

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Fibre optic communication subsystem test procedures –  
Part 1-4: General communication subsystems – Light source encircled flux  
measurement method**

**Procédures d'essai des sous-systèmes de télécommunication fibroniques –  
Partie 1-4: Sous-systèmes généraux de télécommunication – Méthode de  
mesure du flux inscrit de la source optique**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC COMMUNICATION SUBSYSTEM  
TEST PROCEDURES –****Part 1-4: General communication subsystems –  
Light source encircled flux measurement method**

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IEC 61280-1-4 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

This third edition cancels and replaces the second edition published in 2009. This edition constitutes a technical revision.

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

- a) improvement of calibration procedure and calibration traceability;
- b) improvement of fibre shaker description and requirements;
- c) addition of pulsed light sources;
- d) removal of a poorly traceable calibration process using a micro positioner.

The text of this International Standard is based on the following documents:

| Draft        | Report on voting |
|--------------|------------------|
| 86C/1806/CDV | 86C/1828/RVC     |

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

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## INTRODUCTION

This part of IEC 61280 specifies how to measure the encircled flux of a multimode light source. Encircled flux is a fraction of the cumulative output power to the total output power as a function of radial distance from the centre of the multimode optical fibre's core.

The basic approach is to collect two-dimensional (2D) nearfield data, using a calibrated camera, and to mathematically convert the 2D data into three normalized functions of radial distance from the fibre's optical centre. The three functions are intensity, incremental flux, and encircled flux. The intensity represents optical power per surface area (in watts per square meter). The incremental flux represents optical power per radius differential (in watts per meter), and the encircled flux represents a fraction of the cumulative output power to the total output power.

These three radial functions are intended to characterize fibre optic laser sources either for use in mathematical models predicting the minimum guaranteed length of a communications link, or to qualify a light source to measure insertion loss in multimode links.