

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Optical fibre cables – **Part 1-301: Generic specification – Basic optical cable test procedures – Cable elements test methods – Bend test, method G1**

Câbles à fibres optiques – **Partie 1-301: Spécification générique – Procédures fondamentales d'essai des câbles optiques – Méthodes d'essai des éléments de câbles – Essai de courbure, méthode G1**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

OPTICAL FIBRE CABLES –

**Part 1-301: Generic specification – Basic optical cable test procedures –
Cable elements test methods – Bend test, method G1**

FOREWORD

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IEC 60794-1-301 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 60794-1-23:2019.

This edition includes the following significant technical changes with respect to IEC 60794-1-23:2019:

- a) reference test method IEC 60793-1-40 removed regarding the apparatus;
- b) information added regarding the temperature to be specified in the detail specification;
- c) new subclause added containing the details to be reported.

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

Draft	Report on voting
86A/2298/FDIS	86A/2318/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.

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- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

This document contains method G1 of IEC 60794-1-23:2019, which will be withdrawn. The optical cable element test methods contained in IEC 60794-1-23:2019 will now be individually numbered in the IEC 60794-1-3xx 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.

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OPTICAL FIBRE CABLES –

Part 1-301: Generic specification – Basic optical cable test procedures – Cable elements test methods – Bend test, method G1

1 Scope

This part of IEC 60794 describes test procedures to be used in establishing uniform requirements of optical fibre cable elements for the mechanical property – bending.

This document applies to optical fibre cables for use with telecommunication equipment and devices employing similar techniques, and to cables having a combination of both optical fibres and electrical conductors.

Throughout the document, the wording "optical cable" can also include optical fibre units, microduct fibre units, etc.

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 60794-1-2, *Optical fibre cables – Part 1-2: Generic specification – Basic optical cable test procedures – General guidance* /standards/sist/0d68ac89-cc5d-436c-8e3d-fac1ac8c72fe/iec-60794-1-301-2023

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

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 General requirements

IEC 60794-1-2 is the reference guide to test methods of all types. It shall be considered for general requirements and definitions.

5 Method G1: Bend test for optical cable elements

5.1 Object

The purpose of this test is to characterize cable elements for splicing purposes by determining the attenuation increase of an optical cable element (fibre, ribbon, core tube, breakout unit, etc.) when bent within a splice closure or similar device.

5.2 Sample

The length of the sample of optical cable element shall be sufficient to carry out the testing specified.

5.3 Apparatus

The apparatus consists of a mandrel having a smooth surface with diameter as stated in the relevant specification, and an attenuation measuring apparatus for the determination of attenuation change (according to test method IEC 60793-1-46).

5.4 Procedure

Precondition the sample for at least 4 h at the test temperature

The element to be tested shall be wound on the mandrel at minimal tension; the number of turns and cycles shall be stated in the specification.

The change in attenuation should be measured during and after test.

5.5 Requirements

Any increase in attenuation shall comply with the limits shown in the relevant specification.

In order to measure the attenuation increase caused by bending, allowance should be made for the intrinsic attenuation of the fibre.

5.6 Details to be specified

The relevant specification shall include the following, if applicable:

- a) optical test wavelength;
- b) diameter of the mandrel;
- c) number of turns;
- d) number of cycles for winding and unwinding the turns;
- e) temperature at which the evaluation shall be performed if different from room temperature; testing at different temperatures shall be based on min./max. installation or termination temperature of the cable;
- f) maximum allowed change in attenuation during and after test.

5.7 Details to be reported

The test report shall include, beside the specified parameters in the relevant specification (see 5.6), the following information, if applicable:

- a) apparatus and attenuation measurement technique;
- b) detailed description of the sample of optical cable element;
- c) attenuation variation during and after test.

Bibliography

IEC 60794-1-21:2015, *Optical fibre cables – Part 1-21: Generic specification – Basic optical cable test procedures – Mechanical tests methods*

IEC 60794-1-23:2019, *Optical fibre cables – Part 1-23: Generic specification – Basic optical cable test procedures – Cable element test methods*

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