IEC 60794-1-212

Edition 1.0 2024-04

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Optical fibre cables –
Part 1-212: Generic specification – Basic optical cable test procedures – Environmental test methods – Temperature cycling with cable elements fixed at both ends, Method F12

Câbles à fibres optiques –
Partie 1-212: Spécification générique – Procédures fondamentales d'essais des câbles optiques – Méthodes d'essais d'environnement – Cycle de température avec éléments de câble fixés aux deux extrémités, Méthode F12



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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OPTICAL FIBRE CABLES –

Part 1-212: Generic specification – Basic optical cable test procedures – Environmental test methods – Temperature cycling with cable elements fixed at both ends, method F12

FOREWORD

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IEC 60794-1-212 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics. It is an International Standard.

This document partially cancels and replaces IEC 60794-1-22:2017. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to IEC 60794-1-22:2017:

a) the description of the test method has been changed to “with cable elements fixed at both ends”;
b) subclauses have been added to the procedure clause;

c) the preparation of cable sample and test set-up has been arranged in a logical way;

d) Figure 1 has been added for illustration of the preparation of cable sample, DUT and test set-up;

e) the temperature chamber temperature tolerance has been changed to ± 3 °C as done in IEC 60794-1-22, method F1;

f) all required steps have been added to the subclause for temperature cycling as well as the table for the minimum soak time and the figure for the cycle procedure, and removed the reference to IEC 60794-1-22, method F1;

g) the maximum change in attenuation has been added to the details to be specified;

h) a new subclause 4.5 has been added for details to be reported.

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

Draft	Report on voting
86A/2357/CDV	86A/2409/RVC

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.

A list of all parts in the IEC 60794 series, published under the general title *Optical fibre cables*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- 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

This document defines the test method F12 to measure the attenuation behaviour (change in attenuation) when an optical fibre cable with cable elements fixed at both ends is subjected to temperature cycling. This test assesses the attenuation behaviour of a cable under a no-end movement condition intended for termination with, for example, connectors or passive components.

This document cancels and replaces method F12 of IEC 60794-1-22:2017, which will be withdrawn. It includes an editorial revision, based on the new structure and numbering system for optical fibre cable test methods. Additionally, technical changes were implemented. The environmental tests contained in IEC 60794-1-22:2017 will be individually numbered in the IEC 60794-1-2xx series. Each test method is now considered to be an individual document rather than part of a multi-test method compendium. Full cross-reference details are given in IEC 60794-1-2.

The main performance of a terminated cable is the optical transmission performance during environmental variations (i.e. during temperature changes). Therefore, the test method F12 is recommended to be performed for cables intended to be terminated with connectors. Moreover this method can be optionally used as an indicator for cables terminated with hardened connectors or fixed into a module and the fibres terminated with connectors.

IEC TR 62959 provides information on cable shrinkage characterisation of optical fibre cables that consist of standard glass optical fibres for telecommunication applications. The characterisation is directed to the effects of cable shrinkage or cable element shrinkage on the termination of cables. Recommended test methods for the evaluation of cable shrinkage are provided and classification using a “grading” system are given as guidance.

OPTICAL FIBRE CABLES –

Part 1-212: Generic specification – Basic optical cable test procedures – Environmental test methods – Temperature cycling with cable elements fixed at both ends, method F12

1 Scope

This part of the IEC 60794 series defines the test procedure to examine the attenuation behaviour (change in attenuation) when an optical fibre cable with cable elements fixed at both ends is subjected to temperature cycling. This test assesses the attenuation behaviour of a cable under a no-end movement condition intended for termination with, for example, interconnecting devices or passive components.

NOTE IEC 60794-1-201[1] (method F1) is a general temperature cycling test for cables.

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 60793-1-46, *Optical fibres – Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance*

IEC 60794-1-1, *Optical fibre cables – Part 1-1: Generic specification – General*

IEC 60794-1-2, *Optical fibre cables – Part 1-2: Generic specification – Basic optical cable test procedures – General guidance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60794-1-1 apply.

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

- IEC Electropedia: available at https://www.electropedia.org/
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[1] Under preparation. Stage at the time of publication: IEC FDIS 60794-1-201:2024.