IEC/TR 62572-4

Edition 1.0 2013-11

TECHNICAL REPORT

colour inside

withdrawn

Fibre optic active components and devices – Reliability standards – Part 4: Guidelines for optical connector end-face cleaning methods for receptacle style optical transceivers

IEC/TR 62572-4:2013(E)

Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2013 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester.
If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

Useful links:

IEC publications search - www.iec.ch/searchpub

The advanced search enables you to find IEC publications by a variety of criteria (reference number, text, technical committee,…).
It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available on-line and also once a month by email.

Electropedia - www.electropedia.org

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

withdrawn

Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

IEC/TR 62572-4

Edition 1.0 2013-11

TECHNICAL REPORT

colour inside

withdrawn

Fibre optic active components and devices – Reliability standards – Part 4: Guidelines for optical connector end-face cleaning methods for receptacle style optical transceivers

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE T

ICS 33.180.01

ISBN 978-2-8322-1172-4

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

® Registered trademark of the International Electrotechnical Commission

Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

CONTENTS

FOREWORD 4
INTRODUCTION 6
1 Scope 7
2 Normative references 7
3 Terms and definitions 7
4 Application of receptacle style optical transceivers and influence of contamination on optical connector end-face 8
4.1 Application of receptacle style optical transceivers 8
4.2 Influence of contamination on optical connector plugs 9
4.3 Transferring of contamination 9
4.4 Influence of contamination on optical connector for optical transceivers 9
5 Care in handling of receptacle style optical transceivers 9
5.1 General 9
5.2 Storage of receptacle style optical transceivers 9
5.3 Installation of receptacle style optical transceivers 10
5.4 Connection of optical connector plugs to receptacle style optical transceivers 10
5.5 Removing of receptacle style optical transceivers 10
5.6 Action in case of abnormality 10
6 Cleaning tools and machines 10
6.1 General 10
6.2 Cleaning tools and machines for optical receptacles 11
7 Internal structure of receptacle style optical transceivers and their applicable cleaning tools and machines 11
Annex A (informative) Detail information of optical connector end-face cleaning tools and machines 13
A.1 Reel type cleaner 13
A.2 Stick type cleaner 13
A.3 Pen type cleaner 13
A.4 Gas and vacuum cleaning machine 14
A.5 Air duster 14
A.6 Wet clean 15
Annex B (informative) Detailed information on the internal structure of receptacle style optical transceivers and their applicable cleaning tools and machines 16
B.1 Internal structure of receptacle style optical transceivers 16
B.2 Example of the method to distinguish internal structure of receptacle style optical transceivers 16
B.3 Applicable cleaning tools and machines according to internal structure of receptacle style optical transceivers 17
B.3.1 General 17
B.3.2 Characteristics of stub type optical transceivers 17
B.3.3 Characteristics of lens type optical transceivers 17
B.3.4 Characteristics of plate contact type optical transceivers 18
Annex C (informative) Cleaning procedure of optical connector end-face of receptacle style optical transceivers 19
C.1 Basic cleaning procedure 19
C.2 Cleaning procedure of stick type cleaner 19

Withdrawn

AVA Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

C.3 Cleaning procedure of pen type cleaner 20
C.4 Cleaning procedure of gas and vacuum type cleaning machine 20
C.5 Cleaning procedure of air duster 20
C.6 Other important points 20
Annex D (informative) Examples of inspection instruments for an optical connector receptacle end-face 22
Bibliography 23

Figure A.1 – Example of a reel type cleaner 13
Figure A.2 – Examples of stick type cleaners 13
Figure A.3 – Examples of pen type cleaners 14
Figure A.4 – Example of pen type cleaner 14
Figure A.5 – Examples of air dusters 14
Figure B.1 – Internal structures for connecting to optical connector plugs 16
Figure C.1 – Cleaning an optical transceiver receptacle end-face by a stick type cleaner 19
Figure C.2 – Cleaning optical transceiver receptacle end-face using a pen type cleaner 20
Figure D.1 – Examples of visual inspection instruments for optical connector end-face 22

Table 1 – Typical optical connector receptacle cleaning tools and machines 11
Table 2 – Applicable cleaning tools and machines depending on the internal structure of optical transceivers 12

Withdrawn

Documents
Document Sharing Hub
Full document details: IEC TR 62572-4 2013

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – RELIABILITY STANDARDS –

Part 4: Guidelines for optical connector end-face cleaning methods for receptacle style optical transceivers

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.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

IEC/TR 62572-4, which is a technical report, has been prepared by subcommittee 86C: Fibre optic active components and devices, of IEC technical committee 86: Fibre optics.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
86C/1147/DTR	86C/1182/RVC

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

Withdrawn

AVA Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

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

A list of all parts in IEC 62752 series, under the general title *Fibre optic active components and devices – Reliability standards*, 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.

Withdrawn

Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

INTRODUCTION

High speed internet communication systems and subscriber systems have spread rapidly owing to the increased capacity of data communication. In these systems, receptacle style optical transceivers such as SFP (small form factor pluggable), XFP (10-Gbps small form factor pluggable), which can be mounted and removed during transmission systems operation, are widely used. Optical receptacles of optical transceivers are connected to optical connector plugs of optical patch cords and optical signals are transmitted and received through these optical receptacles. Pluggable type optical transceivers are required to be low cost and of small size, and the designs are often simplified. Therefore, the internal structure, especially the receptacle structure, tends to vary between optical transceiver manufacturers.

Generally, to maintain high reliability, optical connections require cleaning of the optical connector end-face. The technical report on cleaning of optical connector plugs and optical adaptors, IEC/TR 62627-01, which was proposed by Japan, was published in August, 2010.

There are, however, no standard cleaning methods for the optical receptacles of optical transceivers. It is a concern that the failure of optical transceivers due to damage and contamination of the optical receptacle end-face may lead to failure in optical network systems.

This technical report is based on OITDA TP12/TP-2012.[1][1]

Withdrawn

[1] References in square brackets refer to the Bibliography.

Documents
Document Sharing Hub

Full document details: IEC TR 62572-4 2013

FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – RELIABILITY STANDARDS –

Part 4: Guidelines for optical connector end-face cleaning methods for receptacle style optical transceivers

Withdrawn

1 Scope

IEC/TR 62572-4, which is a technical report, provides guidelines for optical connector end-face cleaning methods for receptacle style optical transceivers. It includes details about handling receptacle style optical transceivers, internal structures of optical transceivers, information on cleaning tools and machines, applicable cleaning methods and cleaning procedures.

Receptacle style optical transceivers as well as optical fibre patch cords are handled by operators and maintenance staff of optical network systems. This technical report may be used as a guideline to prepare instruction manuals for the operators and maintenance staff of optical network systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/TR 62627-01, *Fibre optic interconnecting devices and passive components – Part 01: Fibre optic connector cleaning methods*

IEC/TR 62627-05, *Fibre optic interconnecting devices and passive components – Part 05: Investigation on impact of contamination and scratches on optical performance of single mode (SM) and multimode (MM) connectors*[2]

3 Terms and definitions

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

3.1
stub
polished short ferrule, including optical fibre inside, mounted in a receptacle style optical transceiver

Note 1 to entry: The stub is connected to an optical connector plug of an optical patch cord.

3.2
stub type optical transceiver
receptacle style optical transceiver with a stub

[2] To be published.

Documents
Document Sharing Hub