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TECHNICAL REPORT

Dynamic modules –
Part 6-6: Design guide – Failure mode effect analysis for optical units of dynamic modules



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CONTENTS

FOREWORD 3
1 Scope 5
2 Normative references 5
3 Terms and definitions 6
4 Consideration of types of dynamic modules 6
5 Typical failure points 6
6 Failure modes and known failure mechanisms 7
Bibliography 29

Table 1 – Categorization based on the structure and mode of evaluation 7
Table 2 – Failure mode and known failure mechanisms for the optical units of dynamic devices 8

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DYNAMIC MODULES –

Part 6-6: Design guide – Failure mode effect analysis for optical units of dynamic modules

FOREWORD

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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 62343-6-6, which is a Technical Report, has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2011. It constitutes a technical revision.

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

a) addition of the LCOS based and the DLP based wavelength selective switch (WSS);

b) addition of the multicast optical switch module (MCOS).

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

DTR	Report on voting
86C/1396/DTR	86C/1421/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 in the IEC 62343 series, published under the general title *Dynamic modules*, 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- withdrawn,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.

DYNAMIC MODULES –

Part 6-6: Design guide – Failure mode effect analysis for optical units of dynamic modules

1 Scope

This part of IEC 62343, which is a Technical Report, describes failure mode effect analysis (FMEA) for optical units of dynamic modules. FMEA is one of the effective and useful analysis methods to determine the reliability evaluation test items and conditions that are defined in future reliability qualification documents.

In order to estimate the lifetime for a module, there is a typical procedure. The first step is to identify the dominant failure modes. The second step is to determine the acceleration tests according to these failure modes. The third step is to carry out the test. The fourth step is to estimate the acceleration factors. Finally, the fifth step is to calculate the lifetime of the dynamic module.

IEC 61300-2 (all parts) defines environment and mechanical tests. This Technical Report describes the dominant failure mode for dynamic modules and relevant tests from IEC 61300-2 (all parts).

2 Normative references

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.

IEC 61300-2-1, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-1: Tests – Vibration (sinusoidal)*

IEC 61300-2-4, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-4: Tests – Fibre/cable retention*

IEC 61300-2-9, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-9: Tests – Shock*

IEC 61300-2-17, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-17: Tests – Cold*

IEC 61300-2-18, F*ibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-18: Tests – Dry heat – High temperature endurance*

IEC 61300-2-19, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-19: Tests – Damp heat (steady state)*

IEC 61300-2-22, *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 2-22: Tests – Change of temperature*