Fibre optic interconnecting devices and passive components – Performance standard – Part 021-02: Single-mode fibre optic connectors terminated as pigtails and patchcords for category C – Controlled environment
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TITLE:
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IEC 61753-021-02 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 edition includes the following significant technical changes with respect to IEC 61753-021-2:2007:

a) changed scope to remove restrictions on attenuation and return loss grades;

b) included provisions for rectangular ferrule connectors;
c) changed the terms and definitions of the different types of test samples (pigtail test samples and patchcord test samples) used in the various tests to avoid confusion;

d) updated fibre naming conventions according to IEC 60793-2-50 and added provisions for B-657 fibres;

e) added all the attenuation and return loss grades defined in IEC 61753-1;

f) test severities updated according to IEC 61753-1;

g) reduced flexing of strain relief cycles from 100 cycles to 50 cycles;

h) added the torsion test;

i) reduced the duration of the fibre/cable retention test on reinforced cables from 120 s to 60 s minimum;

j) removed the static side load test;

k) reduced the number of mating durability cycles from 500 cycles to 200 cycles and added provisions for rectangular ferrule connectors;

l) added Annex B for visual examination of the outer cable sheath movement of reinforced cables as an additional requirement for change of temperature, cable retention and flexing of the strain relief tests.

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

<table>
<thead>
<tr>
<th>Draft</th>
<th>Report on voting</th>
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<tbody>
<tr>
<td>86B/XX/FDIS</td>
<td>86B/XX/RVD</td>
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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 the IEC 61753 series, published under the general title *Fibre optic interconnecting devices and passive components – Performance standard*, 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 61753 defines the minimum initial test and measurement requirements and severities which single-mode fibre optic connectors terminated as a pigtail or a patchcord satisfy in order to be categorized as meeting the IEC standard category C (controlled environment), as defined in IEC 61753-1.

If tests were performed on the connectors terminated as pigtails or patchcords for categories OP+HD, OP+, OP, OP^HD, or C^HD and the product passed, the product will be automatically qualified or categorized as meeting the IEC standard for category C.

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 60794-2-50, Optical fibre cables – Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies

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

IEC 61300-2-1, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-1: Tests – Vibration (sinusoidal)

IEC 61300-2-2, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-2: Tests – Mating durability

IEC 61300-2-4, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-4: Tests – Fibre or cable retention

IEC 61300-2-5, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-5: Tests – Torsion

IEC 61300-2-6, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-6: Tests – Tensile strength of coupling mechanism

IEC 61300-2-12, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-12: Tests – Impact
IEC 61300-2-17, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-17: Tests – Cold

IEC 61300-2-18, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-18: Tests – Dry heat

IEC 61300-2-19, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-19: Tests – Damp heat (steady state)

IEC 61300-2-22, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature

IEC 61300-2-44, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-44: Tests – Flexing of the strain relief of fibre optic devices

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 61300-3-6, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss

IEC 61300-3-28, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-28: Examinations and measurements – Transient loss

IEC 61300-3-34, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-34: Examinations and measurements – Attenuation of random mated connectors

IEC 61300-3-45, Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-45: Examinations and measurements – Attenuation of random mated multi-fibre connectors

IEC 61753-1, Fibre optic interconnecting devices and passive components – Performance standard – Part 1: General and guidance

IEC 61754 (all parts), Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces

IEC 61755 (all parts), Fibre optic interconnecting devices and passive components – Connector optical interfaces for single-mode fibres

IEC 61755-2 (all parts), Fibre optic interconnecting devices and passive components – Connector optical interfaces for single-mode fibres – Part 2: Connection parameters of dispersion unshifted physically contacting fibres

IEC 61755-3 (all parts), Fibre optic interconnecting devices and passive components – Connector optical interfaces for single-mode fibres – Part 3: Connector parameters of dispersion unshifted physically contacting fibres
ISO/IEC 11801 (all parts), Information technology – Generic cabling for customer premises

3 Terms and definitions
For the purposes of this document, the terms and definitions given in IEC 61753-1 and the following apply.

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

3.1 change in attenuation $\delta$
large or small deviation from the original value of the transmitted power at the start of the test

3.2 sample
complete set of connector components required to provide demountable coupling between one or more pairs of optical fibres

3.3 pigtail test sample
two pigtails mated with an adaptor

Note 1 to entry: See Figure 1.

Figure 1 – Pigtail test sample

3.4 patchcord test sample
patchcord mated to two pigtails using adaptors

Note 1 to entry: See Figure 2.

Figure 2 – Patchcord test sample