SLOVENSKI STANDARD
SIST EN 61745:2018

01-januar-2018

Postopek analize čelne slike za umerjanje pribora za preskušanje geometrije optičnih vlaken (IEC 61745:2017)

End-face image analysis procedure for the calibration of optical fibre geometry test sets (IEC 61745:2017)

Ta slovenski standard je istoveten z: EN 61745:2017

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33.180.10 (Optična) vlakna in kabli Fibres and cables

SIST EN 61745:2018 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61745

October 2017

ICS 33.180.01

English Version

End-face image analysis procedure for the calibration of optical fibre geometry test sets (IEC 61745:2017)

Procédure d'analyse d'image d'extrémité pour l'étalonnage de dispositifs d'essais de géométrie des fibres optiques (IEC 61745:2017)

Endflächen-Bildanalyseverfahren für die Kalibrierung von Prüfeinrichtungen für die Geometrie von Lichtwellenleitern (IEC 61745:2017)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

The text of document 86/510/CDV, future edition 2 of IEC 61745, prepared by IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61745:2017.

The following dates are fixed:

latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2018-06-01
latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-09-01

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Endorsement notice

The text of the International Standard IEC 61745:2017 was approved by CENELEC as a European Standard without any modification.

IEC 61745

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

End-face image analysis procedure for the calibration of optical fibre geometry test sets

Procédure d'analyse d'image d'extrémité pour l'étalonnage de dispositifs d'essais de géométrie des fibres optiques

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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END-FACE IMAGE ANALYSIS PROCEDURE FOR THE CALIBRATION OF OPTICAL FIBRE GEOMETRY TEST SETS

FOREWORD

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International Standard IEC 61745 has been prepared by IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition, published in 1998, and constitutes a technical revision.

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

a) removal of the limitation of single mode optical fibre geometry test sets to include multimode;
b) addition of a new annex as mathematical basis.

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

CDV	Report on voting
86/510/CDV	86/516/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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.

INTRODUCTION

In the research and production environments, there exists a range of test methods for characterizing the geometry of optical fibres. Furthermore, each test method may determine one or more of the many parameters required for complete geometrical characterization. IEC 61745 describes the calibration of test sets that perform end-face image analysis, also known as "near-field" or "grey-scale" analysis. The principles, however, may be applied to test sets of a different type.

END-FACE IMAGE ANALYSIS PROCEDURE FOR THE CALIBRATION OF OPTICAL FIBRE GEOMETRY TEST SETS

1 Scope

This document describes the calibration of test sets that perform end-face image analysis, also known as "near-field" or "grey-scale" analysis. The principles, however, can be applied to test sets of a different type.

The procedures outlined are performed by calibration laboratories and by the manufacturers or users of geometry test sets, for the purpose of calibrating geometry test sets and for evaluating the uncertainties in measurements made on calibrated test sets. The calibration of fibre coating or cable measurement test sets is not covered by this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purpose of this International Standard, the following definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

3.1
accredited calibration laboratory
calibration laboratory authorized by an appropriate national organization to issue calibration certificates that demonstrates traceability to national standards

3.2
artefact
object that is measured on or used to calibrate a geometry test set

EXAMPLE An optical fibre and a chromium-on-glass pattern are examples of artefacts.

3.3
calibration
set of operations that establish, under specified conditions, the relationship between the values of quantities indicated by a measuring instrument and the corresponding values realized by standards

Note 1 to entry: The results of a calibration permit either the assignment of measurand values to the indications or the determination of corrections with respect to the indications.

Note 2 to entry: A calibration may also determine other metrological properties such as the effects of influence quantities.

Note 3 to entry: The result of a calibration may be recorded in a document, called a "calibration certificate" or a "calibration report".

3.4
calibration chain
chain of transfers from a national standard to the geometry test set through intermediate or working standards

Note 1 to entry: See $U = k \times u$.

3.5
calibration checking
establishing that a geometry test set that has been previously calibrated but has reached its calibration due date remains within specified uncertainty limits

Note 1 to entry: If the geometry test set has drifted outside these limits, then re-calibration is required. Otherwise, the re-checking period can be extended for a stated period.

Note 2 to entry: The test set may be checked using a working standard.

3.6
calibration standard
artefact that is calibrated against a reference standard and is used to calibrate test sets

Note 1 to entry: The artefact may be a fibre or a chromium-on-glass pattern.

Note 2 to entry: Proper use of a calibration standard ensures traceability.

Note 3 to entry: The term includes the reference standard, the transfer standard and the working standard(s), in descending order of metrological uncertainty.

3.7
combined standard uncertainty
combination of a number of individual standard uncertainties

Note 1 to entry: The term "accuracy" should be avoided in this context.

Note 2 to entry: In calibration reports and technical data sheets, the combined standard uncertainty in the geometry test set measurement is reported as an overall expanded uncertainty with the applicable confidence level, for example 95,5% or 99,7 %.

3.8
confidence level
estimation of the probability that the true value of a measured parameter lies within a given range (expanded uncertainty)

3.9
correction offset
number that is added to or subtracted from the measurement result of a test set to correct for a known physical effect

3.10
coverage factor
k
factor used to calculate the expanded uncertainty, U, from the standard uncertainty, u

3.11
expanded uncertainty
U
range of values within which the measurement parameter, at the stated confidence level, can be expected to lie

Note 1 to entry: It is equal to the coverage factor, k, times the combined standard uncertainty u

$$U = k \times u \tag{1}$$