

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic interconnecting devices and passive components – Basic test and measurement procedures –

Part 3-39: Examinations and measurements – Physical contact (PC) optical connector reference plug selection for return loss measurements

Dispositifs d'interconnexion et composants passifs à fibres optiques – Méthodes fondamentales d'essais et de mesures –

Partie 3-39: Examens et mesures – Choix d'une fiche de référence pour connecteur optique à contact physique (PC) pour la mesure de l'affaiblissement de réflexion



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DEVICES AND PASSIVE COMPONENTS –
BASIC TEST AND MEASUREMENT PROCEDURES –****Part 3-39: Examinations and measurements –
Physical contact (PC) optical connector reference
plug selection for return loss measurements**

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International Standard IEC 61300-3-39 has been prepared by subcommittee 86B: Fibre optic interconnecting devices and passive components, of IEC technical committee 86: Fibre optics.

This second edition of IEC 61300-3-39 cancels and replaces the first edition published in 1997 and constitutes a technical revision. Changes from the previous edition are structure of the standard, general description and the Annex.

The text of this standard is based on the following documents:

FDIS	Report on voting
86B/3274/FDIS	86B/3306/RVD

Full information on the voting for the approval of this standard 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.

The list of all parts of IEC 61300 series, published under the general title *Fibre optic interconnecting and passive components – Basic test and measurement procedures*, 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

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FIBRE OPTIC INTERCONNECTING DEVICES AND PASSIVE COMPONENTS – BASIC TEST AND MEASUREMENT PROCEDURES –

Part 3-39: Examinations and measurements – Physical contact (PC) optical connector reference plug selection for return loss measurements

1 Scope

The objective of this part of IEC 61300 is to select non-angled physical contact (PC) optical connector plugs for use as the reference plug in the return loss RL measurement and to define an acceptance return loss value RL_a for use in plug acceptance testing.

This procedure is for use to guarantee a certain return loss value RL when two plugs have been successfully tested against the reference connector when randomly mated.

2 Normative references

The following referenced documents are essential 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.

IEC 61300-3-6. *Fibre optic interconnecting devices and passive components – Basic test and measurement procedures – Part 3-6: Examinations and measurements – Return loss*

3 General description

3.1 General

Return loss at mating points of mated non-angled PC optical connectors occurs due to multiple reflections at thin damaged layers on the fibre surface due to the polishing process. The refractive index of the damaged layers is higher than that of the silica fibre. Due to this consideration, it is possible to derive a simple law for predicting the return loss of a connection formed by mating two plugs, and to define a parameter that characterizes the reflectance behaviour of each single plug.

When testing a plug against a reference one, the measured return loss depends on the characteristics of the reference plug used. In order to guarantee that two randomly mated plugs give a return loss greater than a minimum acceptable value RL_m , the following steps are necessary:

- select the reference plug with well-defined characteristics;
- set a lower limit, RL_a , for the return loss of each plug measured against the reference plug.

3.2 Definitions

3.2.1 Reference plug

A reference plug is defined as any plug in a group of plugs (minimum three) that, mated together in each possible combination, give results with a specified value of return loss RL_{ref} (see 5.1 for an operative method of reference plug selection). The value for RL_{ref} and the