IEC 60794-1-213

Edition 1.0 2024-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Optical fibre cables –
Part 1-213: Generic specification – Basic optical cable test procedures – Environmental test methods – Microduct pressure withstand, method F13

Câbles à fibres optiques –
Partie 1-213: Spécification générique – Procédures fondamentales d'essais des câbles optiques – Méthodes d'essais d'environnement – Tenue à la pression des microconduits, méthode F13

IEC 60794-1-213:2024-05(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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OPTICAL FIBRE CABLES –

**Part 1-213: Generic specification –
Basic optical cable test procedures –
Environmental test methods –
Microduct pressure withstand, method F13**

FOREWORD

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IEC 60794-1-213 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) pressure gauge used to monitor internal pressure of microduct added as part of the test apparatus;

b) "test temperature" added to the details to be specified;

c) added a new subclause “4.7 Details to be reported”.

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

Draft	Report on voting
86A/2331/CDV	86A/2432/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.

INTRODUCTION

This document cancels and replaces method F13 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.

OPTICAL FIBRE CABLES –

Part 1-213: Generic specification – Basic optical cable test procedures – Environmental test methods – Microduct pressure withstand, method F13

1 Scope

This part of the IEC 60794 series defines test procedures to be used in establishing uniform requirements for the environmental performance of microduct. The test determines the capability of the microduct to withstand internal pressure without leakage and visible damage.

This document applies to microduct used for installation of microduct cable or fibre unit by blowing.

Throughout this document, the wording "microduct" can also include protected microduct(s).

See IEC 60794-1-2 for a reference guide to test methods of all types and for general requirements and definitions.

2 Normative references

There are no normative references in this document.

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 Method F13 – Microduct pressure withstand

4.1 Object

The purpose of this test is to verify that the microduct can withstand the maximum internal pressure used for blowing the microduct cable or fibre unit.

This test ensures safe operation over a range of temperatures. The test pressure is chosen to be either the maximum working pressure of the microduct or a multiple of this as stated in the relevant specification. The controlled area is a heating or cooling chamber if the relevant specification requires testing above or below ambient temperatures. Typical ranges are −20 °C to +60 °C. In general, polymer microducts will have a reduced tolerance to pressure as the temperature is increased.

4.2 Sample

Equal lengths L of microduct approximately 1 m long are cut from a production length. The ends shall be cut carefully, ensuring that they are not crushed. This will prevent air leaks from around the connectors. This test shall be conducted in a controlled area so that there is no danger from flying fragments if the microduct is not able to withstand the applied air pressure during the test.

4.3 Apparatus

The pressure source shall be agreed between customer and supplier: typically, it is a compressor or gas bottle. There shall be a pressure gauge used to monitor the internal pressure of sample. Personal protective equipment (PPE) is recommended (goggles or full-face mask and gloves).

4.4 Procedure

One end of the microduct is inserted into the pressurizing device. A fully blocking end cap (usually metal) is fitted to the opposite end. The microduct samples shall be conditioned at the test temperature for a minimum of 4 h before testing.

The pressurizing device is activated, and the pressure slowly increased to the specified level. The sample is left pressurised for 30 min (unless otherwise stated in the relevant specification).

The sample is continuously observed for leaks; it can be useful to place the microduct in a container of water to look for leaking air bubbles. After 30 min (unless otherwise stated in the relevant specification) the air source is disconnected, and the sample removed. PPE should be worn when entering the test area.

Ten samples shall be tested, unless otherwise stated in the relevant specification.

4.5 Requirements

All samples shall withstand the applied pressure with no leakage during test and no visible damage after test.

4.6 Details to be specified

The relevant specification shall include the following:

a) test pressure: according to the relevant specification;

b) test temperature: according to the relevant specification.

4.7 Details to be reported

The test report shall include all the information given in 4.6 and the following:

a) sample length,

b) duration,

c) number of samples,

d) any deviations from the test method.

Bibliography

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

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