

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Mechanical structures for electrical and electronic equipment – Tests for IEC 60917 and IEC 60297 series –  
Part 1: Environmental requirements, test setups and safety aspects**

**Structures mécaniques pour les équipements électriques et électroniques –  
Essais pour les séries IEC 60917 et IEC 60297 –  
Partie 1: Exigences environnementales, montages d'essai et aspects liés à la  
sécurité**



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## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references .....	8
3 Terms and definitions .....	10
4 Classification of environmental conditions .....	10
5 General .....	11
6 Climatic tests.....	12
6.1 General.....	12
6.2 Cold, dry heat and damp heat (cyclic) .....	12
6.3 Industrial atmosphere .....	13
7 Mechanical load tests for subracks and associated plug-in units, chassis integrated subracks and chassis.....	14
7.1 General.....	14
7.2 Test setup.....	14
7.3 Test sample arrangement .....	15
7.4 Mechanical static load test.....	17
7.4.1 Mechanical static load categories .....	17
7.4.2 Total mass test categories .....	18
7.4.3 Test conditions .....	19
7.4.4 Test procedures.....	19
7.4.5 Assessment following the mechanical static load test .....	19
7.5 Mechanical dynamic load tests.....	19
7.5.1 Test conditions .....	19
7.5.2 Test procedures.....	20
7.5.3 Assessment following the vibration and shock tests .....	21
8 Mechanical load tests for cabinets and racks .....	21
8.1 General.....	21
8.2 Test setups for static load tests .....	21
8.3 Mechanical static load tests .....	25
8.3.1 General .....	25
8.3.2 Nominal load test (NL).....	25
8.3.3 Vertical structure test (VT).....	26
8.3.4 Stiffness test (ST).....	27
8.3.5 Combined classification levels of static loads for cabinets or racks .....	29
8.4 Mechanical dynamic load tests (vibration and shock tests).....	29
8.4.1 General .....	29
8.4.2 Test conditions .....	30
8.4.3 Test procedures.....	31
8.4.4 Assessment following the test.....	31
9 Applications of other performance levels or classifications and safety aspects .....	31
9.1 General.....	31
9.2 Degree of protection (IP code) .....	32
9.3 Impact test (IK code).....	32
9.4 Protective earth bonding .....	32
9.5 Flammability .....	32
9.6 Stability of cabinet or rack installations .....	32

Annex A (normative) Mechanical load tests for plug-in units .....	34
A.1 General.....	34
A.2 Test setup and test sample arrangement .....	34
A.3 Plug-in units mass load categories.....	36
A.4 Mechanical dynamic load tests.....	37
A.4.1 Test conditions .....	37
A.4.2 Test procedures and assessment following the tests .....	37
Annex B (normative) Stability tests for cabinets or racks equipped with castors .....	38
B.1 General.....	38
B.2 Stability tests .....	38
B.2.1 General .....	38
B.2.2 Test conditions and requirements .....	38
B.2.3 Test procedure and test severity.....	39
B.3 Assessment following tests .....	44
B.3.1 Assessment following the rolling test and the threshold test.....	44
B.3.2 Assessment following the blocking test and the touch-down test.....	44
B.4 Classification (stability performance levels).....	45
Figure 1 – Test setup within the test fixture.....	15
Figure 2 – Test sample arrangement, subrack with loaded plug-in units.....	16
Figure 3 – Test sample arrangement, chassis with an integrated subrack with loaded plug-in units.....	16
Figure 4 – Test sample arrangement, chassis with a dummy load .....	17
Figure 5 – Type A test setup, with M3 and M4 dummy loads .....	22
Figure 6 – Type B test setup, with M5 dummy loads .....	23
Figure 7 – Type C test setup, with M6 dummy loads on mounting plate.....	24
Figure 8 – Vertical structure test for cabinets or racks .....	26
Figure 9 – Stiffness test for cabinets or racks .....	28
Figure A.1 – Test setup and test fixture, for plug-in units in accordance with IEC 60297 series and IEC 60917 series .....	36
Figure B.1 – Rolling test setup .....	39
Figure B.2 – Threshold test setup .....	41
Figure B.3 – Blocking test setup .....	42
Figure B.4 – Touch-down test setup.....	44
Table 1 – Examples showing references to tests.....	11
Table 2 – Classifications for cold, dry heat and damp heat.....	12
Table 3 – Classifications for industrial atmosphere .....	13
Table 4 – Mechanical static load classification .....	18
Table 5 – Total mass test categories, for subracks and chassis integrated subracks.....	19
Table 6 – Vibration and shock load classifications for subracks, chassis integrated subracks and chassis.....	20
Table 7 – Nominal load test values for Type A test setup, with M3 and M4 dummy loads .....	22
Table 8 – Nominal load test values for Type B test setup, with M5 dummy loads.....	23
Table 9 – Nominal load test values for Type C test setup, with M6 dummy loads .....	24
Table 10 – Typical reporting of a cabinet nominal load test (NL) .....	26

Table 11 – Classification levels for cabinets/racks – vertical structure test (VT) .....	27
Table 12 – Typical reporting of a cabinet vertical structure test (VT) .....	27
Table 13 – Classification levels for cabinets/racks – stiffness tests (ST) .....	28
Table 14 – Typical reporting of a cabinet stiffness test (ST) .....	29
Table 15 – Combined classification levels of loads for cabinets or racks .....	29
Table 16 – Typical reporting of a cabinet combined static load test .....	29
Table 17 – Vibration and shock classifications for cabinets and racks .....	30
Table A.1 – Plug-in units mass load categories .....	37
Table B.1 – Minimum required load capacity of the castor kit (4 castors and fitting devices) according to the nominal load (NL) classification of cabinets or racks .....	39
Table B.2 – Rolling test .....	39
Table B.3 – Threshold test .....	40
Table B.4 – Blocking test .....	42
Table B.5 – Touch-down test .....	43
Table B.6 – Classification .....	45

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**MECHANICAL STRUCTURES FOR  
ELECTRICAL AND ELECTRONIC EQUIPMENT –  
TESTS FOR IEC 60917 AND IEC 60297 SERIES –****Part 1: Environmental requirements,  
test setups and safety aspects**

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

This fifth edition cancels and replaces the fourth edition published in 2016. This edition constitutes a technical revision.

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

- a) Modification of title.
- b) Revision of Clauses 6, 7 and 8 including new defined test setups.
- c) Compatibility with IEC 61587-2, IEC 61587-3 and IEC 61587-5.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
48D/743/FDIS	48D/748/RVD

Full information on the voting for the approval of this International Standard 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 the 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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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## INTRODUCTION

This document provides a common methodology to perform and report conformance tests of IEC 60917 or IEC 60297 compliant cabinets, racks, subracks, chassis, chassis integrated subracks and associated plug-in units under indoor condition use and transportation conditions.

Manufacturers can show the performance and characteristics of products in their catalogues by using the classifications in accordance with this document.

Users get comparative figures to compare products of different producers and can choose products for their targeted system from their catalogues. With the information of different classification levels, they get important indices for the possible maximum loads of the enclosure, which are important for their individual and safe applicability.

Designers of new products can define the performance requirements of these new products for their targeted systems by referencing this document. This allows a cost optimized design in accordance with the intended application.

This edition 5 constitutes a revision of the previous edition, with the following changes:

a) Subracks, chassis with integrated subracks and associated plug-in units

- The static mechanical tests of subracks as described in edition 4 were based on the inspection of load bearing structural parts (single point load). On the other hand, the dynamic mechanical load test in edition 4 described not only subracks but also various types of chassis with integrated subracks, based on the load categories. In addition, the dynamic mechanical test for plug-in units with mass load was defined. There was no mention of mechanical tests for chassis.
- This edition 5 provides test methods for static load tests for subracks and chassis integrated subracks, which are categorized based on subracks' associated mass loaded plug-in units. The static load test for chassis is similarly categorized by applying with dummy loads for chassis. These load categories for subracks, chassis with integrated subracks and chassis are applied for the dynamic load tests. These test methods solve previous edition lack of requirements on the static/dynamic tests for subracks and associated plug-in units, chassis with integrated subrack and chassis.
- Furthermore, a test setup is defined in a test fixture with optional recessed assembly fixtures at subracks in a housing or rack.
- In the dynamic load tests, the random vibration test is added.
- Specification of individual mechanical tests for plug-in units, which were defined in edition 4, are required for applications of single board computing system or embedded systems in relation with applied connector reliability test. The test specification is introduced as Annex A (normative).

b) Cabinets and racks

- Test setups for the cabinet for different applications, e.g. using a mounting plate, are added.
- The cabinet/rack samples with different dummy loads have been extended by a test sample with dummy loads mounted on a mounting plate for industrial electrical installations.
- The vertical structure test is supplemented instead of the lifting test (LT) of edition 4.
- In the dynamic load tests, the random vibration test is added.

In the revised Clause 9, stability, installation conditions of racks and cabinets are added.