

INTERNATIONAL STANDARD

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**Fibre optic interconnecting devices and passive components - Basic test and measurement procedures -
Part 2-2: Tests - Mating durability**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Fibre optic interconnecting devices and passive components -
Basic test and measurement procedures -
Part 2-2: Tests - Mating durability**

FOREWORD

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61300-2-2:2009. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 61300-2-2 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics. It is an International Standard.

This fourth edition cancels and replaces the third edition, published in 2009. This edition constitutes a technical revision.

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

- a) definition of the mating durability test also for a plug-receptacle configuration of the device under test (DUT);
- b) deletion of measurement condition B;
- c) Definition of a unique measurement condition;
- d) addition of performance categories in the severities;
- e) introduction of new severity levels for connectors and hardened connectors;
- f) definition of new cleaning criteria during mating durability test;
- g) deletion of performance category E in the severities.

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

Draft	Report on voting
86B/5225/FDIS	86B/5247/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 of IEC 61300 series, published under the general title *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures*, 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.

1 Scope

This part of IEC 61300 evaluates the effects of a number of successive cycles of ~~engagement~~ mating and ~~separation~~ un-mating of fibre optic connectors or other interconnecting devices on optical performance and mechanical degradation of the component under normal usage conditions.

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 61300-1, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 1: General and guidance*

IEC 61300-3-1, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-1: Examinations and measurements - Visual examination*

IEC 61300-3-3, *Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-3: Examinations and measurements - Active monitoring of changes in attenuation and return loss*

~~IEC 61300-3-4, Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-4: Examinations and measurements - Attenuation~~

IEC 61753 (all parts), *Fibre optic interconnecting devices and passive components - Performance standard*

IEC 62005 (all parts), *Reliability of fibre optic interconnecting devices and passive components*

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 General description

The device under test (DUT), i.e. the plug-receptacle or plug-adaptor-plug configuration, is subjected to a number of successive cycles of ~~engagement~~ mating and ~~separation~~ un-mating. If more than one coupling mechanism is involved, each cycle of engagement shall be conducted with all other mechanisms properly engaged.

5 Apparatus

~~The apparatus shall include the following elements:~~

5.1 Fixture

The ~~device~~ DUT ~~should~~ shall be tested under normal conditions of use. Where appropriate, suitable clamps, jaws or other means ~~may~~ can be used to hold the mating parts of the ~~device~~ DUT in proper alignment during the test.

5.2 Application of force

~~Use a means of applying the force or torque to engage and separate the specimen. Unless otherwise stated, the force to engage the device shall be applied manually. Where required, a means of applying the engagement force or torque shall be specified.~~

The force to mate and un-mate the DUT shall be applied by hand, unless otherwise defined by the manufacturer. If an alternative method is defined by the manufacturer's instructions, the method and the amount of force or the torque value that must be applied shall be reported.

5.3 Measuring equipment

~~Unless otherwise specified,~~ The measuring equipment specified in ~~IEC 61300-3-4~~ IEC 61300-3-3 shall be connected to the DUT for monitoring the optical performance during the test.

6 Procedure

6.1 Preconditioning

The DUT shall be preconditioned for a minimum of 2 h at the standard atmospheric conditions in accordance with IEC 61300-1.

6.2 Initial inspection

~~Complete initial examinations and measurements of the specimen as specified in the relevant specification.~~

Initial examinations shall be completed in accordance with IEC 61300-3-1 and the measurements of the DUT shall be performed as specified in the relevant IEC 61753 series performance standard or in the relevant IEC 62005 series reliability document.

6.3 Cycling

~~Unless otherwise specified in the relevant specification, a cycle shall consist of one normal full engagement and separation of the coupling mechanism to be evaluated. The minimum time between each engagement shall be 3 s.~~

The initial optical measurement is taken with the plug mated to the plug-adaptor or receptacle and serves as the baseline for the change in attenuation and return loss during and after testing. The plug is then un-mated and mated. This un-mating and mating operations represent one cycle. The minimum time between each un-mating/mating cycle shall be 3 s.

When the ~~specimen~~ DUT involves more than one coupling mechanism, the cycles shall be conducted with all mechanisms properly ~~engaged~~ mated. The mating shall be accomplished according to the manufacturer's instructions. In the case of a plug-adaptor-plug configuration, only one plug is subjected to successive ~~engagement~~ mating and ~~separations~~ un-mating cycles, see Figure 1 and Figure 2.