



BSI Standards Publication

# Integrated circuits — Measurement of electromagnetic emissions

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Part 4: Measurement of conducted emissions —  
1  $\Omega$ /150  $\Omega$  direct coupling method

## National foreword

This British Standard is the UK implementation of EN IEC 61967-4:2021. It is identical to IEC 61967-4:2021. It supersedes BS EN 61967-4:2002+A1:2006, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EPL/47, Semiconductors.

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and corrigenda (if any)

English Version

**Integrated circuits - Measurement of electromagnetic emissions  
- Part 4: Measurement of conducted emissions - 1  $\Omega$ /150  $\Omega$   
direct coupling method  
(IEC 61967-4:2021)**

Circuits intégrés - Mesure des émissions  
électromagnétiques - Partie 4: Mesure des émissions  
conduites - Méthode par couplage direct 1  $\Omega$ /150  $\Omega$   
(IEC 61967-4:2021)

Integrierte Schaltungen - Messung von  
elektromagnetischen Aussendungen - Teil 4: Messung der  
leitungsgeführten Aussendungen - Messung mit direkter 1-  
Ohm-/150-Ohm-Kopplung  
(IEC 61967-4:2021)

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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## **European foreword**

The text of document 47A/1101/CDV, future edition 2 of IEC 61967-4, prepared by SC 47A "Integrated circuits" of IEC/TC 47 "Semiconductor devices" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61967-4:2021.

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) 2022-01-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-04-20

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

CISPR 16-1-2 NOTE Harmonized as EN 55016-1-2

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## CONTENTS

FOREWORD .....	5
1 Scope .....	7
2 Normative references .....	7
3 Terms and definitions .....	7
4 General .....	7
4.1 Measurement basics .....	7
4.2 RF current measurement .....	9
4.3 RF voltage measurement at IC pins .....	9
4.4 Assessment of the measurement technique .....	9
5 Test conditions .....	9
6 Test equipment .....	10
6.1 RF measuring instrument .....	10
6.2 RF current probe specification .....	10
6.3 Test of the RF current probe capability .....	11
6.4 Matching network specification .....	11
7 Test setup .....	12
7.1 General test configuration .....	12
7.2 Printed circuit test board layout .....	12
8 Test procedure .....	13
9 Test report .....	13
Annex A (informative) Probe verification procedure .....	14
Annex B (informative) Classification of conducted emission levels .....	18
B.1 Introductory remark .....	18
B.2 General .....	18
B.3 Definition of emission levels .....	18
B.4 Presentation of results .....	18
B.4.1 General .....	18
B.4.2 Examples .....	20
Annex C (informative) Example of reference levels for automotive applications .....	22
C.1 Introductory remark .....	22
C.2 General .....	22
C.3 Reference levels .....	22
C.3.1 General .....	22
C.3.2 Measurements of conducted emissions, 1 $\Omega$ method .....	23
C.3.3 Measurements of conducted emissions, 150 $\Omega$ method .....	23
Annex D (informative) EMC requirements and how to use EMC IC measurement techniques .....	24
D.1 Introductory remark .....	24
D.2 Using EMC measurement procedures .....	24
D.3 Assessment of the IC influence to the EMC behaviour of the modules .....	24
Annex E (informative) Example of a test setup consisting of an EMC main test board and an EME IC test board .....	26
E.1 Introductory remark .....	26
E.2 EMC main test board .....	26
E.3 EME IC test board .....	28

E.3.1	General explanation of the test board .....	28
E.3.2	How to build the test system .....	28
E.3.3	PCB layout and component positioning .....	30
Annex F (informative)	150 $\Omega$ direct coupling networks for common mode emission measurements of differential mode data transfer ICs and similar circuits .....	32
F.1	Basic direct coupling network .....	32
F.2	Example of a common-mode coupling network alternative for LVDS or RS485 or similar systems .....	33
F.3	Example of a common-mode coupling network alternative for differential IC outputs to resistive loads (e.g. airbag ignition driver) .....	34
F.4	Example of a common-mode coupling network for CAN systems .....	34
Annex G (informative)	Measurement of conducted emissions in extended frequency range .....	35
G.1	General .....	35
G.2	Guidelines .....	35
G.2.1	Measurement network .....	35
G.2.2	Network components .....	36
G.2.3	Network layout .....	38
G.2.4	Network verification .....	38
G.2.5	Test board .....	39
G.3	Application area .....	41
Bibliography	.....	43
Figure 1	– Example of two emitting loops returning to the IC via common ground .....	8
Figure 2	– Example of IC with two ground pins, a small I/O loop and two emitting loops .....	8
Figure 3	– Construction of the 1 $\Omega$ RF current probe .....	10
Figure 4	– Impedance matching network corresponding with IEC 61000-4-6 .....	12
Figure 5	– General test configuration .....	12
Figure A.1	– Test circuit .....	14
Figure A.2	– Insertion loss of the 1 $\Omega$ probe .....	14
Figure A.3	– Layout of the verification test circuit .....	15
Figure A.4	– Connection of the verification test circuit .....	16
Figure A.5	– Minimum decoupling limit versus frequency .....	16
Figure A.6	– Example of 1 $\Omega$ probe input impedance characteristic .....	17
Figure B.1	– Emission level scheme .....	19
Figure B.2	– Example of the maximum emission level G8f .....	20
Figure C.1	– 1 $\Omega$ method – Examples of reference levels for conducted disturbances from semiconductors (peak detector) .....	23
Figure C.2	– 150 $\Omega$ method – Examples of reference levels for conducted disturbances from semiconductors (peak detector) .....	23
Figure E.1	– EMC main test board .....	27
Figure E.2	– Jumper field .....	27
Figure E.3	– EME IC test board (contact areas for the spring connector pins of the main test board) .....	28
Figure E.4	– Example of an EME IC test system .....	29
Figure E.5	– Component side of the EME IC test board .....	30
Figure E.6	– Bottom side of the EME IC test board .....	31

Figure F.1 – Basic direct coupling for common mode EMC measurements .....	32
Figure F.2 – Measurement setup for the S21 measurement of the common-mode coupling .....	33
Figure F.3 – Using split load termination as coupling for measuring equipment .....	33
Figure F.4 – Using split load termination as coupling for measuring equipment .....	34
Figure F.5 – Example of an acceptable adaptation for special network requirements (e.g. for CAN systems) .....	34
Figure G.1 – Example of a 150 $\Omega$ measurement network .....	36
Figure G.2 – Example of RF characteristic of network components .....	37
Figure G.3 – Examples of S21 characteristic by simulation .....	39
Figure G.4 – Examples of test board section .....	40
Figure G.5 – Examples of unwanted cross coupling between measurement network and traces on test PCB .....	40
Figure G.6 – Examples of unwanted signal line cross coupling on S21 transfer characteristic of RF measurement network .....	40
Figure G.7 – Examples of test board with additional signal line connected to IC pin .....	41
Figure G.8 – Examples of stub lines length effects on S21 transfer characteristic of RF measurement network .....	41
Table 1 – Specification of the RF current probe .....	11
Table 2 – Characteristics of the impedance matching network .....	12
Table B.1 – Emission levels .....	21
Table D.1 – Examples in which the measurement procedure can be reduced .....	24
Table D.2 – System- and module-related ambient parameters .....	25
Table D.3 – Changes at the IC which influence the EMC .....	25
Table G.1 – Draft selection table for conducted emission measurements at pins above 1 GHz .....	42

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INTEGRATED CIRCUITS –  
MEASUREMENT OF ELECTROMAGNETIC EMISSIONS –****Part 4: Measurement of conducted emissions –  
1  $\Omega$ /150  $\Omega$  direct coupling method**

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IEC 61967-4 has been prepared by subcommittee 47A: Integrated circuits, of IEC technical committee 47: Semiconductor devices. It is an International Standard.

This second edition cancels and replaces the first edition published in 2002 and Amendment 1:2006. This edition constitutes a technical revision.

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

- a) frequency range of 150 kHz to 1 GHz has been deleted from the title;
- b) recommended frequency range for 1  $\Omega$  method has been reduced to 30 MHz;
- c) Annex G with recommendations and guidelines for frequency range extension beyond 1 GHz has been added.



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

Draft	Report on voting
47A/1101/CDV	47A/1107/RVC

Full information on the voting for its approval 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 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).

A list of all parts of the IEC 61967 series, under the general title *Integrated circuits – Measurement of electromagnetic emissions* can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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

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## INTEGRATED CIRCUITS – MEASUREMENT OF ELECTROMAGNETIC EMISSIONS –

### Part 4: Measurement of conducted emissions – 1 $\Omega$ /150 $\Omega$ direct coupling method

#### 1 Scope

This part of IEC 61967 specifies a method to measure the conducted electromagnetic emission (EME) of integrated circuits by direct radio frequency (RF) current measurement with a 1  $\Omega$  resistive probe and RF voltage measurement using a 150  $\Omega$  coupling network. These methods ensure a high degree of reproducibility and correlation of EME measurement results.

#### 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 61000-4-6, *Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

IEC 61967-1, *Integrated circuits – Measurement of electromagnetic emissions – Part 1: General conditions and definitions*

#### 3 Terms and definitions

For the purposes of this document, the terms and definitions of IEC 61967-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 4 General

##### 4.1 Measurement basics

The maximum tolerated emission level from an integrated circuit (IC) depends on the permitted maximum emission level of the electronic system, which includes the IC, and also on the immunity level of other parts of the electronic system itself (so called inherent EMC). The value of this emission level is dependent on system and application specific (ambient) parameters. To characterise ICs, i.e. to provide typical EME values for a data sheet, a simple measurement procedure and non-resonant measurement setup are required to guarantee a high degree of reproducibility. Subclause 4.1 describes the basis of this test procedure.