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Edition 2.0 2021-03

INTERNATIONAL STANDARD

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Fibre optic communication subsystem test procedures – Part 2-8: Digital systems – Determination of low BER using Q-factor measurements

Procédures d'essai des sous-systèmes de télécommunications fibroniques – Partie 2-8: Systèmes numériques – Détermination de faibles valeurs de BER en utilisant des mesures du facteur Q

IEC 61280-2-8:2021-03 (en-fr)

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FIBRE OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 2-8: Digital systems – Determination of low BER using Q-factor measurements

FOREWORD

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IEC 61280-2-8 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 second edition cancels and replaces the first edition published in 2003. This edition constitutes a technical revision.

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

a) correction of errors in Formula (8) in 5.5.2 and in a related formula in 5.5.3;
b) correction of errors in the references to clauses, subclauses, figures, procedures, and in the Bibliography;
c) alignment of the terms and definitions in 3.1 with those in IEC 61281-1.

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

FDIS	Report on voting
86C/1708/FDIS	86C/1711/RVD

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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

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- amended.

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FIBRE OPTIC COMMUNICATION SUBSYSTEM TEST PROCEDURES –

Part 2-8: Digital systems – Determination of low BER using Q-factor measurements

1 Scope

This part of IEC 61280 specifies two main methods for the determination of low BER values by making accelerated measurements. These include the variable decision threshold method (Clause 5) and the variable optical threshold method (Clause 6). In addition, a third method, the sinusoidal interference method, is described in Annex B.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
amplified spontaneous emission
ASE
optical power associated to spontaneously emitted photon amplified by an active medium in an optical amplifier

3.1.2
bit error ratio
BER
P_e
number of errored bits divided by the total number of bits, over some stipulated period of time

3.1.3
inter-symbol interference
ISI
overlap of adjacent pulses as caused by the limited bandwidth characteristics of the optical devices in a fibre optic link

3.1.4
Q-factor
Q
ratio of the difference between the mean voltage of the 1 and 0 rails, to the sum of their standard deviation values