BSI Standards Publication

Calibration of optical time-domain reflectometers (OTDR)

Part 1: OTDR for single-mode fibres
This British Standard is the UK implementation of EN 61746-1:2011, incorporating corrigendum September 2014. It is identical to IEC 61746-1:2009. It supersedes BS EN 61746:2005, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/86, Fibre optics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Calibration of optical time-domain reflectometers (OTDR) -
Part 1: OTDR for single-mode fibres

(IEC 61746-1:2009)
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This European Standard supersedes EN 61746:2005.

The main technical changes to EN 61746:2005 are:

- the adaptation of Clause 4;
- the deletion of Clause 10;
- the adaptation of some definitions and calculations;
- the change of graphical symbology to IEC/TR 61930.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2011-10-02
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2014-01-02

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61746-1:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

[7] IEC 61300-3-2 NOTE Harmonized as EN 61300-3-2.
[8] IEC 61300-3-6 NOTE Harmonized as EN 61300-3-6.
Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

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INTRODUCTION

In order for an Optical time-domain reflectometer (OTDR) to qualify as a candidate for complete calibration using this standard, it must be equipped with the following minimum feature set:

a) a programmable index of refraction, or equivalent parameter;
b) the ability to present a display of a trace representation, with a logarithmic power scale and a linear distance scale;
c) two markers/cursors, which display the loss and distance between any two points on a trace display;
d) the ability to measure absolute distance (location) from the OTDR's zero-distance reference;
e) the ability to measure the displayed power level relative to a reference level (for example, the clipping level);
f) the ability to evaluate the reflectance of a reflective event.
CALIBRATION OF OPTICAL TIME-DOMAIN REFLECTOMETERS (OTDR) –

Part 1: OTDR for single mode fibres

1 Scope

This part of IEC 61746 provides procedures for calibrating single-mode optical time domain reflectometers (OTDR). It only covers OTDR measurement errors and uncertainties.

This standard does not cover correction of the OTDR response.

2 Normative references

The following referenced documents are indispensable for the application 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.


ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories


3 Terms, definitions and symbols

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

NOTE For more precise definitions, the references to IEC 60050-731 should be consulted.

3.1 attenuation loss

\[ A = 10 \log_{10} \left( \frac{P_{\text{in}}}{P_{\text{out}}} \right) \text{ dB} \]  

[IEV 731-01-48, modified]