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Optical amplifiers –
Part 7: Four wave mixing effect in optical amplifiers

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FOREWORD

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IEC 61292-7, which is a technical report, has been prepared by subcommittee 86C: Fibre optic systems and active 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/1029/DTR	86C/1036/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 61292 series, under the general title *Optical amplifiers,* 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- withdrawn,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.

INTRODUCTION

The four-wave mixing (FWM) effect is known as one of the major restrictions in DWDM transmission systems. Although observation, conditions for generation, and evaluation methods have been reported in the literature, no international standards have been published on this subject, and manufacturers and users evaluate this phenomenon using their own techniques.

This technical report is dedicated to the subject of four-wave mixing (FWM) effects in optical amplifiers. It provides an overview of the FWM effect and references information on test methods. The technology of optical amplifiers is quite new and still emerging; hence amendments and new editions to this technical report can be expected.

OPTICAL AMPLIFIERS –

Part 7: Four wave mixing effect in optical amplifiers

1 Scope and object

This part of IEC 61292, which is a technical report, applies to optical amplifiers (OAs) using active fibres and waveguides, containing rare-earth dopants, currently commercially available.

It provides guidance on crosstalk caused by the four-wave mixing (FWM) effect. The object of this technical report is to provide introductory information for understanding of the crosstalk issue raised by the FWM effect. This report also presents a measurement method in Annex A.

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 61290-10-4: *Optical amplifiers – Test methods – Part 10-4: Multichannel parameters – Interpolated source subtraction method using an optical spectrum analyzer*

NOTE A list of informative references is given in the Bibliography.