SLOVENSKI STANDARD
oSIST prEN IEC 61753-021-02:2022

01-oktober-2022

Optični spojni elementi in pasivne komponente - Izvedbeni standard - 021-02. del: Konektorji za enorodovna optična vlakna, zaključeni kot repki ali povezovalne vrvice za kategorijo C - Nadzorovano okolje

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

Dispositifs d'interconnexion et composants passifs fibroniques - Norme de performance - Partie 021-02: Connecteurs à fibres optiques unimodales raccordés comme des fibres amorces ou des cordons de brassage pour la catégorie C – Environnement contrôlé

Ta slovenski standard je istoveten z: **prEN IEC 61753-021-02:2022**

ICS:

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices

oSIST prEN IEC 61753-021-02:2022 **en**

86B/4630/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:	
IEC 61753-021-02 ED3	
DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2022-08-12	**2022-11-04**
SUPERSEDES DOCUMENTS:	
86B/4575/CD, 86B/4593A/CC	

IEC SC 86B : FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS	
SECRETARIAT: Japan	SECRETARY: Mr Shigeru Tomita
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING
Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

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

PROPOSED STABILITY DATE: 2032

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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

FOREWORD

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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 first edition cancels and replaces the second edition of IEC 61753-021-2 published in 2007. This edition constitutes a technical revision.

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

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

b) include provisions for rectangular ferrule connectors;

c) changed the term 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 60793-2-50:2018 and add 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 61753-1:2018;

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:

Draft	Report on voting
XX/XX/FDIS	XX/XX/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/standardsdev/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 "http://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.

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

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 satisfies in order to be categorized as meeting the IEC standard category C (controlled environment), as defined in IEC 61753-1.

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 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

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 – Fibre optic connector optical interfaces*

IEC 61755-2 (all parts), *Fibre optic interconnecting devices and passive components – Fibre optic connector optical interfaces – Part 2: Optical interface*

IEC 61755-3 (all parts), *Fibre optic interconnecting devices and passive components – Fibre optic connector optical interfaces – Part 3: Optical interface*

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 terminological databases for use in standardization at the following addresses:

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

3.1
change in attenuation
δ
± 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.

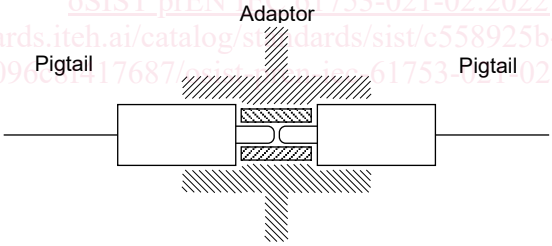

Figure 1 – Pigtail test sample

3.4
patchcord test sample
patchcord mated to two pigtails using adaptors

Note 1 to entry: See Figure 2.

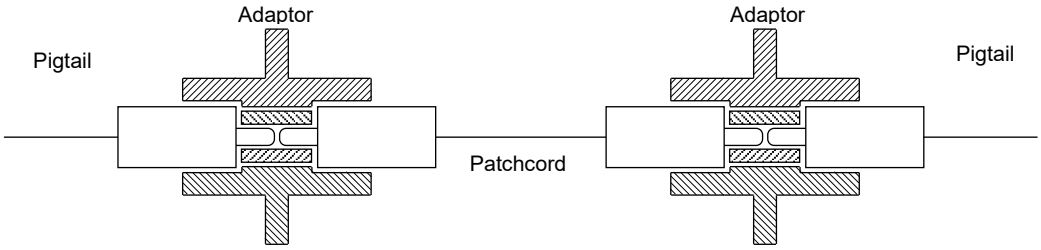

Figure 2 – Patchcord test sample

4 Tests

All test and measurement methods have been selected from the IEC 61300 series and the test parameters and requirements from IEC 61753-1 as defined in 7.6 and 7.7. Additional requirements to certain tests are given in Annex B.

The connector plugs under test shall be terminated onto single-mode fibre per type B-652 or B-657 of IEC 60793-2-50, in either buffered or reinforced cable format. The reinforced cable used for the pigtails or patchcords shall conform to the requirements of IEC 60794-2-50. Care shall be taken to respect the minimum bend radius of the cable. The connector interface standard shall meet the dimensions of the relevant part of the IEC 61754 series and the connector optical interface standard shall meet the relevant requirements of the IEC 61755 series.

The optical connector requirements shall be met in order to be in accordance with the ISO/IEC 11801 series.

5 Test report

Fully documented test reports and supporting evidence shall be prepared and available for inspection as evidence that the tests have been carried out and the results are satisfactory.

6 Reference components

No reference components are required to perform the tests in this document.

7 Performance requirements

7.1 General

Unless otherwise specified, all tests shall be carried out at standard atmospheric conditions as specified in IEC 61300-1.

7.2 Dimensions

Dimensions shall comply with the appropriate IEC interface standard as defined in the IEC 61754 series.

7.3 Sample size and test sequencing

For the purposes of this document, a sample is composed of pigtail test samples or patchcord test samples (see Clause 3). The sample sizes to be used for the tests shall be as defined in Annex A. The tests are not intended to be performed in any particular sequence or grouping, but rather, individually on new samples. Samples for the first test (attenuation) are to be randomly selected and randomly mated new products. Samples for the second test (return loss) are the same plugs selected and mated for the first test. Samples from the previous tests may be used if desired. If a failure occurs on a sample that was tested in a previous test, a new set of samples shall be prepared, and the failed test shall be re-done.

7.4 Endface geometry

The connector endface shall comply with the endface geometry requirements of the applicable IEC optical interface standard as defined in the IEC 61755-3 series. Compliance with the appropriate optical interface standard shall be confirmed on all samples before the start of testing and after each of the tests have been completed. Non-compliance with the endface geometry requirements of the applicable optical interface standard on any connector tested results in a failure of this performance standard.

7.5 Visual examination

A visual examination shall be carried out on all samples before and after each of the mechanical and climatic tests (see Table 2). The outer cable sheath of the samples with reinforced cable shall be marked at the end of the connector boot during the initial visual examination (see Annex B).

The connector endface shall comply with the visual requirements for defects and scratches according to the relevant part of the IEC 61755-2 series.

7.6 Performance criteria

The optical performance levels shall meet the requirements of one specified grade as defined in IEC 61753-1 (See Table 1).