Mechanical structures for electronic equipment — Tests for IEC 60917 and IEC 60297 series

Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation
National foreword

This British Standard is the UK implementation of EN 61587-1:2017. It is identical to IEC 61587-1:2016. It supersedes BS EN 61587-1:2012, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/48, Electromechanical components and mechanical structures for electronic equipment.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Mechanical structures for electronic equipment - Tests for IEC 60917 and IEC 60297 series - Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation (IEC 61587-1:2016)

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) 2017-10-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-04-21

This document supersedes EN 61587-1:2012.

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Endorsement notice

The text of the International Standard IEC 61587-1:2016 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:

- IEC 60068 (series) NOTE Harmonized as EN 60068 (series).
- IEC 60068-2-75 NOTE Harmonized as EN 600068-2-75.
- IEC 62262 NOTE Harmonized as EN 62262.
Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MECHANICAL STRUCTURES FOR ELECTRONIC EQUIPMENT - TESTS FOR IEC 60917 AND IEC 60297 SERIES -

Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

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International Standard IEC 61587-1 has been prepared by IEC subcommittee 48D: Mechanical structures for electronic equipment, of IEC technical committee 48: Electrical connectors and mechanical structures for electrical and electronic equipment.

This fourth edition cancels and replaces the third edition published in 2011. This edition constitutes a technical revision.

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

a) total overhaul of Clause 7 "Mechanical tests";
b) compatibility with IEC 61587-5.
The text of this standard is based on the following documents:

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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.

A list of all parts of the IEC 61587 series, under the general title Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 series, 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 website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.
INTRODUCTION

The purpose of this standard is to provide a common methodology to perform and report conformance tests of IEC 60917 or IEC 60297 compliant cabinets, racks, subracks, chassis with integrated subracks and associated plug-in units under indoor condition use and transportation. Based upon the most recent specification/standard developments in the industry (such as PICMG, ANSI/VITA, ATIS, etc.) and to address new requirements, this edition 4 of IEC 61587-1 includes the following significant technical changes with respect to the previous edition:

a) Document title change to read: IEC 61587-1: Mechanical structures for electronic equipment – Tests for the IEC 60917 and IEC 60297 series – Part 1: Environmental requirements, test set-up and safety aspects for cabinets, racks, subracks and chassis under indoor condition use and transportation.

b) Total overhaul of Clause 7 “Mechanical tests” so as to make it compatible with legacy equipment (i.e., equipment commercially available prior to the publication of the standard). In particular:

1) Subclause 7.2 “Tests for subracks or chassis with an integrated subrack and associated plug-in units” has been considerably expanded and provides for a more realistic intended use test environment (simulation of service condition).

2) Subclause 7.2.1 “Static mechanical load tests of a subrack or a chassis with an integrated subrack” cabinet or rack static load test categories such as cabinets or racks with lifting eye test only and cabinets or racks without the use of lifting eyes have been added.

3) Subclause 7.2.3 “Vibration and shock test of a mass loaded plug-in unit” has been updated to be in line with IEC 62262, which defines the way cabinets should be mounted when impact tests are carried out, the atmospheric conditions that should prevail, the number of impacts, and their distribution, and the physical size, dimensions, etc. of the various styles of hammers designed to produce the test energy level required.

c) Compatibility with IEC 61587-5.
1 Scope

This part of IEC 61587 specifies environmental requirements, test set-up, as well as safety aspects for empty enclosures, i.e., cabinets, racks, subracks, chassis with an integrated subrack, and associated plug-in units under indoor condition use and transportation.

The purpose of this standard is to establish defined levels of physical performance in order to meet certain requirements of storage, transport and final location conditions. It applies in whole or part only to the mechanical structures of cabinets, racks, subracks, chassis with an integrated subrack, and associated plug-in units, but it does not apply to electronic equipment.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60068-1, Environmental testing – Part 1: General and guidance
IEC 60068-2-1, Environmental testing – Part 2-1: Tests – Test A: Cold
IEC 60068-2-2, Environmental testing – Part 2-2: Tests – Test B: Dry heat
IEC 60068-2-6, Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)
IEC 60068-2-11, Environmental testing – Part 2-11: Tests – Test Ka: Salt mist
IEC 60068-2-30, Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle)
IEC 60068-2-42, Environmental testing – Part 2-42: Tests – Test Kc: Sulphur dioxide test for contacts and connections