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Fibre optic active components and devices – Reliability standards – Part 2: Laser module degradation

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – RELIABILITY STANDARDS –

Part 2: Laser module degradation

FOREWORD

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IEC 61751-2, which is a technical report, has been prepared by subcommittee 86C: Fibre optic systems and active devices of IEC technical committee 86: Fibre optics, based on the Standard IEC 61751 prepared by subcommittee 47C: Optoelectronic, display and imaging devices, of IEC technical committee 47: Semiconductor devices.

The field of this technical report will henceforth be placed under the responsibility 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/833/DTR	86C/847/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.

A list of all parts of 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 maintenance result 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- withdrawn,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.

INTRODUCTION

The laser modules covered by this technical report are purchased by a system supplier (SS) to be inserted in equipments which in turn are supplied/sold to a system operator (SO), for example, a telecommunications company (see definitions in Clause 3).

For the system operator to act as an informed buyer, knowledge of the potential risks posed by the use of critical components is required.

Optoelectronic component technology is continuing to develop. Consequently, during product development phases, many failure mechanisms in laser modules have been identified. These failure mechanisms, if undetected, could result in very short laser lifetime in system use.

FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – RELIABILITY STANDARDS –

Part 2: Laser module degradation

1 Scope

This technical report deals with reliability assessment of laser modules used for telecommunication guidance on testing, use of failure criteria and reliability predictions is provided.

This technical report provides guidance on:

– the testing that a system supplier should ensure is in a place prior to procurement of a laser module from a laser module manufacturer;

– a range of activities expected of a system supplier to verify a laser module manufacturer's reliability claims.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60068-2-1: *Environmental testing – Part 2-1: Tests. Tests A: Cold*

IEC 60068-2-14: *Environmental testing – Part 2-14: Tests. Test N: Change of temperature*

IEC 60747-1: *Semiconductor devices Part 1: General*

IEC 60749-1: *Semiconductor devices – Mechanical and climatic test methods Part 1: General*

ISO 9000: *Quality management systems – Fundamentals and vocabulary*

MIL-STD-883G: *Test method standard, microcircuits*