Measurement procedures of magnetic field levels generated by electronic and electrical apparatus in the railway environment with respect to human exposure

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EESTI STANDARDIKESKUS
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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 50500:2008 sisaldab Euroopa standardi EN 50500:2008 ingliskeelset teksti.	This Estonian standard EVS-EN 50500:2008 consists of the English text of the European standard EN 50500:2008.
Standard on kinnitatud Eesti Standardikeskuse 19.08.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 19.08.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 16.07.2008.	Date of Availability of the European standard text 16.07.2008.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

ICS 17.240

Võtmesõnad:

EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN 50500

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English version

Measurement procedures of magnetic field levels generated by electronic and electrical apparatus in the railway environment with respect to human exposure

Procédures de mesure des niveaux de champ magnétique générés par les appareils électriques et électroniques dans l'environnement ferroviaire en regard de l'exposition humaine

Messverfahren für magnetische Felder, die durch elektronische und elektrische Geräte in der Bahnumgebung erzeugt werden, hinsichtlich der Exposition von Personen

This European Standard was approved by CENELEC on 2008-06-01. 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, Bulgaria, 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

Ref. No. EN 50500:2008 E

Foreword

This European Standard was prepared by 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 50500 on 2008-06-01.

This European Standard is to be read in conjunction with EN 50392.

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)	2009-06-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2011-06-01

Contents

Introduction

The intention of this European Standard is to establish a suitable measuring/calculation method for determining the magnetic fields in the space around the equipment mentioned in the scope, to standardize operating conditions and to fix measuring/calculation distances. It offers a method to demonstrate compliance with the council recommendation 1999/519/EC (see Bibliography) and Directive 2004/40/EC (see Bibliography).

1 Scope

The scope of this product-family standard is limited to apparatus, systems and fixed installations which are intended for use in the railway environment. The frequency range covered is 0 Hz to 300 GHz.

Technical considerations and measurements are necessary for frequencies up to 20 kHz because no relevant field strengths are expected above due to the physical nature of EMF-sources in the railway environment.

The object of this standard is to provide measurement and calculation procedures of electric and magnetic field levels generated by electronic and electrical apparatus in the railway environment with respect to human exposure.

The regulations regarding the protection of human being during exposure to non-ionizing electromagnetic fields in the railway environment are different within the countries of European Community. This standard offers a procedure regarding measurement, simulation and evaluation.

At present two European documents regarding EMF have to be considered:
a) Council Recommendation 1999/519/EC of 12 July 1999 (see Bibliography);
b) Directive 2004/40/EC (see Bibliography).

The measurement procedures and points of measurement cover also the aspect of persons bearing active implantable medical devices.

NOTE 1 Not covered is the risk assessment for persons bearing active implants in magnetic field generated by electronic and electrical apparatus in the railway environment.

Not covered are personal electronic devices (e.g. mobile phones, notebooks, wireless communication systems etc.) of passengers and workers.

Not covered are intentional transmitters with frequencies higher than 20 kHz.

NOTE 2 These apparatus (with a working frequency of 9 kHz or higher) are covered by R&TTE Directive and have to comply also with LVD (Low Voltage Directive). In this view these apparatus have also limitation of EM fields or a “safety-distance” for these apparatus must be given.

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 50392	Generic standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic fields (0 GHz – 300 GHz)
EN 50121 series	Railway applications - Electromagnetic compatibility
EN 45502-2-1	Active implantable medical devices - Part 2-1: Particular requirements for active implantable medical devices intended to treat bradyarrhythmia (cardiac pacemakers)
EN ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50121, EN 50392 and the following apply.

3.1
workers
drivers, train-staff and all people working in the railway environment

3.2
platform
place where passengers can enter, leave and change trains

3.3
fixed installation
infrastructure of railway environment without rolling stock

3.4
electric traction system
railway electric distribution network to provide energy for an electrical motive power unit.
This system may comprise
- contact line systems,
- return circuit system,
- running rails of non-electric traction systems, which are in the vicinity of, and conductively connected to the running rails of an electric traction system,
- electrical installations, which are supplied from contact lines either directly or via a transformer,
- electrical installations in power plants and substations, which are utilized solely for generation and distribution of power directly to the contact line,
- electrical installations of switching stations

3.5
main line
railway line for passenger and freight trains in regional and long-distances operation