SVENSK STANDARD SS-EN 61000-4-22

| Fastställd | Utgåva | Sida | Ansvarig kommitté |
|---|---|---|---|
| 2011-06-08 | 1 | 1 (1+50) | SEK TK EMC |




# Elektromagnetisk kompatibilitet (EMC) – Del 4-22: Mät- och provningsmetoder – Mätning av emission och immunitet i heldämpade rum (FAR)

*Electromagnetic compatibility (EMC) – Part 4-22: Testing and measurement techniques – Radiated emissions and immunity measurements in fully anechoic rooms (FARs)*

Som svensk standard gäller europastandarden EN 61000-4-22:2011. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61000-4-22:2011.

## Nationellt förord

Europastandarden EN 61000-4-22:2011

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC

– **IEC 61000-4-22, First edition, 2010 - Electromagnetic compatibility (EMC) - Part 4-22: Testing and measurement techniques - Radiated emissions and immunity measurements in fully anechoic rooms (FARs)**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 33.100.10; 33.100.20

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: SEK, Box 1284, 164 29 KISTA
*Telefon*: 08 - 444 14 00. *Telefax*: 08 - 444 14 30
*E-post*: sek@elstandard.se. *Internet*: www.elstandard.se

## *Standarder underlättar utvecklingen och höjer elsäkerheten*

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

## *SEK är Sveriges röst i standardiseringsarbetet inom elområdet*

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

## *Stora delar av arbetet sker internationellt*

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

## *Var med och påverka!*

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 61000-4-22

April 2011

ICS 33.100.10; 33.100.20

English version

# Electromagnetic compatibility (EMC) - Part 4-22: Testing and measurement techniques - Radiated emission and immunity measurements in fully anechoic rooms (FARs)

(IEC 61000-4-22:2010)

Compatibilité électromagnétique (CEM) - Partie 4-22: Techniques d'essai et de mesure - Mesures de l'immunité et des émissions rayonnées dans des enceintes complètement anéchoïques (FAR) (CEI 61000-4-22:2010)

Elektromagnetische Verträglichkeit (EMV) - Teil 4-22: Prüf- und Messverfahren - Messungen der gestrahlten Störaussendung und Prüfungen der Störfestigkeit gegen gestrahlte Störgrößen in Vollabsorberräumen (FAR) (IEC 61000-4-22:2010)



CENELEC

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**



Ref. No. EN 61000-4-22:2011 E

SEK Svensk Elstandard

## Foreword

The text of document CISPR/A/912/FDIS, future edition 1 of IEC 61000-4-22, prepared by CISPR SC A, Radio-interference measurements and statistical methods, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61000-4-22 on 2011-02-01.

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

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) | 2011-11-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2014-02-01 |

Annex ZA has been added by CENELEC.

---

## Endorsement notice

The text of the International Standard IEC 61000-4-22:2010 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

[2] IEC 61000-4-3:2006 + A1:2007 NOTE Harmonized as EN 61000-4-3:2006 + A1:2008 (not modified).

---

## Annex ZA
(normative)

## Normative references to international publications with their corresponding European publications

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.

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

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| CISPR 16-1-1 | 2010 | 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 | 2010 |
| CISPR 16-1-4 | 2010 | Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Antennas and test sites for radiated disturbance measurements | EN 55016-1-4 | 2010 |
| IEC 60050-161 | 1990 | International Electrotechnical Vocabulary (IEV) - Chapter 161: Electromagnetic compatibility | - | - |
| IEC 60050-394 | 2007 | International Electrotechnical Vocabulary (IEV) - Part 394: Nuclear instrumentation - Instruments, systems, equipment and detectors | - | - |

# CONTENTS

# INTRODUCTION

This standard is part of the IEC 61000 series of standards, according to the following structure:

Part 1: General

General considerations (introduction, fundamental principles)

Definitions, terminology

Part 2: Environment

Description of the environment

Classification of the environment

Compatibility levels

Part 3: Limits

Emission limits

Immunity limits (in so far as they do not fall under the responsibility of the product committees)

Part 4: Testing and measurement techniques

Measurement techniques

Testing techniques

Part 5: Installation and mitigation guidelines

Installation guidelines

Mitigation methods and devices

Part 6: Test set-up

Part 9: Miscellaneous

Each part is further subdivided into several parts, published either as international standards, as technical specifications or technical reports, some of which have already been published as sections. Others will be published with the part number followed by a dash and a second number identifying the subdivision (example: IEC 61000-6-1).

This part is an international standard that establishes the required test procedures for using fully anechoic rooms for performing radiated immunity testing and radiated emission measurements.

The main text of this standard provides all information that is common to both radiated emission measurements and immunity tests in a FAR (fully anechoic room). This includes the description of a FAR, a common set-up for equipment under test (EUT), and a harmonized validation/calibration procedure. The test methods described in this standard are based on the harmonized validation/calibration which verifies a FAR as a measurement system, including the room, antenna and associated cables simultaneously. The validation procedure determines a combined transducer factor for a FAR measurement system that is later applied to both emission measurements and immunity tests. If different sets of antennas and/or cables are used for emission measurements and immunity tests the validation/calibration process is performed twice.

Annex A (normative) provides the measurement procedure and any special considerations for performing radiated immunity tests.

Annex B (normative) provides the measurement procedure and any special considerations for performing radiated emission measurements.

Annex C (informative) provides background on the system transducer factor and simultaneous emissions/immunity validation method.

Annex D (informative) provides guidance for calculation of the uncertainty of measurement results obtained using a FAR and instrumentation in accordance with ISO/IEC Guide 98-3 [4][1)].

1) Numbers in square brackets refer to the Bibliography.

# ELECTROMAGNETIC COMPATIBILITY (EMC) –

# Part 4-22: Testing and measurement techniques – Radiated emissions and immunity measurements in fully anechoic rooms (FARs)

## 1 Scope

This part of IEC 61000 considers immunity tests and emission measurements for electric and/or electronic equipment. Only radiated phenomena are considered. It establishes the required test procedures for using fully anechoic rooms for performing radiated immunity testing and radiated emission measurements.

NOTE In accordance with IEC Guide 107 [1], IEC 61000-4-22 is a basic EMC publication for use by product committees of the IEC. As stated in Guide 107, product committees are responsible for determining the applicability of the EMC standards. TC 77 and CISPR and their sub-committees are prepared to cooperate with product committees in the determination of the value of particular EMC tests for specific products.

This part establishes a common validation procedure, equipment under test (EUT) set-up requirements, and measurement methods for fully anechoic rooms (FARs) when both radiated electromagnetic emission measurements and radiated electromagnetic immunity tests will be performed in the same FAR.

As a basic measurement standard, this part of IEC 61000 does not intend to specify the test levels or emission limits to be applied to particular apparatus or system(s). Its main goal is to provide general measurement procedures to all concerned product committees of IEC or CISPR. Specific product requirements and test conditions are defined by the responsible product committees.

The methods described in this standard are appropriate for radiated emission measurements and immunity tests in the frequency range of 30 MHz to 18 GHz.

## 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.

CISPR 16-1-1:2010, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

CISPR 16-1-4:2010, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-4: Radio disturbance and immunity measuring apparatus – Ancillary equipment – Radiated disturbances*

IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Part 161: Electromagnetic compatibility*

IEC 60050-394:2007, *International Electrotechnical Vocabulary (IEV) – Part 394: Nuclear instrumentation – Instruments, systems, equipment and detectors*