



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN IEC 61967-1:2019

Integrated circuits - Measurement of electromagnetic emissions - Part 1: General conditions and definitions

Integrierte Schaltungen - Messung von
elektromagnetischen Aussendungen -
Teil 1: Allgemeine Bedingungen und
Definitionen

Circuits intégrés - Mesure des émissions
électromagnétiques - Partie 1: Conditions
générales et définitions

02/2019

National Foreword

This European Standard EN IEC 61967-1:2019 was adopted as Luxembourgish Standard ILNAS-EN IEC 61967-1:2019.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

English Version

Integrated circuits - Measurement of electromagnetic emissions -
Part 1: General conditions and definitions
(IEC 61967-1:2018)

Circuits intégrés - Mesure des émissions
électromagnétiques - Partie 1: Conditions générales et
définitions
(IEC 61967-1:2018)

Integrierte Schaltungen - Messung von
elektromagnetischen Aussendungen - Teil 1: Allgemeine
Bedingungen und Definitionen
(IEC 61967-1:2018)

This European Standard was approved by CENELEC on 2019-01-16. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 47A/1062/FDIS, future edition 2 of IEC 61967-1, 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 61967-1:2019.

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) 2019-10-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-01-16

This document supersedes EN 61967-1:2002.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 61967-1:2018 was approved by CENELEC as a European Standard without any modification.

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

IEC 61967-2	NOTE	Harmonized as EN 61967-2
IEC 61967-4	NOTE	Harmonized as EN 61967-4
IEC 61967-5	NOTE	Harmonized as EN 61967-5
IEC 61967-6	NOTE	Harmonized as EN 61967-6
IEC 61967-8	NOTE	Harmonized as EN 61967-8
IEC 62132-1	NOTE	Harmonized as EN 62132-1
CISPR 25:2008	NOTE	Harmonized as EN 55025:2008 (not modified)

Annex ZA
(normative)**Normative references to international publications
with their corresponding European publications**

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 16-1-1	-	Specification for radio disturbance and immunity measuring apparatus and Methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus	EN 55016-1-1	-



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Integrated circuits – Measurement of electromagnetic emissions –
Part 1: General conditions and definitions**

**Circuits intégrés – Mesure des émissions électromagnétiques –
Partie 1: Conditions générales et définitions**

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	6
4 Test conditions	10
4.1 General	10
4.2 Ambient conditions	10
4.2.1 General	10
4.2.2 Ambient temperature	11
4.2.3 Ambient RF field strength	11
4.2.4 Other ambient conditions	11
4.2.5 IC stability over time	11
5 Test equipment	11
5.1 General	11
5.2 Shielding	11
5.3 RF measuring instrument	11
5.3.1 General	11
5.3.2 Measuring receiver	11
5.3.3 Spectrum analyser	12
5.3.4 Other RBW for narrowband emissions	12
5.3.5 Emission type, detector type and sweep speed	12
5.3.6 Video bandwidth	12
5.3.7 Verification of calibration for the RF measuring instrument	12
5.4 Frequency range	13
5.5 Preamplifier or attenuator	13
5.6 System gain	13
5.7 Other components	13
6 Test set-up	13
6.1 General	13
6.2 Test circuit board	13
6.3 IC pin loading	13
6.4 Power supply requirements – Test board power supply	14
6.5 IC specific considerations	14
6.5.1 IC supply voltage	14
6.5.2 IC decoupling	14
6.5.3 Activity of IC	14
6.5.4 Guidelines regarding IC operation	14
7 Test procedure	15
7.1 Ambient RF noise check	15
7.2 Operational check	15
7.3 Specific procedures	15
8 Test report	15
8.1 General	15
8.2 Ambient RF noise	15
8.3 Description of device	15
8.4 Description of set-up	16

8.5	Description of software	16
8.6	Data presentation	16
8.6.1	General	16
8.6.2	Graphical presentation.....	16
8.6.3	Measurement data	16
8.6.4	Data processing.....	16
8.7	RF emission limits.....	16
8.8	Interpretation of results	16
8.8.1	Comparison between IC(s) using the same test method.....	16
8.8.2	Comparison between different test methods	16
8.8.3	Correlation to module test methods	16
Annex A	(informative) Test method comparison tables	17
Annex B	(informative) Flow chart of a counter test code.....	19
Annex C	(informative) Description of worst-case application software	20
Annex D	(informative) General test board description	21
D.1	General.....	21
D.2	Board description – Mechanical	21
D.3	Board description – Electrical.....	21
D.4	Ground planes	21
D.5	Package pins	22
D.5.1	General	22
D.5.2	DIL packages	22
D.5.3	SOP, PLCC, QFP packages.....	22
D.5.4	PGA packages.....	22
D.5.5	BGA packages.....	22
D.6	Via diameters.....	22
D.7	Via distance	22
D.8	Additional components.....	22
D.9	Supply decoupling.....	22
D.9.1	General	22
D.9.2	IC decoupling capacitors	23
D.9.3	Power supply decoupling for the test board	23
D.10	I/O load.....	23
Bibliography.....	25	
Figure B.1 – Test code flow chart.....	19	
Figure D.1 – Example of an emission test board	24	
Table 1 – Measuring receiver bands and resolution bandwidth (RBW) default settings.....	11	
Table 2 – Spectrum analyser bands and RBW default settings.....	12	
Table 3 – IC pin loading recommendations	14	
Table A.1 – Conducted emission.....	17	
Table A.2 – Radiated emission	18	
Table D.1 – Position of vias over the board.....	21	