Mechanical structures for electronic equipment – Tests for IEC 60917 and IEC 60297 –

Part 3: Electromagnetic shielding performance tests for cabinets, racks and subracks

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FOREWORD

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 61587-3, which is a technical specification, has been prepared by subcommittee 48D: Mechanical structures for electronic equipment, of IEC technical committee 48: Electromechanical components and mechanical structures for electronic equipment.
The text of this technical specification is based on the following documents:

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Full information on the voting for the approval of this technical specification 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 3.

The committee has decided that this publication remains valid until 2003.

At this date, in accordance with the committee's decision, the publication will be
• reconfirmed;
• withdrawn;
• replaced by a revised edition, or
• amended.

A bilingual version of this Technical Specification may be issued at a later date.
MECHANICAL STRUCTURES FOR ELECTRONIC EQUIPMENT –
TESTS FOR IEC 60917 AND IEC 60297 –
Part 3: Electromagnetic shielding performance tests
for cabinets, racks and subracks

1 Scope and object

This part of IEC 61587 specifies the test of empty cabinets and subracks concerning electromagnetic shielding performance, in the frequency range of 30 MHz to 1 000 MHz. Stipulated attenuation values are chosen for the definition of the shielding performance level of cabinets and subracks as per the IEC 60297 and IEC 60917 series. The shielding performance level of the referenced product will support the measures to achieve electromagnetic compatibility of the finished equipment but cannot replace final testing of compliance.

The purpose of this technical specification is to ensure physical integrity and environmental performance in cabinets and subracks, taking into account the need for different levels of performance in different applications. It is intended to give the user a level of confidence in the selection of products to meet his specific needs. This specification, in whole or part, applies only to the mechanical structures for electronic equipment practices according to IEC 60297 and IEC 60917, and does not apply to electronic equipment or systems.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61587. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61587 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60297-1:1986, Dimensions of mechanical structures of the 482,6 mm (19") series – Part 1: Panels and racks

IEC 60297-2:1982, Dimensions of mechanical structures of the 482,6 mm (19") series – Part 2: Cabinets and pitches of rack structures

IEC 60297-3:1984, Dimensions of mechanical structures of the 482,6 mm (19") series – Part 3: Subracks and associated plug-in units

IEC 60297-4:1995, Mechanical structures for electronic equipment – Dimensions of mechanical structures of the 482,6 mm (19") series – Part 4: Subracks and associated plug-in units – Additional dimensions


IEC 60917-2:1992, Modular order for the development of mechanical structures for electronic equipment practices – Part 2: Sectional specification – Interface co-ordination dimensions for the 25 mm equipment practice
3 Electromagnetic shielding performance tests

3.1 Electromagnetic shielding performance tests for cabinets and subracks

Various levels of shielding performance can be achieved depending upon the construction of the cabinet or subrack. Although shielding performance measurements are of limited value in predicting the final overall system performance, consistent measurement techniques are vital to ensure any measure of repeatability. The test result is valid only for the measured cabinet or subrack and the result cannot be used to compare different cabinets or subracks. The following test technique shall be used for all shielding performance testing. The aim of this technical specification is to provide comparable shielding performance testing results from one test laboratory to another (see IEC 61000-4-3).

3.2 Test conditions

All testing shall be performed in a semi-anechoic or full anechoic chamber, or open field test site as illustrated in the figures. When the semi-anechoic chamber or the open field test site is used, the chamber shall meet the vertical and horizontal site attenuation test described in CISPR 16-1.

3.3 Test configuration

3.3.1 Calibration of the reference antenna

The purpose of calibration is to check the characteristics of the reference antenna, which are the output level of the transmitting antenna and the sensitivity level of the receiving antenna. The test shall be performed by setting the transmitting antenna facing the receiving antenna. The direction of the transmitting antenna is at 0° and the radiated field strength is maximum. The height of the transmitting antenna shall be set at 1,1 m. The receiving antenna shall be positioned 1 m high and 3 m in distance from the transmitting antenna. The frequency is 100 MHz and 500 MHz. Calibration shall be made using both horizontal and vertical antenna polarities.

3.3.2 Transmitting antenna

The transmitting source shall be a spherical dipole antenna (SDA) or similar (see note 3 in 3.5). The size of the transmitting antenna should be equal to or smaller than 150 mm in diameter.