SLOVENSKI STANDARD
SIST EN 2591-603:2004

01-maj-2004

Aerospace series - Elements of electrical and optical connection - Test methods - Part 603: Optical elements - Change of power distribution

Aerospace series - Elements of electrical and optical connection - Test methods - Part 603: Optical elements - Change of power distribution

Luft- und Raumfahrt - Elektrische und optische Verbindungselemente - Prüfverfahren - Teil 603: Optische Elemente - Änderung der Leistungsverteilungskurve

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Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 603: Organes optiques - Modification de la distribution de puissance

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ICS:

49.060	Letalska in vesoljska elektriļ na oprema in sistemi	Aerospace electric equipment and systems

SIST EN 2591-603:2004 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

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English version

Aerospace series - Elements of electrical and optical connection - Test methods - Part 603: Optical elements - Change of power distribution

Série aérospatiale - Organes de connexion électrique et optique - Méthodes d'essais - Partie 603: Organes optiques - Modifcation de la distribution de puissance

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This European Standard was approved by CEN on 8 February 2002.

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Foreword

This document (EN 2591-603:2002) has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of AECMA, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2002, and conflicting national standards shall be withdrawn at the latest by December 2002.

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom

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1 Scope

This standard specifies a method of detecting changes in the power distribution when using optical connection elements (including permanent connections) with optical contacts and fibre optic couplers.

These changes are attributable to mode-selective loss mechanisms or uneven distribution of coupled modes.

It shall be used together with EN 2591-100.

2 Normative references

This European Standard incorporates by dated or undated reference provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 2591-100 Aerospace series – Elements of electrical and optical connection – Test methods – Part 100: General [1)]

EN 2591-601 Aerospace series – Elements of electrical and optical connection – Test methods – Part 601: Optical elements – Insertion loss

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3 Preparation of specimens

3.1 Specimens shall be fitted with normal accessories, mounted and terminated in accordance with the product standard. Cavities with unterminated contacts shall have filler plugs fitted (where applicable).

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For optical connection elements and splices, "n" fibre specimens shall be prepared in accordance with the configuration of EN 2591-601, method 1.

For couplers, "n" specimens shall be prepared in accordance with the configuration of EN 2591-601, method 2.

3.2 Unless indicated in the technical specification, the following details shall be specified:

- type and length of cable/fibre;
- permitted change in the power distribution curve.

4 Apparatus

It shall comprise:

- a Light Launch System (LLS) as defined in EN 2591-100;
- a Light Detector System (LDS) as defined in EN 2591-100.

A detector which may be a single diode or detector mounted on a goniometer arrangement (see figure 1) shall enable measurements to be made in at least two axes.
The detector system shall be compatible with the spatial resolution of the required optical power distribution.

1) Published as AECMA Prestandard at the date of publication of this standard

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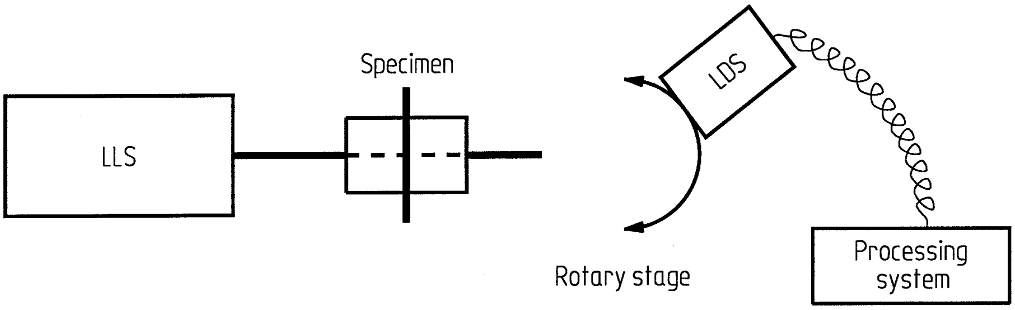

Figure 1

Other systems may also be considered, for example a coupled charge device array, camera, video analyser, etc. (see figure 2).

The radiation emerging from the optical fibre shall be measured using a detector system which allows far-field measurement, i.e.: light intensity as a function of the angle to the optical fibre axis.

Chopping the optical signal is desirable for ease of evaluation.

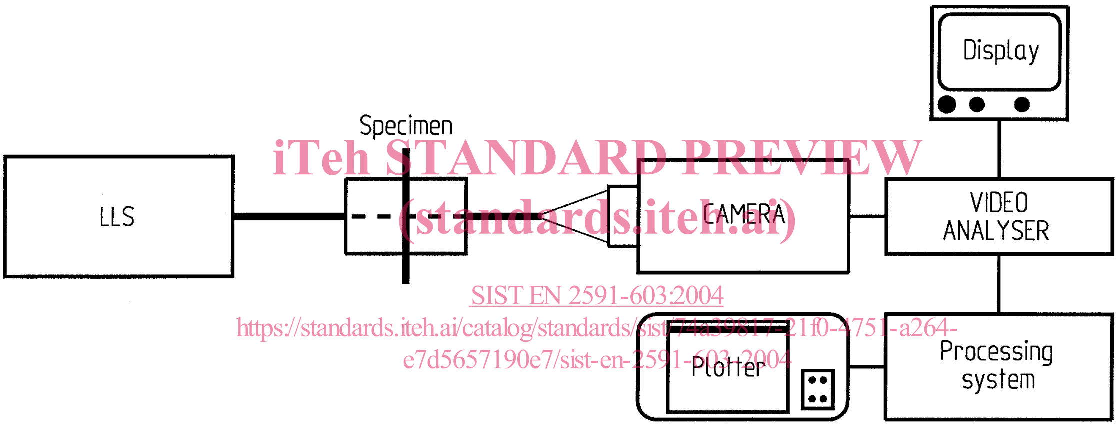

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Figure 2

5 Method

5.1 The test shall be based on a comparison measurement, using, as an example, the test arrangement shown in figure 1.

5.2 Procedure

5.2.1 Optical connection elements and splices

Measure the far-field power distribution characteristic of the reference fibre.

Cut the fibre and insert the optical connection element or splice (EN 2591-601, method 1).

Measure the far-field power distribution of the fibre and optical connection element or splice.

5.2.2 Couplers

Measure the far-field power distribution characteristic of the reference fibre.
Remove the reference cable/fibre and replace with the specimen coupler (EN 2591-601, method 2).
Measure the far-field power distribution of the specimen coupler.

5.3 Requirements

The curves shall be compared to establish how the far-field distribution has been changed by the insertion of a specimen. This change shall be in accordance with the product standard.