



Handläggande organ

**Svenska Elektriska Kommissionen, SEK**

Fastställd

2000-12-01

Utgåva

1

Sida

1 (1+22)

Ingår i

SEK Översikt 9

**Reg 481 01 23**

© Copyright SIS. Reproduction in any form without permission is prohibited.

## **Järnvägsanläggningar – Elektromagnetisk kompatibilitet (EMC) – Del 2: Emission från hela järnvägssystemet till omgivningen**

*Railway applications –*

*Electromagnetic compatibility –*

*Part 2: Emission of the whole railway system to the outside world*

Som svensk standard gäller europastandarden EN 50121-2:2000. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50121-2:2000.

Standarden skall användas tillsammans med SS-EN 50121-1, utgåva 1, 2000.

Tidigare utgiven svensk standard SS-ENV 50121-2, utgåva 1, 1996, gäller ej fr o m 2000-12-01.

---

ICS 29.020; 29.280; 45.020

Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.  
Postadress: SIS, Box 6455, 113 82 STOCKHOLM  
Telefon: 08 - 610 30 00. Telefax: 08 - 30 77 57  
E-post: sis.sales@sis.se. Internet: www.sisforlag.se

Upplysningar om **sakinnehållet** i standarden lämnas av SEK.  
Telefon: 08 - 444 14 00. Telefax: 08 - 444 14 30  
E-post: sek@sekom.se

Prisgrupp Q

Tryckt i februari 2001



**Railway applications - Electromagnetic compatibility**  
**Part 2: Emission of the whole railway system to the outside world**

Applications ferroviaires -  
Compatibilité électromagnétique  
Partie 2: Emission du système ferroviaire  
dans son ensemble vers le monde  
extérieur

Bahnanwendungen -  
Elektromagnetische Verträglichkeit  
Teil 2: Störaussendungen des gesamten  
Bahnsystems in die Außenwelt

This European Standard was approved by CENELEC on 2000-04-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, 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

This European Standard was prepared the Technical Committee CENELEC 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 50121-2 on 2000-04-01.

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) 2001-04-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2003-04-01

This European Standard is to be read in conjunction with EN 50121-1:2000.

This standard forms part 2 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

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

Annexes designated "informative" are given only for information.

In this standard, annex A is normative and annexes B and C are informative.

## Contents

1	Scope.....	4
2	Normative references .....	4
3	Definitions .....	4
4	Emission limits .....	5
4.1	Emission from the open railway route.....	5
4.2	Emission from railway substation.....	5
4.3	Emission at radio frequencies from railway supply lines.....	6
4.4	Emission from the substation at power frequencies and harmonics to 9 kHz.....	6
5	Method of measurement of emission from moving trains.....	6
5.1	Measurement parameters.....	6
5.2	Frequency selection .....	9
5.3	Transients .....	9
5.4	Measuring conditions.....	9
5.5	Test report.....	10
5.6	Antenna positions .....	10
	Annex A (normative) Method of measurement of emission from railway substations.....	16
	Annex B (informative) Background to the method of measurement.....	17
	Annex C (informative) Cartography Electric and Magnetic fields at traction frequencies.....	22

## 1 Scope

This European Standard sets the emission limits from the whole railway system including urban vehicles for use in city streets, it describes the measurement method to verify the emissions, and gives the cartography values of the fields most frequently encountered.

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

The limits refer to the particular measuring points defined in clause 5 and annex A. These emissions should be assumed to exist at all points in the vertical planes which are 10 m from the centre lines of the outer electrified railway tracks, or 3 m from the fence of the substations.

The zones above and below the railway will experience emission and particular cases shall be considered individually.

Excluded from the limits is apparatus which complies with the generic industrial emission standard EN 50081-2.

## 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place 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.

EN 50121-1	Railway applications - Electromagnetic compatibility - Part 1: General
EN 50121-3-1	Part 3-1: Rolling stock - Train and complete vehicle
EN 50121-5	Part 5: Emission and immunity of fixed power supply installations and apparatus
EN 55013	Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment
EN 55022	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
CISPR 16-1	Specification for radio disturbance and immunity measuring apparatus and methods -- Part 1: Radio disturbance and immunity measuring apparatus
CISPR 18	Radio interference characteristics of overhead power lines and high voltage equipment