SLOVENSKI STANDARD
oSIST prEN 3745-306:2022

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Aeronavtika - Optična vlakna in kabli za uporabo v zračnih plovilih - Preskusne metode - 306. del: Spreminjanje dušenja med cikličnimi temperaturnimi spremembami

Aerospace series - Fibres and cables, optical, aircraft use - Test methods - Part 306: Variation of attenuation during temperature cycling

Luft- und Raumfahrt - Faseroptische Leitungen für Luftfahrzeuge - Prüfverfahren - Teil 306: Dämpfungsänderung bei Temperaturwechsel

Série aérospatiale - Fibres et câbles optiques à usage aéronautique - Méthodes d'essais - Partie 306 : Variation de l'atténuation pendant le cyclage en température

Ta slovenski standard je istoveten z: **prEN 3745-306**

ICS:

33.180.10	(Optična) vlakna in kabli	Fibres and cables
49.090	Oprema in instrumenti v zračnih in vesoljskih plovilih	On-board equipment and instruments

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EUROPEAN STANDARD

NORME EUROPÉENNE

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English Version

Aerospace series - Fibres and cables, optical, aircraft use - Test methods - Part 306: Variation of attenuation during temperature cycling

Série aérospatiale - Fibres et câbles optiques à usage aéronautique - Méthodes d'essais - Partie 306 : Variation de l'atténuation pendant le cyclage en température

Luft- und Raumfahrt - Faseroptische Leitungen für Luftfahrzeuge - Prüfverfahren - Teil 306: Dämpfungsänderung bei Temperaturwechsel

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (prEN 3745-306:2022) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 3745-306:2005.

1 Scope

This document specifies a method for checking the variation of attenuation of an optical cable during temperature cycling.

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.

EN 3745-201, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 201: Visual examination*

EN 3745-402, *Aerospace series — Fibres and cables, optical, aircraft use — Test methods — Part 402: Temperature cycling*

IEC 61300-3-47, *Examinations and measurements — End face geometry of PC/APC spherically polished ferrules using interferometry*

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:

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

4 Preparation of specimens

4.1 Unless detailed in the product standard the cable specimens shall be pre-conditioned for a minimum of 24 hours at the ambient temperature of the test area prior to commencing the test programme.

The specimens shall be loosely coiled with a bend radius greater than that of the specified storage radius.

4.2 Unless specified in the product standard, the following elements shall be applied:

— The specimen length tolerances shall be in accordance with the product standard. The test specimens shall be terminated with suitable fibre optic termini to enable mateability to optical monitoring equipment.

— Qualification test specimen termini shall be polished with end-face geometry requirements in accordance with IEC 61300-3-47 unless otherwise specified in the product standard.

— Each end of the specimen should be labelled for identification purposes. The labels shall allow test data traceability to the respective test specimen.

— Insertion loss requirements shall be in accordance with the product standard.

— Test launch cables shall be compliant with fibre characteristics of the specimen under test e.g. 62,5 µm/125 µm graded index fibre, NA of 0,275 for testing 62,5 µm/125 µm optical fibre.

5 Launch conditions

The following launch condition criteria shall be used for the test (for additional information, refer to EN 2591-100).

5.1 Launch conditions specification for 62,5 µm/125 µm fibres and cables (NA = 0,275)

This launch condition is considered suitable for testing general 62,5 µm/125 µm fibres and cables with a numerical aperture (NA) of 0,275 ± 0,015.

To test this optical fibre or cable, the light launch system shall emit at 850 nm ± 30 nm and 1 300 nm ± 30 nm with specific launch conditions defined in tables detailed in EN 2591-100. The user has the option of using a source with built-in launch conditioner or performing the launch conditioning externally to the source. As such it is an 85:85 launch into 62,5 µm/125 µm fibre with appropriate limits.

This specification is defined to allow the application of a common mode conditioner to both 850 nm and 1 300 nm wavelength sources.

5.2 Launch conditions specification for 50 µm/125 µm fibres and cables (NA = 0,2 ± 0,015)

This launch condition is considered suitable for testing general 50 µm/125 µm fibres and cables with a NA of 0,2 ± 0,015.

The launch condition specification for testing 50 µm/125 µm fibre (0,2 NA) is given in tables detailed in EN 2591-100. This is a scaled version of the proposed launch condition for 62,5 µm fibre. As such it is an 85:85 launch into 50 µm/125 µm fibre with appropriate limits.

To test this optical cable, the light launch system shall emit at 850 nm ± 30 nm and 1 300 nm ± 30 nm with specific launch conditions defined in the following table. The user has the option of using a source with built in launch conditioner or performing the launch conditioning externally to the source. This specification is defined to allow the application of a common mode conditioner to both 850 nm and 1 300 nm wavelength sources.

6 Method

6.1 Procedure

Connect the specimen to a suitable light launch system.

Coil the specimen to the bend radius as specified in the product standard.

Connect the specimen to a suitable light detection system.

Measure the variation of attenuation continuously throughout the test in accordance with the product standard.

Perform the specified cycle numbers of temperature cycling in accordance with EN 3745-402.

6.2 Final measurements and requirements

— The maximum increase in attenuation shall not exceed the specified value, as defined in the product standard.

— Examine the test specimen for damage in accordance with EN 3745-201.