

This is a preview - click here to buy the full publication



IEC TR 62627-06

Edition 1.0 2014-05

TECHNICAL REPORT



**Fibre optic interconnecting devices and passive components –
Part 06: Mechanical design proving nutation test results for reinforced fibre
cable terminated with optical connectors for high density patching applications**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

K

ICS 33.180.20

ISBN 978-2-8322-1574-6

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

CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Fibre operation in high density packaged system.....	6
4 Tensile force measurements for reinforced fibre cable assemblies.....	7
5 Adequate tensile force for nutation test.....	8
6 Nutation test method	8
7 Example of nutation test results.....	9
8 Conclusions.....	10
Figure 1 – High density packaged equipment.....	7
Figure 2 – Experimental set-up for tensile load measurement	7
Figure 3 – Tensile load histogram	8
Figure 4 – Nutation test apparatus	9
Table 1 – Experimental results.....	9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS –

Part 06: Mechanical design proving nutation test results for reinforced fibre cable terminated with optical connectors for high density patching applications

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 62627-06, which is a technical report, has been prepared by subcommittee SC86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

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

Enquiry draft	Report on voting
86B/3714/DTR	86B/3751/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.

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

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.

INTRODUCTION

Optical connectors are widely used in a variety of optical communication systems. These connectors are sometimes used in high density equipment. When an optical fibre cable assembly is connected to a receptacle port, the optical fibre cable assembly connected to an adjacent port may be pulled to one side. During this operation, the pulling force has the potential to act on the optical fibre cable in an oblique direction. When an optical fibre cable assembly is pulled to one side, the tensile force acts on the optical connector in various directions. The optical connector has to possess mechanical durability to withstand the tensile force imposed on it, and an allowable tensile force should be defined to ensure that the system can continue to operate. Therefore test methods are used to evaluate the mechanical durability when an optical fibre cable assembly is pulled laterally. One of these tests methods is nutation.

The IEC Japan National Committee (JPNC) undertook research on a nutation test for optical connectors terminated with reinforced fibre cable.

FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS –

Part 06: Mechanical design proving nutation test results for reinforced fibre cable terminated with optical connectors for high density patching applications

1 Scope

This part of IEC 62627, which is a technical report, describes the results of mechanical design proving tests for a high density systems application, carried out using the nutation test according to IEC 61300-2-35, performed on reinforced fibre cable terminated with optical connectors. A tensile load is suggested for the design proving requirements to be used to ensure that connectors meet the mechanical design requirements of connectors for specific application.

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 60794-2-50, *Optical fibre cables – Part 2-50: Indoor cables – Family specification for simplex and duplex cables for use in terminated cable assemblies*

IEC 61300-2-35, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-35: Tests – Cable nutation*

IEC 61300-2-51, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-51: Tests – Fibre optic connector test for transmission with applied tensile load – Singlemode and multimode*