

### SLOVENSKI STANDARD SIST EN IEC 61300-3-7:2021

01-november-2021

Nadomešča:

SIST EN 61300-3-7:2012

Naprave za spajanje optičnih vlaken in pasivne komponente - Postopki osnovnega preskušanja in merjenja - 3-7. del: Preiskave in meritve - Odvisnost valovne dolžine od slabljenja in povratne izgube enorodovnih komponent (IEC 61300-3-7:2021)

Fibre optic interconnecting devices and passive components - Basic test and measurement procedures - Part 3-7: Examinations and measurements - Wavelength dependence of attenuation and return loss of single mode components (IEC 61300-3-7:2021)

(standards.iteh.ai)

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Messverfahren - Teil 3-7: Untersuchungen und Messungen Wellenlängenabhängigkeit von Dämpfung und Rückflussdämpfung von Einmodenbauteilen (IEC 61300-3-7:2021)

Dispositifs d'interconnexion et composants passifs a fibres optiques - Méthodes fondamentales d'essais et de mesures - Partie 3-7: Examens et mesurages - Affaiblissement et affaiblissement de réflexion des composants unimodaux en fonction de la longueur d'onde (IEC 61300-3-7:2021)

Ta slovenski standard je istoveten z: EN IEC 61300-3-7:2021

ICS:

33.180.20 Povezovalne naprave za

optična vlakna

Fibre optic interconnecting

devices

SIST EN IEC 61300-3-7:2021

en

SIST EN IEC 61300-3-7:2021

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 61300-3-7:2021

https://standards.iteh.ai/catalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-bd5e843ea099/sist-en-iec-61300-3-7-2021

### **EUROPEAN STANDARD** NORME EUROPÉENNE **EUROPÄISCHE NORM**

EN IEC 61300-3-7

August 2021

ICS 33.180.20

Supersedes EN 61300-3-7:2012 and all of its amendments and corrigenda (if any)

#### **English Version**

Fibre optic interconnecting devices and passive components -Basic test and measurement procedures - Part 3-7: Examinations and measurements - Wavelength dependence of attenuation and return loss of single mode components (IEC 61300-3-7:2021)

Dispositifs d'interconnexion et composants passifs a fibres optiques - Méthodes fondamentales d'essais et de mesures - Partie 3-7: Examens et mesurages - Affaiblissement et affaiblissement de réflexion des composants unimodaux en fonction de la longueur d'onde (IEC 61300-3-7:2021)

Lichtwellenleiter - Verbindungselemente und passive Bauteile - Grundlegende Prüf- und Messverfahren - Teil 3-7: Untersuchungen und Messungen -Wellenlängenabhängigkeit von Dämpfung und Rückflussdämpfung von Einmodenbauteilen (IEC 61300-3-7:2021)

### iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 2021-08-11. 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 atalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-

bd5e843ea099/sist-en-iec-61300-3-7-2021
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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovakia, 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: Rue de la Science 23, B-1040 Brussels

EN IEC 61300-3-7:2021 (E)

### **European foreword**

The text of document 86B/4337/CDV, future edition 3 of IEC 61300-3-7, prepared by SC 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 IEC 61300-3-7:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2022-08-11 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2022-08-11 document have to be withdrawn

This document supersedes EN 61300-3-7:2012 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

## **Endorsement notice**

The text of the International Standard IEC 61300-3-7:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61300-3-4 NOTE Harmonized as EN 61300-3-4

IEC 61300-3-6 NOTE Harmonized as EN 61300-3-6

IEC 61300-3-29 NOTE Harmonized as EN 61300-3-29

### Annex ZA

(normative)

## Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 60050-731	-	International Electrotechnical Vocabulary (IEV) - Part 731: Optical fibre communication	-	-
IEC 60793-2-50	iT	Optical fibres - Part 2–50: Product specifications - Sectional specification for class B single-mode fibres	ENJEC 60793-2-5	0 -
IEC 61755-2-4	- https://sta	Fibre optic interconnecting devices and passive components - Connector optical interfaces - Part 2–4: Connection parameters of non-dispersion shifted single-mode physically contacting fibres - Non-angled for reference connection applications	EN 61755-2-4 47d3-8ebe-	-
IEC 61755-2-5	-	Fibre optic interconnecting devices and passive components - Connector optical interfaces - Part 2–5: Connection parameters of non-dispersion shifted single-mode physically contacting fibres - Angled for reference connection applications	EN 61755-2-5	-
IEC/TR 61931	-	Fibre optic - Terminology	-	-
IEC 62074-1	-	Fibre optic interconnecting devices and passive components - Fibre optic WDM devices - Part 1: Generic specification	EN 62074-1	-

SIST EN IEC 61300-3-7:2021

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 61300-3-7:2021

https://standards.iteh.ai/catalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-bd5e843ea099/sist-en-iec-61300-3-7-2021



IEC 61300-3-7

Edition 3.0 2021-07

## INTERNATIONAL STANDARD

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures standards iteh.ai)
Part 3-7: Examinations and measurements – Wavelength dependence of attenuation and return loss of single mode components

https://standards.iteh.ai/catalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-bd5e843ea099/sist-en-iec-61300-3-7-2021

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 33.180.20 ISBN 978-2-8322-9989-0

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

### CONTENTS

FC	REWO	RD	5
1	Scop	e	7
2	Norm	ative references	7
3	Term	s, definitions, abbreviated terms and quantity symbols	7
	3.1	Terms and definitions	
	3.2	Abbreviated terms	
	3.3	Quantity symbols	
4		eral description	
•	4.1	General	
	4.2	Light source and detector conditions	
	4.3	General explanation of attenuation and return loss	
	4.3.1	Attenuation	
	4.3.2		
	4.4	Device under test (DUT)	11
	4.5	Measurement methods	
5	Appa	ratus	12
	5.1	General	12
	5.2		
	5.2.1	Optical source	13
	5.2.2		
	5.2.3		
	5.3	Depolarizer <u>SIST.EN IEC.61300-3-7:2021</u>	
	5.4	Power detection systems a/catalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-	
	5.4.1	Method A – Tuneable narrowband detection (TND)	14
	5.4.2	Method B and C – Broadband detection (BBD)	14
	5.5	Branching device (BD)	15
	5.6	Termination	
	5.7	Temporary joint (TJ)	
	5.8	Test patch cord	
	5.9	Reference plugs (RP)	
	5.10	Reference adapters (RA)	
6	Proce	edure	
	6.1	Method A – Broadband light source	
	6.1.1	Method A1 – Attenuation only	
	6.1.2		
	6.2	Method B – Tuneable narrowband light source	
	6.2.1	General	
	6.2.2	•	
	6.2.3		
	6.3	Method C – Set of multiple fixed narrowband light sources	
	6.3.1	General	
	6.3.2	,	
7	6.3.3		
7	rest	results	23

8 Detai	ils to be reported	. 23
8.1	General	. 23
8.2	Total measurement system	.24
8.3	Source	. 24
8.3.1	3	
8.3.2	3	
8.3.3	•	
8.4	Detection system	
8.4.1	Optical power meter	
8.4.2	-1 1	
8.4.3	3	
8.4.4 8.4.5		
8.4.6	, , ,	
8.4.7	1 3	
_	informative) Types of passive optical components	
	informative) Typical light source characteristics	
B.1	General	
В. I В.2	Broadband light source	
	· · · · · · · · · · · · · · · · · · ·	
Δnney C. (	Tuneable laser source ANDARD PREVIEW  (informative) Terminations	20
Piblicaron	hy (standards.iteh.ai)	21
ыынодгар	(Stanuarus.rtcm.ar)	. 3 1
F: 4	SIST FN IEC 61300-3-72021	
Figure 1 -	- Generic explanation of attenuation and return loss https://standards.itch.avcatalog/standards/sist/ic3700ca-0e3b-47d3-8ebe Method A1, attenuation-only, reference measurement set-up	.11
_	- Method A1, attenuation-only, DUT measurement set-up	. 17
	- Method A2, attenuation and return loss, reference branching device nent set-up	. 18
	Method A2, attenuation and return loss, reference measurement set-up	
_	- Method A2, system background measurement set-up	
Figure 7 -	- Method A2, attenuation and return loss, DUT measurement set-up	.20
Figure 8 -	- Method B, tuneable narrowband light source with and without depolarizer	.21
Figure 9 -	- Method C, multiple fixed narrowband sources set-up	.22
_	- Example wavelength dependent attenuation plot	
i igaio io	Zampio marciongin apponacin allerialicin piocini.	0
Table 1 –	Device under test categories	.11
Table 2 –	Measurement methods	.12
	Reference test methods	
	Preferred OPM parameters	
	Steps of method A1, attenuation only	
	Steps of method A2, attenuation and return loss	
	Steps of method B, attenuation only	
	Steps of method B, attenuation and return loss	
	Steps of method C, attenuation only	
Table 10 -	<ul> <li>Steps of method C2, attenuation and return loss</li> </ul>	. 22

<b>- 4 -</b>	IEC 61300-3-7:2021	@ IEC 2021
- 4 -	1EC 01300-3-7:2021	© 1EC 2021

Table 11 – Example report for wavelength dependent attenuation and return loss	23
Table A.1 – Functional summary of common passive optical components	26
Table B.1 – Types of broadband light source (BBS) and main characteristics	27
Table B.2 – Types of tuneable light source (TLS) and main characteristics	28
Table C.1 – Impact on termination values on measured return loss	29
Table C.2 – Impact on termination values on measured return loss uncertainty	30

# iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN IEC 61300-3-7:2021 https://standards.iteh.ai/catalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-bd5e843ea099/sist-en-iec-61300-3-7-2021

### INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC INTERCONNECTING DEVICES

AND PASSIVE COMPONENTS –

BASIC TEST AND MEASUREMENT PROCEDURES –

## Part 3-7: Examinations and measurements – Wavelength dependence of attenuation and return loss of single mode components

#### **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. The property of the property o
- 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\_NEC.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.

IEC 61300-3-7 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 third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

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

- a) reduction of the number of alternative methods proposed to bring in-line with industry practice;
- b) re-statement of the equations for insertion loss and return loss using logarithmic forms more common in the industry;
- c) additional recommendations with respect to the creation of fibre terminations;

IEC 61300-3-7:2021 © IEC 2021

d) additional discussion on the characterization of the optical sources used in this document;

**- 6 -**

- e) simplification of bi-directional testing;
- f) removal of separate return loss only measurement procedures.

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

Draft	Report on voting
86B/4337/CDV	86B/4425A/RVC

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 <a href="https://www.iec.ch/members\_experts/refdocs">www.iec.ch/members\_experts/refdocs</a>. The main document types developed by IEC are described in greater detail at <a href="https://www.iec.ch/standardsdev/publications">www.iec.ch/standardsdev/publications</a>.

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

iTeh STANDARD PREVIEW

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

SIST EN IEC 61300-3-7:2021

- reconfirmed, https://standards.iteh.ai/catalog/standards/sist/fc3700ca-0e3b-47d3-8ebe-
- withdrawn. bd5e843ea099/sist-en-iec-61300-3-7-2021
- replaced by a revised edition, or
- amended.