BRITISH STANDARD

BS EN
50116 : 1996

Information technology equipment

Routine electrical safety testing in production

The European Standard EN 50116 : 1996 has the status of a British Standard

ICS 35.020; 35.260.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee EPL/74, Safety and energy efficiency of information technology equipment, on which the following bodies were represented:

BSI Testing Services
British Approvals Board for Telecommunications
British Computer Society
British Electrotechnical Approvals Board
British Telecommunications plc
Department of Trade and Industry (Consumer Safety Unit)
Federation of the Electronics Industries
Health and Safety Executive
Power Supply Manufacturers Association

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on
15 December 1996

Amendments issued since publication

Amd. No.	Date	Text affected

The following BSI references relate to the work on this standard:
Committee reference EPL/74
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Contents

National foreword

This British Standard has been prepared by Technical Committee EPL/74 and is the English language version of EN 50116 : 1996, *Information technology equipment — Routine electrical safety testing in production*, published by the European Committee for Electrotechnical Standardization (CENELEC).

Cross-references

Publication referred to	Corresponding British Standard
EN 60950 : 1992	BS EN 60950 : 1992 *Safety of information technology equipment, including electrical business equipment*

Compliance with a British Standard does not of itself confer immunity from legal obligations.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 50116

August 1996

ICS 35.020; 35.260.10

Descriptors: Information technology equipment, routine test, testing in production, electrical safety, test procedure

English version

Information technology equipment
Routine electrical safety testing in production

Matériel de traitement de l'information
Essais individuels de série, en production, pour la vérification de la sécurité électrique

Einrichtungen der Informationstechnik
Stückprüfungen für die Fertigung in bezug auf elecktrische Sicherheit

This European Standard was approved by CENELEC on 1995-11-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CENELEC TC 74, Safety and energy efficiency of information technology equipment.

The text of the draft was submitted to the formal vote in August 1995 and was approved by CENELEC as EN 50116 on 1995-11-28.

EN 60950 specifies type tests only. Type tests may not be suitable as routine tests to be carried out on equipment during the manufacturing process or at the end of the production line. Nevertheless it is recognised that some safety tests are necessary in order to guarantee an acceptable level of production uniformity, which is also a requirement for certified products.

This standard defines tests to measure the resistance of the earthing circuit and to check the insulation between the primary circuits and accessible conductive parts. In addition, it defines the documentation to be maintained by the manufacturer.

The following dates were fixed:

— latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-12-01

— latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1998-06-01

For products which have complied with the relevant national standard before 1998-06-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2003-06-01.

Contents

1 Scope

This European Standard applies to Information Technology Equipment.

It is intended to be used in conjunction with Operational Document CCA - 201.

This European Standard defines the routine electrical safety tests and their procedures to be applied during or after the manufacturing process of equipment certified or declared as complying with EN 60950.

Alternatively, manufacturers can apply the tests of this Standard to sub-assemblies and components so long as the final equipment continues to comply with EN 60950.

In all cases the application of the tests detailed in this Standard are design dependent and need to be defined by the manufacturer, taking account of all of the conditions identified in Operational Document CCA - 201.

NOTE. Operational Document CCA - 201 is available from National Committees and test houses.

2 Conformance

In order to conform to this European Standard an equipment shall pass the tests of **5.1** and **5.2** where applicable.

3 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 applies.

EN 60950 *Safety of information technology equipment, including electrical business equipment* (IEC 950 modified)

Operational Document CCA - 201 *Factory inspection procedures - CCA Harmonised requirements*

4 Definitions

The definitions of EN 60950 apply.

In addition, for the purpose of this Standard the following definition applies.

routine electrical safety test

A test to which each individual device is subjected during or after manufacture, to detect manufacturing failures and unacceptable tolerances in manufacturing and materials.

5 Tests

5.1 Resistance of the protective earthing circuit

The purpose of this test is to check that the resistance between accessible parts required to be reliably earthed for safety reasons and the protective earthing terminal or earthing contact is not higher than 0,1 Ω.

The test shall be carried out by circulating a test current 1,5 times the current capacity of any hazardous voltage circuit, but not more than 25 A (a.c. or d.c.), for the time required to obtain a meaningful reading, through parts to be tested and the protective earthing terminal or earthing contact.

It is permitted to include the power cord (if any) in the resistance measurement, and, if the result exceeds 0,1 Ω, to subtract the resistance of the protective earthing conductor of the power cord.

5.2 Electric strength

The test is performed by applying to the complete equipment a sinusoidal a.c. voltage of at least 1500 V (for basic insulation) or 3000 V (for reinforced insulation) 50 Hz or 60 Hz, or an equivalent d.c. voltage, selected and applied in accordance with subclause **5.3** of EN 60950.

The test voltage shall be applied between the primary circuit and accessible conductive parts, excluding secondary circuits, and shall be maintained for at least 1 s and no more than 6 s.

Testing of components connected between primary and secondary circuits shall be performed before final assembly.

NOTE 1. Separate testing of components is necessary because tests between the primary circuit and accessible conductive parts of the complete equipment will not necessarily check components and insulation connected between primary and secondary circuits

No insulation breakdown shall occur during the tests.

For the purpose of this Standard, an insulation breakdown, as indicated by a trip current, is defined as any significant increase from the steady state current measured during the electric strength test.

The test equipment shall be provided with a means of indicating the test voltage and the insulation breakdown, e.g. visible and/or audible. The trip current level shall be determined by the manufacturer of the equipment under test.

NOTE 2. The trip current should be set at the minimum practical value. As a reference this value is usually in the order of a few μA for d.c. measurements. For a.c. measurements the current flowing through the r.f.i. filter capacitors has to be taken into account.

NOTE 3. When testing equipment incorporating solid-state components that might be damaged by a secondary effect of the test, the test may be conducted without the components electrically connected, providing that the wiring and terminal spacings are maintained.

NOTE 4. Document CCA - 201 requires that all test results shall be kept available. The choice of support and format for reports is left to the manufacturers; separate forms (one for each equipment) or lists of equipment, grouped according to the most suitable parameters (periods of time, model, etc.) are equally acceptable.

The only obligation is the availability of data and their immediate interpretability for all equipment leaving the production line.

For every piece of equipment tested, the following data are filed:

– date of test;

– model of the equipment;

– serial number of the equipment or another identifier permitting the identification without ambiguity;

– value of earthing circuit resistance with the corresponding current value (*);

– value of voltage applied during the electric strength test (*);

– quick-reference information that the whole set of tests has/has not been successful.

As an alternative to the values referred with an (*) above, the information of the accomplishment of each test (e.g. pass or fail) is permitted, if the pass/fail criteria are described elsewhere on the test report.

List of references

See national foreword.

BSI — British Standards Institution

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Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

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