceptance criteria;
– information to be reported;
– any deviations from the procedure that apply.

Annex A
(normative)

Requirements specific to method A – Change in ~~transmittance~~ attenuation by transmitted power

A.1 Apparatus

A.1.1 General

The arrangement shall provide a monitoring for ~~optical transmittance~~ attenuation with high resolution and good stability over the time and temperature changes given in the relevant product specification.

Figure A.1 is an example of a typical arrangement suitable for use when carrying out mechanical or environmental tests in a laboratory or factory. By comparison with a reference sample, it provides a measurement of the change in ~~optical transmittance~~ attenuation, corrected for any changes that might occur in the optical source. Connections shall have stable coupling conditions.

Figure A.2 is an example of a typical arrangement suitable for use in the field, laboratory, or factory where long-term tests are required, in cases where it is possible to stabilize the optical source by optical feedback. If the stability of the optical source is compatible with the accuracy necessary for the measurement, then the insertion loss measurement method (method B of IEC 60793-1-40) ~~may~~ can be used.

A.1.2 Optical source

Use a suitable source such as a laser or light-emitting diode, emitting at wavelengths compatible with the optical fibres under test. It is customary to modulate the optical source and wavelength selective optical filters ~~may~~ can be used.

A.1.3 Optical divider

The optical divider shall have a splitting ratio that remains constant during the test. The splitting ratio and temperature stability shall be as shown in the relevant detail specification. Commercially available or custom-built devices ~~may~~ can be used.

A.1.4 Optical detector

The optical detector shall be of sufficient area to intercept all of the radiated power in the output cone and shall be sufficiently linear over the optical powers encountered.

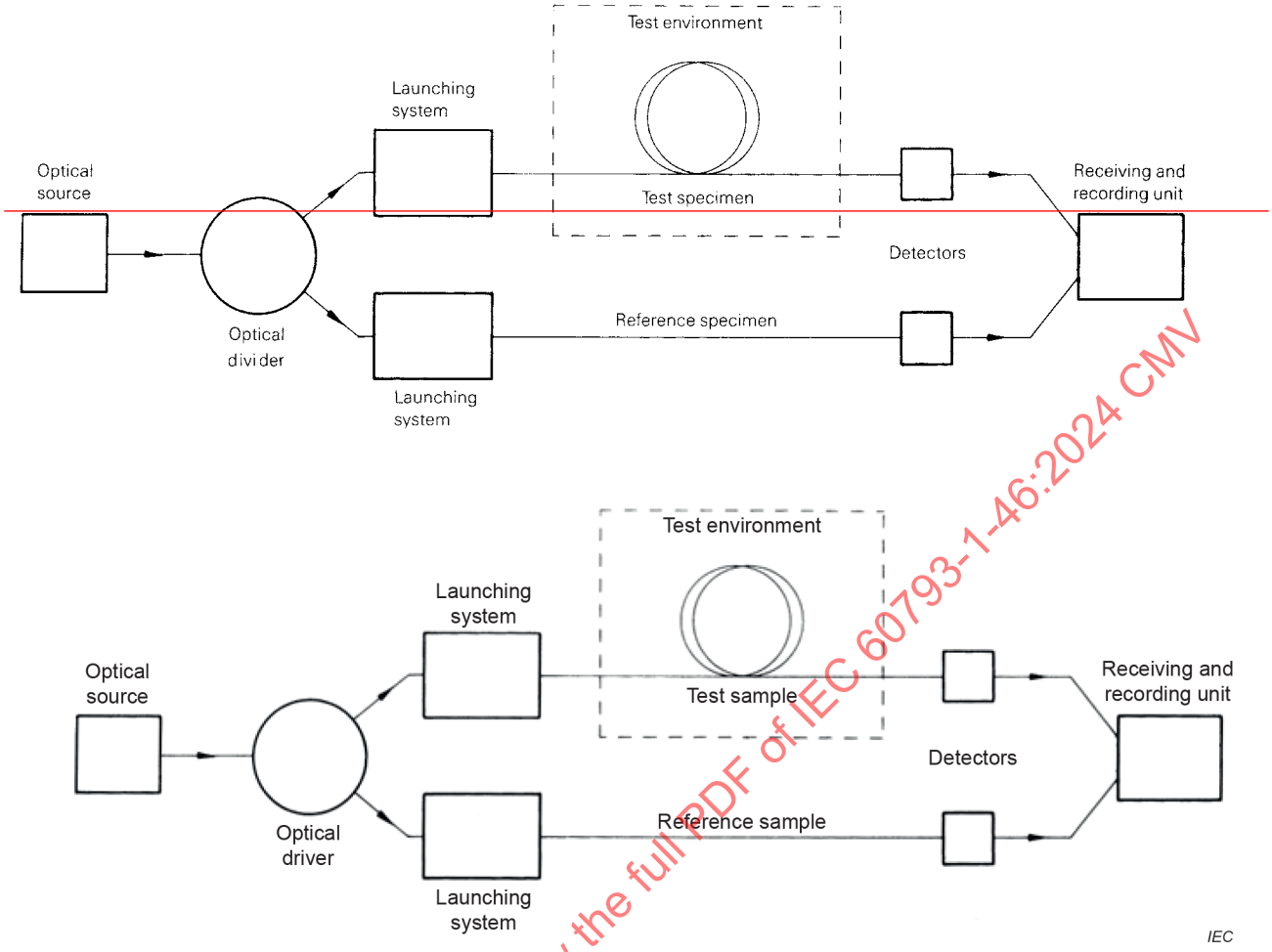

Figure A.1 – Measurement of change in ~~optical transmittance~~ attenuation using reference ~~specimen~~ sample

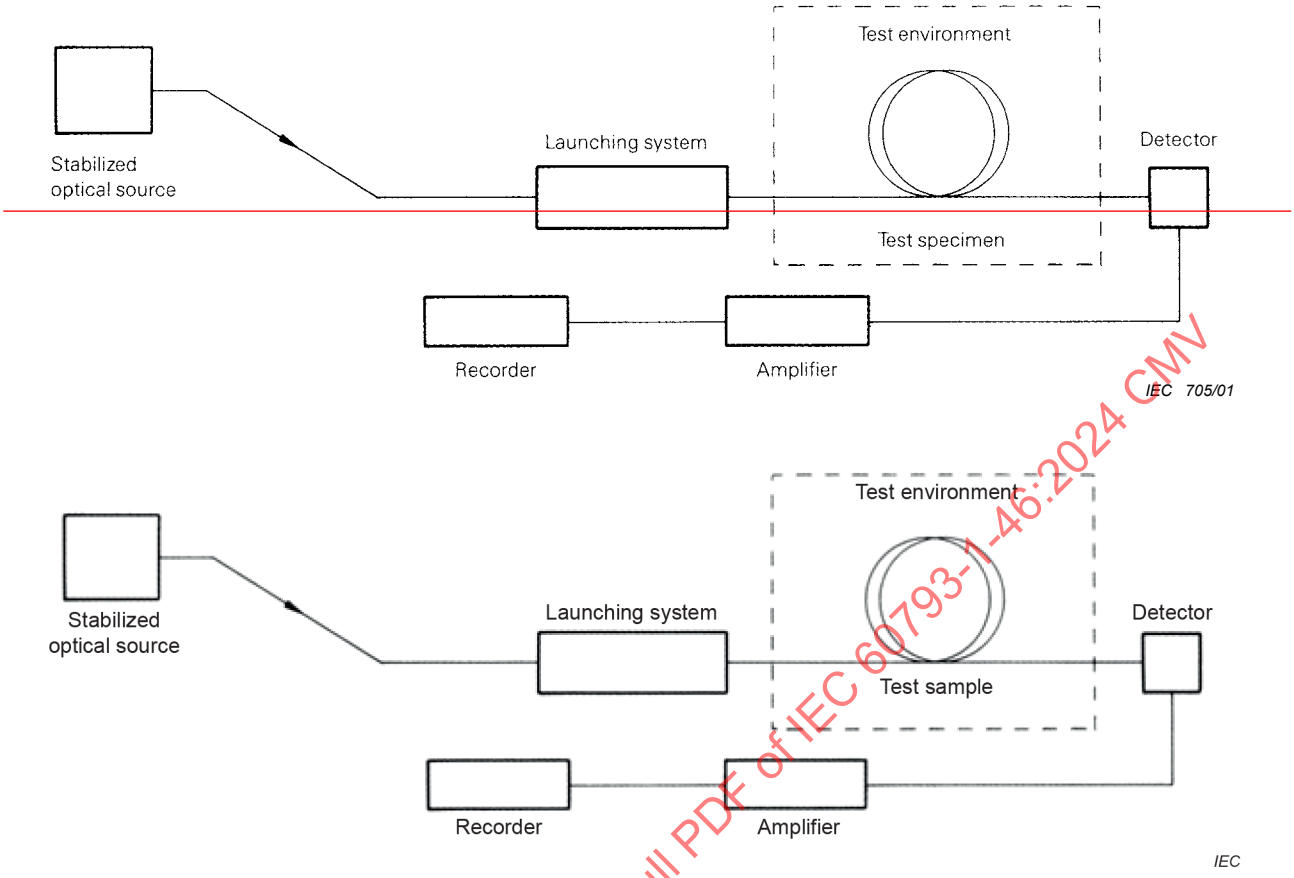

Figure A.2 – Measurement of change in ~~optical transmittance~~ attenuation using stabilized source

The optical detector shall have a sufficiently uniform response over the active area and range of incidence angle at the measurement wavelength to ensure the movement of the output cone in position or angle relative to the detector. This shall be within the limits determined by the mechanical design of the measurement equipment and shall not significantly affect the results.

Where more than one detector is used, as in the arrangement shown in Figure A.1, the detectors shall be of the same manufacturer and model and be of comparable linearity.

A.1.5 Launch apparatus

Provide apparatus to produce a full or restricted launch, depending on the parameter being measured, with conditions as shown in IEC 60793-1-40, methods A and B, for both multimode and single-mode fibre. Use cladding mode strippers at the source and detector ends of the ~~specimen~~ sample, and of the reference ~~specimen~~ sample if used.

A.2 Procedure

Before the test sequence, measure the initial optical power, $P_{0t,}$ from the test ~~specimen~~ sample and, in the case of Figure A.1, the initial optical output power, P_{0r}, from the reference ~~specimen~~ sample.

During the test sequence specified in the appropriate mechanical, environmental, or other test being carried out, measure the subsequent optical output powers, P_{nt} (n = 1, 2, 3, ...), from the test ~~specimen~~ sample and, in the case of Figure A.1, the subsequent powers, P_{nr}, from the reference ~~specimen~~ sample.

In the above measurements, quantities proportional to the absolute power, rather than the absolute powers themselves, ~~may~~ can be measured. In the case of Figure A.1, the proportionality factor ~~may~~ can differ between the test and reference channels. The proportionality factor(s) shall remain constant for the duration of the test sequence.

A.3 Calculations 5

Calculate the changes in ~~optical transmittance~~ attenuation during the test sequence ~~(in decibels)~~

for Figure A.1:

~~$$D_n = 10 \log_{10} \frac{P_{0r} \times P_{nt}}{P_{0t} \times P_{nr}}$$~~

$$A_n = 10 \log_{10} \left((P_{0t} \times P_{nr}) / (P_{0r} \times P_{nt}) \right) \quad \text{(A.1)}$$

for Figure A.2:

~~$$D_n = 10 \log_{10} \frac{P_{nt}}{P_{0t}}$$~~

$$A_n = 10 \log_{10} (P_{0t} / P_{nt}) \quad \text{(A.2)}$$

where

~~D_n~~ A_n is the change in ~~optical transmittance~~ attenuation during the sequence, in dB;

P_{0t} is the initial optical output power from the test ~~specimen~~ sample, in mW;

P_{0r} is the initial optical output power from the reference ~~specimen~~ sample, in mW;

P_{nt} is the subsequent optical output power from the test ~~specimen~~ sample, in mW;

P_{nr} is the subsequent optical output power from the reference ~~specimen~~ sample, in mW.

Annex B
(normative)

Requirements specific to method B – Change in ~~transmittance~~ attenuation by backscattering

B.1 Apparatus

See IEC 60793-1-40, method C – Backscattering.

B.2 Procedure

B.2.1 Align the fibre under test to the coupling device.

B.2.2 Analyse the backscattering power by a signal processor and record it on a logarithmic scale.

B.2.3 Choose two points, A and B, on the curve corresponding to the beginning and the end of the fibre or cable under test.

B.2.4 If necessary, make measurements from both sides.

B.2.5 Record the following values:

– initial power levels P_{A0} and P_{B0} at points A and B (dB);

– subsequent power levels P_{An} and P_{Bn} at points A and B (dB).

B.2.6 Record the aspects of the curves for comparison before, at intervals during, and after the test sequence, as specified.

B.3 Calculations 6

For smooth backscattering curves, determine the change in attenuation at the different intervals of the loss curve by the difference:

~~$D_n = (P_{A0} - P_{B0}) - (P_{An} - P_{Bn})$~~

$$A_n = (P_{An} - P_{Bn}) - (P_{A0} - P_{B0}) \quad \text{(B.1)}$$

In other cases, take care in the interpretation of the results.

For a more detailed interpretation of results of backscattering, see IEC 60793-1-40, C.5.

List of comments

1 “Change in attenuation” is a commonly used term in many IEC 60794 and IEC 60793 series standards while referring to IEC 60793-1-46. For consistency, “optical transmittance” is replaced by “attenuation”.

2 IEC 60793-1-46:2001 was published before IEC 60793-2-60:2008 specifying category C single mode fibre. IEC 60793-2-60 refers to IEC 60793-1-46 for measuring change in attenuation. Therefore, category C fibre is included in this revision.

3 The test method either A or B to be selected based on the length of the samples available for measurement, measurement accuracy or any other measurement conditions. Most preferred method is depending on these conditions. Typically, for shorter length samples Method A is preferred. For example, IEC 60794-1-104 specifies to use Method A of IEC 60793-1-46.

4 “Specimen” is a word normally used in the biological area, usually indicating an individual animal, plant, piece of a mineral, etc., used as an example of its species or type for scientific study or display. Working group experts reach an agreement to use “sample” instead of “specimen” for optical fibre related standards.

5 Equations A.1 and A.2 are revised in accordance with the definition of attenuation replacing optical transmittance.

6 Equation B.1 is revised in accordance with the definition of attenuation replacing optical transmittance.

IEC 60793-1-46

Edition 2.0 2024-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Optical fibres –
Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation

Fibres optiques –
Partie 1-46: Méthodes de mesure et procédures d'essai – Contrôle des variations de l'affaiblissement

IEC 60793-1-46:2024-06(en-fr)

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OPTICAL FIBRES –

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– *Part 1-42: Measurement methods and test procedures – Chromatic dispersion*
– *Part 1-43: Measurement methods and test procedures – Numerical aperture*
– *Part 1-44: Measurement methods and test procedures – Cut-off wavelength*
– *Part 1-45: Measurement methods and test procedures – Mode field diameter*
– *Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation*
– *Part 1-47: Measurement methods and test procedures – Macrobending loss*
– *Part 1-48: Measurement methods and test procedures – Polarization mode dispersion*
– *Part 1-49: Measurement methods and test procedures – Differential mode delay*

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– IEC 60793-1-30 to IEC 60793-1-39: *Measurement methods and test procedures for mechanical characteristics*

– IEC 60793-1-40 to IEC 60793-1-49: *Measurement methods and test procedures for transmission and optical characteristics*

– IEC 60793-1-50 to IEC 60793-1-59: *Measurement methods and test procedures for environmental characteristics*

– IEC 60793-1-60 to IEC 60793-1-69: *Measurement methods and test procedures for polarization-maintaining fibres*

OPTICAL FIBRES –

Part 1-46: Measurement methods and test procedures – Monitoring of changes in attenuation

1 Scope

This part of IEC 60793 establishes uniform requirements for the monitoring of changes in attenuation, thereby assisting in the inspection of fibres and cables for commercial purposes.

This document gives two methods for monitoring the changes in attenuation of optical fibres and cables that occur during mechanical or environmental testing, or both. It provides a monitor in the change of attenuation characteristics arising from optical discontinuity, physical defects and modifications of the attenuation slope:

– method A: change in attenuation by transmitted power;
– method B: change in attenuation by backscattering.

Methods A and B apply to the monitoring of all categories of the following fibres:

– class A: multimode fibres;
– class B: single-mode fibres;
– class C: single-mode intraconnection fibres.

Information common to both measurements is contained in Clause 1 to Clause 10, and information pertaining to each individual method appears in Annex A, and Annex B respectively.

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 60793-1-40, *Optical fibres – Part 1-40: Attenuation measurement methods*

3 Terms and definitions

No terms and definitions are listed in this document.

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- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

4 Reference test method

There are no reference test methods indicated in this document.

5 Apparatus

Annex A and Annex B include layout drawings and other equipment requirements that individually apply for each of the methods, respectively.

6 Sampling

6.1 Sample length

The minimum length of the sample shall be such that the changes in attenuation are compatible with the resolution of the applicable test method (method A or method B), measurement apparatus, and the non-linearities at the beginning and end of it shall not affect the results.

6.2 Sample end face

Prepare a flat end face, orthogonal to the fibre axis, at the input and output ends of each sample.

6.3 Sample preparation

Prepare the sample as described in the appropriate mechanical, environmental, or other test method specified.

6.4 Reference sample

In methods where a reference sample is used, it shall comprise an identical kind of optical fibre or cable to the sample and shall be linked between the optical divider and detector, as shown in Figure A.1. It can be a short length of fibre. The condition of the reference sample shall be constant during the whole test.

7 Procedure

For individual procedures, see appropriate annex: Annex A and Annex B, respectively.

8 Calculations

For calculation procedures, see the appropriate annex: Annex A and Annex B, respectively.

9 Results

9.1 Information to be provided with each measurement

Report the following information with each measurement:

– date and title of measurement;
– identification of sample;
– optical source wavelength, λ;
– sample length;
– conditions of the environment and measurement equipment;
– changes in attenuation, A_n; n = 1,2,3, … preferably plotted in a graph versus test parameters.

9.2 Information available upon request

The following information shall be available upon request:

– measurement method used: A or B;
– type of optical source used and its spectral width (FWHM);
– launching technique used;
– description of all key equipment;
– details of computation technique;
– date of latest calibration of measurement equipment.

10 Specification information

The detail specification shall specify the following information:

– type of fibre to be measured;
– failure or acceptance criteria;
– information to be reported;
– any deviations from the procedure that apply.

Annex A
(normative)

Requirements specific to method A – Change in attenuation by transmitted power

A.1 Apparatus

A.1.1 General

The arrangement shall provide a monitoring for attenuation with high resolution and good stability over the time and temperature changes given in the relevant product specification.

Figure A.1 is an example of a typical arrangement suitable for use when carrying out mechanical or environmental tests in a laboratory or factory. By comparison with a reference sample, it provides a measurement of the change in attenuation, corrected for any changes that might occur in the optical source. Connections shall have stable coupling conditions.

Figure A.2 is an example of a typical arrangement suitable for use in the field, laboratory, or factory where long-term tests are required, in cases where it is possible to stabilize the optical source by optical feedback. If the stability of the optical source is compatible with the accuracy necessary for the measurement, then the insertion loss measurement method (method B of IEC 60793-1-40) can be used.

A.1.2 Optical source

Use a suitable source such as a laser or light-emitting diode, emitting at wavelengths compatible with the optical fibres under test. It is customary to modulate the optical source and wavelength selective optical filters can be used.

A.1.3 Optical divider

The optical divider shall have a splitting ratio that remains constant during the test. The splitting ratio and temperature stability shall be as shown in the relevant detail specification. Commercially available or custom-built devices can be used.

A.1.4 Optical detector

The optical detector shall be of sufficient area to intercept all of the radiated power in the output cone and shall be sufficiently linear over the optical powers encountered.

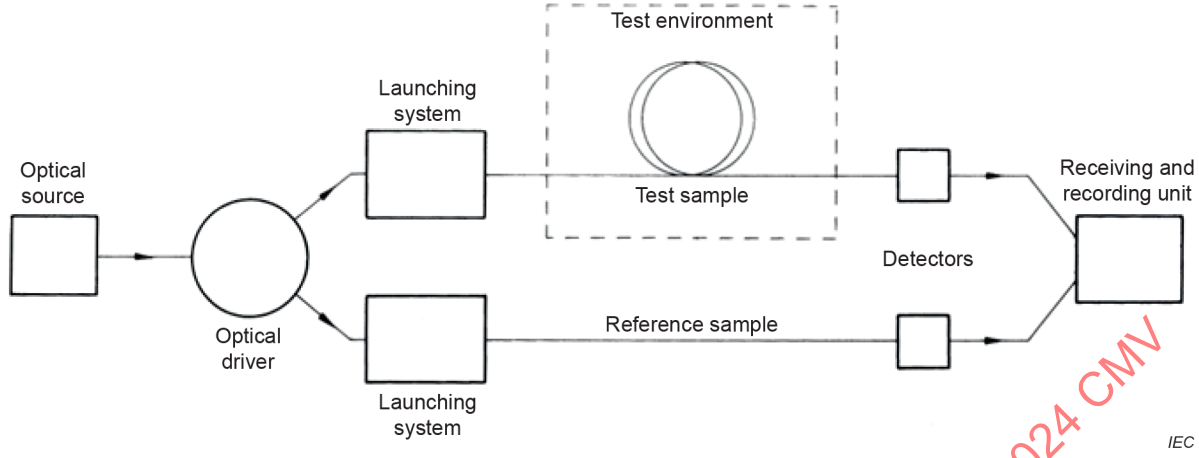

Figure A.1 – Measurement of change in attenuation using reference sample

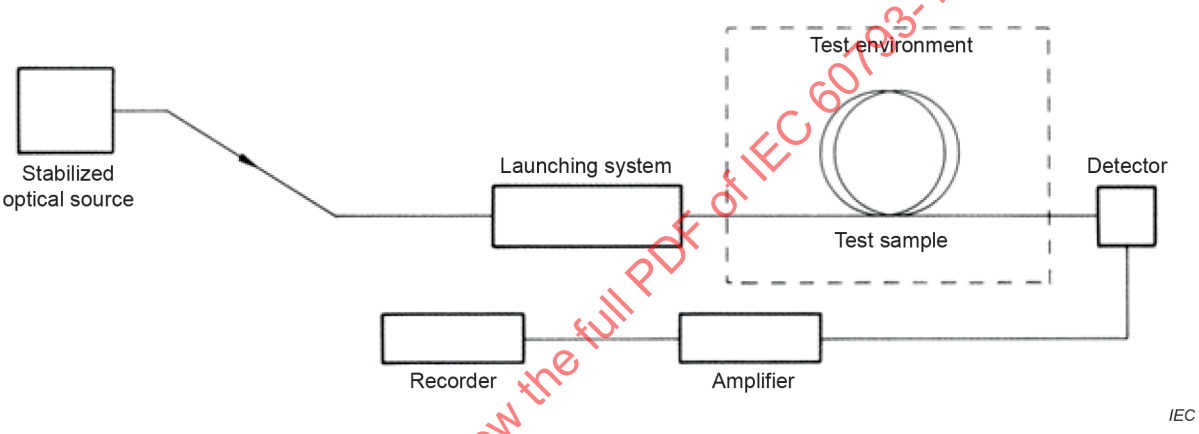

Figure A.2 – Measurement of change in attenuation using stabilized source

The optical detector shall have a sufficiently uniform response over the active area and range of incidence angle at the measurement wavelength to ensure the movement of the output cone in position or angle relative to the detector. This shall be within the limits determined by the mechanical design of the measurement equipment and shall not significantly affect the results.

Where more than one detector is used, as in the arrangement shown in Figure A.1, the detectors shall be of the same manufacturer and model and be of comparable linearity.

A.1.5 Launch apparatus

Provide apparatus to produce a full or restricted launch, depending on the parameter being measured, with conditions as shown in IEC 60793-1-40, methods A and B, for both multimode and single-mode fibre. Use cladding mode strippers at the source and detector ends of the sample, and of the reference sample if used.

A.2 Procedure

Before the test sequence, measure the initial optical power, $P_{0t,}$ from the test sample and, in the case of Figure A.1, the initial optical output power, P_{0r}, from the reference sample.

During the test sequence specified in the appropriate mechanical, environmental, or other test being carried out, measure the subsequent optical output powers, P_{nt} (n = 1, 2, 3, ...), from the test sample and, in the case of Figure A.1, the subsequent powers, P_{nr}, from the reference sample.

In the above measurements, quantities proportional to the absolute power, rather than the absolute powers themselves, can be measured. In the case of Figure A.1, the proportionality factor can differ between the test and reference channels. The proportionality factor(s) shall remain constant for the duration of the test sequence.

A.3 Calculations

Calculate the changes in attenuation during the test sequence

for Figure A.1:

$$A_n = 10 \log_{10}\left((P_{0t} \times P_{nr}) / (P_{0r} \times P_{nt})\right) \quad \text{(A.1)}$$

for Figure A.2:

$$A_n = 10 \log_{10}\left(P_{0t} / P_{nt}\right) \quad \text{(A.2)}$$

where

A_n is the change in attenuation during the sequence, in dB;

P_{0t} is the initial optical output power from the test sample, in mW;

P_{0r} is the initial optical output power from the reference sample, in mW;

P_{nt} is the subsequent optical output power from the test sample, in mW;

P_{nr} is the subsequent optical output power from the reference sample, in mW.

Annex B
(normative)

Requirements specific to method B – Change in attenuation by backscattering

B.1 Apparatus

See IEC 60793-1-40, method C – Backscattering.

B.2 Procedure

B.2.1 Align the fibre under test to the coupling device.

B.2.2 Analyse the backscattering power by a signal processor and record it on a logarithmic scale.

B.2.3 Choose two points, A and B, on the curve corresponding to the beginning and the end of the fibre or cable under test.

B.2.4 If necessary, make measurements from both sides.

B.2.5 Record the following values:

– initial power levels P_{A0} and P_{B0} at points A and B (dB);

– subsequent power levels P_{An} and P_{Bn} at points A and B (dB).

B.2.6 Record the aspects of the curves for comparison before, at intervals during, and after the test sequence, as specified.

B.3 Calculations

For smooth backscattering curves, determine the change in attenuation at the different intervals of the loss curve by the difference:

$$A_n = (P_{An} - P_{Bn}) - (P_{A0} - P_{B0}) \quad \text{(B.1)}$$

In other cases, take care in the interpretation of the results.

For a more detailed interpretation of results of backscattering, see IEC 60793-1-40, C.5.

SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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FIBRES OPTIQUES –

Partie 1-46: Méthodes de mesure et procédures d'essai – Contrôle des variations de l'affaiblissement

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L'IEC 60793-1-46 a été établie par le sous-comité 86A: Fibres et câbles, du comité d'études 86 de l'IEC: Fibres optiques. Il s'agit d'une Norme internationale.

Cette seconde édition annule et remplace la première édition parue en 2001. Cette édition constitue une révision technique.

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

a) ajout de la fibre d'intraconnexion unimodale de classe C;

b) remplacement de l'expression "facteur de transmission optique" par "affaiblissement".

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

Projet	Rapport de vote
86A/2442/FDIS	86A/2475/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

L'IEC 60793-1-1 et l'IEC 60793-1-2 couvrent les spécifications génériques.

L'IEC 60793-1-4X comprend les parties suivantes présentées sous le titre général: *Fibres optiques*:

– *Partie 1-40: Méthodes de mesurage de l'affaiblissement*
– *Partie 1-41: Méthodes de mesure et procédures d'essai – Largeur de bande*
– *Partie 1-42: Méthodes de mesure et procédures d'essai – Dispersion chromatique*
– *Partie 1-43: Méthodes de mesure et procédures d'essai – Mesure de l'ouverture numérique*
– *Partie 1-44: Méthodes de mesure et procédures d'essai – Longueur d'onde de coupure*
– *Partie 1-45: Méthodes de mesure et procédures d'essai – Diamètre du champ de mode*
– *Partie 1-46: Méthodes de mesure et procédures d'essai – Contrôle des variations du facteur de transmission optique*
– *Partie 1-47: Méthodes de mesure et procédures d'essai – Pertes par macrocourbures*
– *Partie 1-48: Méthodes de mesure et procédures d'essai – Dispersion de mode de polarisation*
– *Partie 1-49: Méthodes de mesure et procédures d'essai – Retard différentiel de mode*

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INTRODUCTION

Les publications de la série IEC 60793-1 concernent les méthodes de mesure et les procédures d'essai qui s'appliquent aux fibres optiques.

Cette même série traite des différents domaines regroupés de la façon suivante:

– IEC 60793-1-20 à IEC 60793-1-29: *Méthodes de mesure et procédures d'essai pour les dimensions*

– IEC 60793-1-30 à IEC 60793-1-39: *Méthodes de mesure et procédures d'essai pour les caractéristiques mécaniques*

– IEC 60793-1-40 à IEC 60793-1-49: *Méthodes de mesure et procédures d'essai pour les caractéristiques optiques et de transmission*

– IEC 60793-1-50 à IEC 60793-1-59: *Méthodes de mesure et procédures d'essai pour les caractéristiques environnementales*

– IEC 60793-1-60 à IEC 60793-1-69: *Méthodes de mesure et procédures d'essai pour les fibres à maintien de polarisation*