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

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NATIONAL FOREWORD

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Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
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ICS 33.180.10

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61280-2-8

April 2021

ICS 33.180.10

Supersedes EN 61280-2-8:2003 and all of its amendments and corrigenda (if any)

English Version

Fibre optic communication subsystem test procedures - Part 2-8: Digital systems - Determination of low BER using Q-factor measurements (IEC 61280-2-8:2021)

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)

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European foreword

The text of document 86C/1708/FDIS, future edition 2 of IEC 61280-2-8, prepared by SC 86C "Fibre optic systems and active devices" of IEC/TC 86 "Fibre optics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61280-2-8:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022-01-06
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-04-06

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IEC 61281-1	NOTE	Harmonized as EN IEC 61281-1

IEC 61280-2-8

Edition 2.0 2021-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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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)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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IEC 61280-2-8

Edition 2.0 2021-03

INTERNATIONAL STANDARD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 33.180.10

ISBN 978-2-8322-9497-0

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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.

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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
intersymbol 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