
**Integrirana vezja – Meritve elektromagnetnega sevanja, od 150 kHz do 1 GHz –
6. del: Meritve prevajanega sevanja – Metoda z magnetno sondo (IEC 61967-
6:2002)**

Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz
– Part 6: Measurement of conducted emissions – Magnetic probe method (IEC
61967-6:2002)

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**Integrated circuits -
Measurement of electromagnetic emissions,
150 kHz to 1 GHz
Part 6: Measurement of conducted emissions -
Magnetic probe method
(IEC 61967-6:2002)**

Circuits intégrés -
Mesure des émissions
électromagnétiques, 150 kHz à 1 GHz
Partie 6: Mesure des émissions
conduites -
Méthode de la sonde magnétique
(CEI 61967-6:2002)

Integrierte Schaltungen -
Messung von elektromagnetischen
Ausstrahlungen im Frequenzbereich
von 150 kHz bis 1 GHz
Teil 6: Messung der leitungsgeführten
Ausstrahlungen -
Magnetsondenverfahren
(IEC 61967-6:2002)

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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 electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

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

Foreword

The text of document 47A/645/FDIS, future edition 1 of IEC 61967-6, prepared by SC 47A, Integrated circuits, of IEC TC 47, Semiconductor devices, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61967-6 on 2002-09-01.

This European Standard should be read in conjunction with EN 61967-1:2002.

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) 2003-06-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-09-01

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A and ZA are normative and annexes B, C and D are informative.

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 61967-6:2002 was approved by CENELEC as a European Standard without any modification.

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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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 (including amendments).

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61967-1	- ¹⁾	Integrated circuits - Measurement of electromagnetic emissions, 150 kHz to 1 GHz Part 1: General conditions and definitions	EN 61967-1	2002 ²⁾
IEC 61967-4	- ¹⁾	Part 4: Measurement of conducted emissions - 1 ohm/150 ohm direct coupling method	EN 61967-4	2002 ²⁾

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¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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**NORME
INTERNATIONALE
INTERNATIONAL
STANDARD**

**CEI
IEC**

61967-6

Première édition
First edition
2002-06

**Circuits intégrés –
Mesure des émissions électromagnétiques,
150 kHz à 1 GHz –**

**Partie 6:
Mesure des émissions conduites –
Méthode de la sonde magnétique**

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Integrated circuits –
Measurement of electromagnetic emissions,
150 kHz to 1 GHz –

**Part 6:
Measurement of conducted emissions –
Magnetic probe method**

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INTEGRATED CIRCUITS –
MEASUREMENT OF ELECTROMAGNETIC EMISSIONS,
150 kHz TO 1 GHz –**

**Part 6: Measurement of conducted emissions –
Magnetic probe method**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
- 3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
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- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61967-6 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices.

The text of this standard is based on the following documents:

FDIS	Report on voting
47A/645/FDIS	47A/653/RVD

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 3.

Annex A forms an integral part of this standard.

Annexes B, C and D are for information only.

This standard should be read in conjunction with IEC 61967-1.

IEC 61967 consists of the following parts, under the general title *Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz*:

Part 1: General conditions and definitions

Part 2: Measurement of radiated emissions – TEM-cell method¹

Part 3: Measurement of radiated emissions – Surface scan method (technical specification)¹

Part 4: Measurement of conducted emissions – 1 Ω /150 Ω direct coupling method²

Part 5: Measurement of conducted emissions – Workbench Faraday cage method²

Part 6: Measurement of conducted emissions – Magnetic probe method

The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

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

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¹ Under consideration.

² To be published.

INTEGRATED CIRCUITS – MEASUREMENT OF ELECTROMAGNETIC EMISSIONS, 150 kHz TO 1 GHz –

Part 6: Measurement of conducted emissions – Magnetic probe method

1 Scope

This part of the IEC 61967 specifies a method for evaluating RF currents on the pins of an integrated circuit (IC) by means of non-contact current measurement using a miniature magnetic probe. This method is capable of measuring the RF currents generated by the IC over a frequency range of 0,15 MHz to 1 000 MHz. This method is applicable to the measurement of a single IC or a chip set of ICs on the standardized test board for characterization and comparison purposes. It is also usable to evaluate the electromagnetic characteristics of an IC or group of ICs on an actual application PCB for emission reduction purposes. This method is called the "magnetic probe method".

2 Normative references

The following referenced documents are indispensable for the application 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 61967-1, *Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 1: General conditions and definitions*

IEC 61967-4, *Integrated circuits – Measurement of electromagnetic emissions, 150 kHz to 1 GHz – Part 4: Measurement of conducted emissions – 1 Ω /150 Ω direct coupling method*³

3 Definitions

For the purposes of this part of IEC 61967 the definitions found in IEC 61967-1 apply.

4 General

4.1 Measurement philosophy

The emissions radiated from a PCB are, in part, caused by RF current generated by the onboard IC which drives PCB traces, PCB ground and supply planes, and cables connected to the PCB. All of these can act as RF antennas to radiate the emissions. The emission level is proportional to the driving RF current, and is also affected significantly by PCB design, radiation effectiveness of the pseudo-antennas, and noise coupling path coefficients from the IC to the pseudo-antennas.

For this emission mechanism, the driving force of the IC can be a significant parameter for both users and manufacturers to estimate and predict the electromagnetic characteristics of a PCB, module, or system. A measure of the emission driving force can be obtained by measuring the RF currents generated by the IC under test. Thus, the measured RF noise current can be regarded as an indicator of the undesirable electromagnetic emission driving force generated by the IC.

³ To be published.