SLOVENSKI STANDARD
SIST EN 61300-3-47:2014

01-november-2014

Optični spojni elementi in pasivne komponente - Osnovni preskusni in merilni postopki - 3-47. del: Preiskave in meritve - Geometrija čela sferično poliranih tulk PC/APC z uporabo interferometrije (IEC 61300-3-47:2014)

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-47: Examinations and measurements - Endface geometry of PC/APC spherically polished ferrules using interferometry

Ta slovenski standard je istoveten z: **EN 61300-3-47:2014**

ICS:

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices

SIST EN 61300-3-47:2014 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61300-3-47

September 2014

ICS 33.180.20

English Version

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-47: Examinations and measurements - End face geometry of PC/APC spherically polished ferrules using interferometry (IEC 61300-3-47:2014)

Dispositifs d'interconnexion et composants passifs à fibres optiques - Procédures fondamentales d'essais et de mesures - Partie 3-47: Examens et mesures - Géométrie de l'extrémité des férules PC/APC polies de façon sphérique par interférométrie
(CEI 61300-3-47:2014)

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Messverfahren - Teil 3-47: Untersuchungen und Messungen - Endflächengeometrie von sphärisch polierten PC/APC-Ferrulen mittels Interferometrie
(IEC 61300-3-47:2014)

This European Standard was approved by CENELEC on 2014-08-28. CENELEC 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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

Foreword

The text of document 86B/3773/FDIS, future edition 1 of IEC 61300-3-47, prepared by subcommittee 86B “Fibre optic interconnecting devices and passive components” of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61300-3-47:2014.

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)	2015-05-28
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2017-08-28

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61300-3-47:2014 was approved by CENELEC as a European Standard without any modification.

IEC 61300-3-47

Edition 1.0 2014-07

INTERNATIONAL STANDARD

colour inside

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-47: Examinations and measurements – End face geometry of PC/APC spherically polished ferrules using interferometry

INTERNATIONAL ELECTROTECHNICAL COMMISSION

PRICE CODE Q

ICS 33.180.20

ISBN 978-2-8322-1708-5

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

____

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 3-47: Examinations and measurements – End face geometry of PC/APC spherically polished ferrules using interferometry

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61300-3-47 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This standard merges IEC 61300-3-15, IEC 61300-3-16, IEC 61300-3-17 and IEC 61300-3-23. After publication of this standard IEC 61300-3-15, IEC 61300-3-16, IEC 61300-3-17 and IEC 61300-3-23 will be withdrawn.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/3773/FDIS	86B/3805/RVD

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

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

A list of all parts in the IEC 61300 series, published under the general title, *Fibre optic interconnecting and passive components – Basic test and measurement procedures*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 3-47: Examinations and measurements – End face geometry of PC/APC spherically polished ferrules using interferometry

1 Scope

This part of IEC 61300 describes a procedure to measure the end face geometry of a spherically polished ferrule or connector. Within this standard the words “ferrule” and “connector” can be used interchangeably.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
radius of curvature
B
radius of curvature of the portion of the spherically polished ferrule end face which is domed for physical contact

Note 1 to entry: It is assumed that the end face is spherical, although in practice the end face is often aspherical (see Figure 1).

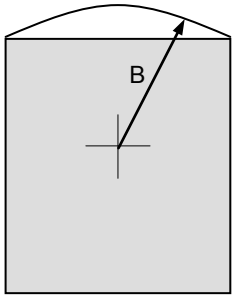

Figure 1 – Radius of curvature of a spherically polished ferrule end face

2.2
apex offset
C
distance between the axis of the ferrule and the line parallel to the axis which passes through the vertex (or highest point on the dome), formed by spherically polishing the ferrule, as shown in Figure 2

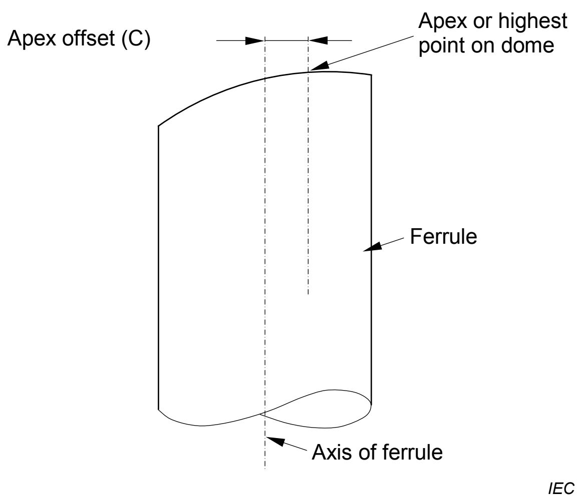

Figure 2 – Apex offset of a spherically polished ferrule end face

2.3
fibre height
average distance between the fibre end face and a virtual spherical surface which is fitted to the spherically polished ferrule end face (see Annex C)

Note 1 to entry: It is assumed that a circular region of the ferrule end face, which is centred to the ferrule axis, is spherical although in practice the end face is often aspherical. A positive value indicates fibre undercut (see Figure 3a). A negative value indicates fibre protrusion (see Figure 3b).

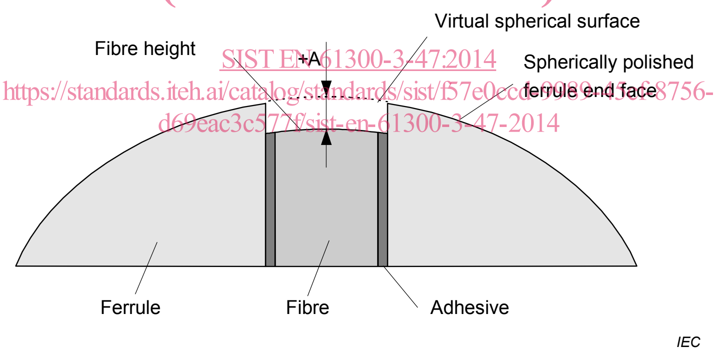

Figure 3a – Fibre height +A

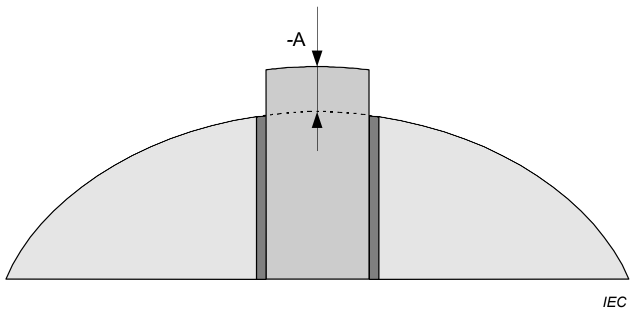

Figure 3b – Fibre height –A (protrusion)

Figure 3 – Fibre height of a spherically polished ferrule end face

2.4
end face angle
angle (θ) between the plane perpendicular to the axis of the ferrule, and the straight line tangent to the polished surface at the fibre centre in the direction of the nominal angle (see Figure 4)

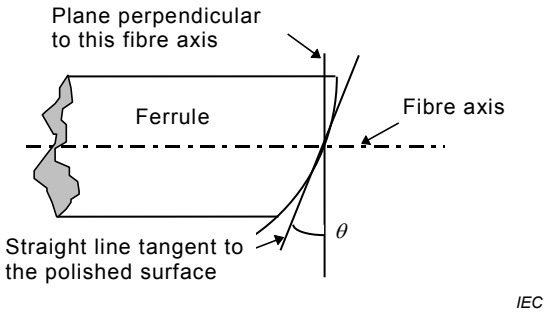

Figure 4 – Ferrule end face angle for spherically polished ferrules

3 Measurement by interferometer

3.1 General

A typical interferometer configuration is shown in Figure 5. The apparatus consists of a suitable ferrule/connector holder, an optical interferometric system combined with a microscope and a camera.

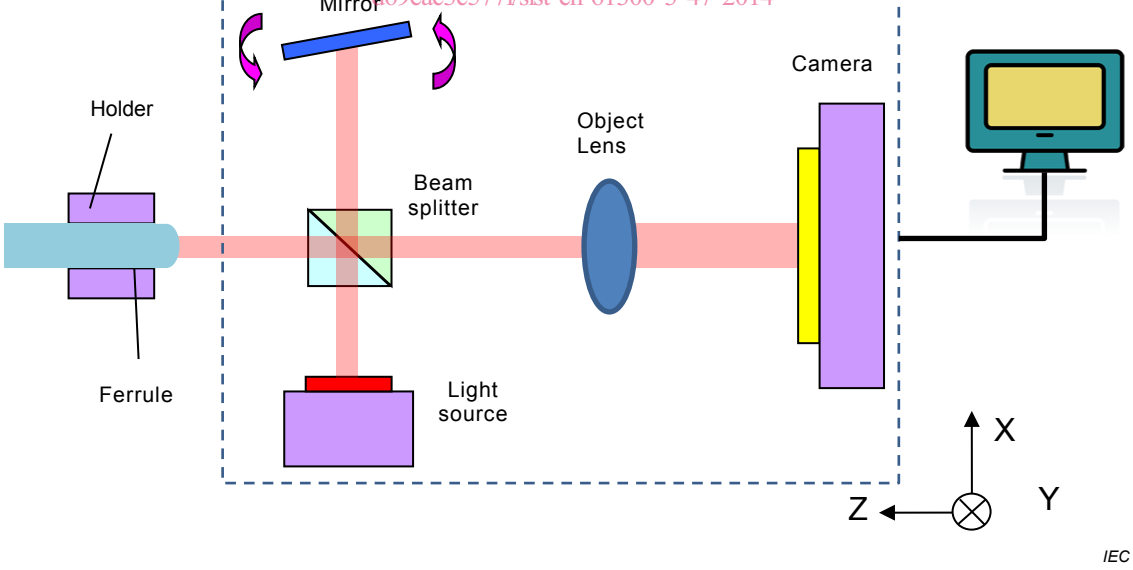

Figure 5 – Interferometer

3.2 Ferrule/connector holder

This is a suitable device to hold the ferrule/connector in a fixed alignment position with respect to the optical axis of the interferometer. The holder is designed such that the portion of the ferrule closest to the end face is secured by the holder. The ferrule shall be aligned by holding it over a distance of at least twice the ferrule diameter. The ferrules axis should be adjustable in order to make it parallel to the optical axis of the interferometer. Alternatively,