

Svenska Elektriska Kommissionen, SEK

Fastställt	Utgåva	Sida	Ingår i
2007-02-26	2	1 (1+15)	SEK Område 9

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Järnvägsanläggningar – Elektromagnetisk kompatibilitet (EMC) – Del 3-1: Fordon – Tåg och kompletta lok och vagnar

*Railway applications –
Electromagnetic compatibility –
Part 3-1: Rolling stock –
Train and complete vehicle*

Som svensk standard gäller europastandarden EN 50121-3-1:2006. Den svenska standarden innehåller den officiella engelska språkversionen av EN 501021-3-1:2006.

Nationellt förord

Standarden skall användas tillsammans med SS-EN 50121-1.

Tidigare fastställd svensk standard SS-EN 50121-3-1, utgåva 1, 2000, gäller ej fr o m 2009-07-01.

ICS 29.020; 29.280; 45.060.01

Denna standard är fastställd av Svenska Elektriska Kommissionen, SEK, som också kan lämna upplysningar om **sakinnehållet** i standarden.
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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.

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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.

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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.

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EUROPEAN STANDARD

EN 50121-3-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2006

ICS 29.020; 29.280; 45.060.01

Supersedes EN 50121-3-1:2000

English version

**Railway applications -
Electromagnetic compatibility
Part 3-1: Rolling stock -
Train and complete vehicle**

Applications ferroviaires -
Compatibilité électromagnétique
Partie 3-1: Matériel roulant -
Trains et véhicules complets

Bahnanwendungen -
Elektromagnetische Verträglichkeit
Teil 3-1: Bahnfahrzeuge -
Zug und gesamtes Fahrzeug

This European Standard was approved by CENELEC on 2006-07-01. 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 electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the 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

This European Standard was prepared by Technical Committee TC 9X: Electrical and electronic applications for railways. The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50121-3-1 on 2006-07-01.

This European Standard supersedes EN 50121-3-1:2000.

This European Standard is to be read in conjunction with EN 50121-1.

This standard forms Part 3-1 of the European Standard series EN 50121, published under the general title "Railway applications - Electromagnetic compatibility". The series consists of:

- Part 1 : General
- Part 2 : Emission of the whole railway system to the outside world
- Part 3-1 : Rolling stock - Train and complete vehicle
- Part 3-2 : Rolling stock - Apparatus
- Part 4 : Emission and immunity of the signalling and telecommunications apparatus
- Part 5 : Emission and immunity of fixed power supply installations and apparatus

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) 2007-07-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2009-07-01

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 89/336/EEC. See Annex ZZ.

Contents

Introduction	4
1 Scope	4
2 Normative references	4
3 Definitions.....	5
4 Applicability.....	5
5 Immunity tests and limits	5
6 Emission tests and limits	5
6.1 Compatibility with signalling and communication systems.....	6
6.2 Interference on telecommunication lines	6
6.3 Radiated electromagnetic disturbances	6
Annex A (informative) Interference on telecommunication lines	10
Annex B (normative) Radiated electromagnetic disturbances - Test procedure	13
Annex ZZ (informative) Coverage of Essential Requirements of EC Directives	15
Figure 1 - Limits for stationary test (QP, 10 m).....	8
Figure 2 - Limits for slow moving test (Peak, 10 m)	9
Table B.1 - Guideline for test.....	14

Introduction

High powered electronic equipment, together with low power microcontrollers and other electronic devices, is being installed on trains in great numbers. Electromagnetic compatibility has therefore become a critical issue for the design of train related apparatus as well as of the train as a whole.

This Product Standard for rolling stock sets limits for electromagnetic emission and immunity in order to ensure a well functioning system within its intended environment.

Immunity limits are not given for the complete vehicle. Part 3-2 of this standard defines requirements for the apparatus installed in the rolling stock, since it is impractical to test the complete unit. An EMC plan shall be established for equipment covered by this standard.

1 Scope

This European Standard specifies the emission and immunity requirements for all types of rolling stock. It covers traction stock and trainsets including urban vehicles for use in city streets.

The frequency range considered is from d.c. to 400 GHz. No measurements need to be performed at frequencies where no requirement is specified.

The scope of this part of the standard ends at the interface of the rolling stock with its respective energy inputs and outputs. In the case of locomotives, trainsets, trams etc., this is the current collector (pantograph, shoe gear). In the case of hauled stock, this is the a.c. or d.c. auxiliary power connector. However, since the current collector is part of the traction stock, it is not entirely possible to exclude the effects of this interface with the power supply line. The slow moving test has been designed to minimise these effects.

Basically, all apparatus to be integrated into a vehicle shall meet the requirements of Part 3-2 of this standard. In exceptional cases, where apparatus meets another EMC Standard, but full compliance with Part 3-2 is not demonstrated, EMC shall be assured by adequate integration measures of the apparatus into the vehicle system and/or by an appropriate EMC analysis and test which justifies deviating from Part 3-2.

The electromagnetic interference concerning the railway system as a whole is dealt with in EN 50121-2.

These specific provisions are to be used in conjunction with the general provisions in EN 50121-1.

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.

EN 50121-1	Railway applications - Electromagnetic compatibility Part 1: General
EN 50121-2	Railway applications - Electromagnetic compatibility Part 2: Emission of the whole railway system to the outside world
EN 50121-3-2	Railway applications - Electromagnetic compatibility Part 3-2: Rolling stock - Apparatus
EN 50238	Railway applications - Compatibility between rolling stock and train detection systems
EN 55016-1-1	Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus (CISPR 16-1-1)
ITU-T	Directive concerning the protection of telecommunication lines against harmful effects from electrical power and electrified railway lines Volume VI: Danger and disturbances