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Spoorwegtoepassingen -
 Elektromagnetische compatibiliteit - Deel
 1: Algemeen

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Railway applications - Electromagnetic compatibility - Part 1: General

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Voorbeeld
Preview

July 2004

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Will supersede EN 50121-1 2000

English version

Railway applications - Electromagnetic compatibility
Part 1: General

Applications ferroviaires - Compatibilité
électromagnétique
Partie 1: Généralités

Bahnanwendungen - Elektromagnetische
Verträglichkeit
Teil 1: Allgemeines

This draft European Standard is submitted to CENELEC members for CENELEC enquiry
Deadline for CENELEC: 2005-01-07

It has been drawn up by Technical Committee CENELEC TC 9X.

If this draft becomes a European Standard, 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

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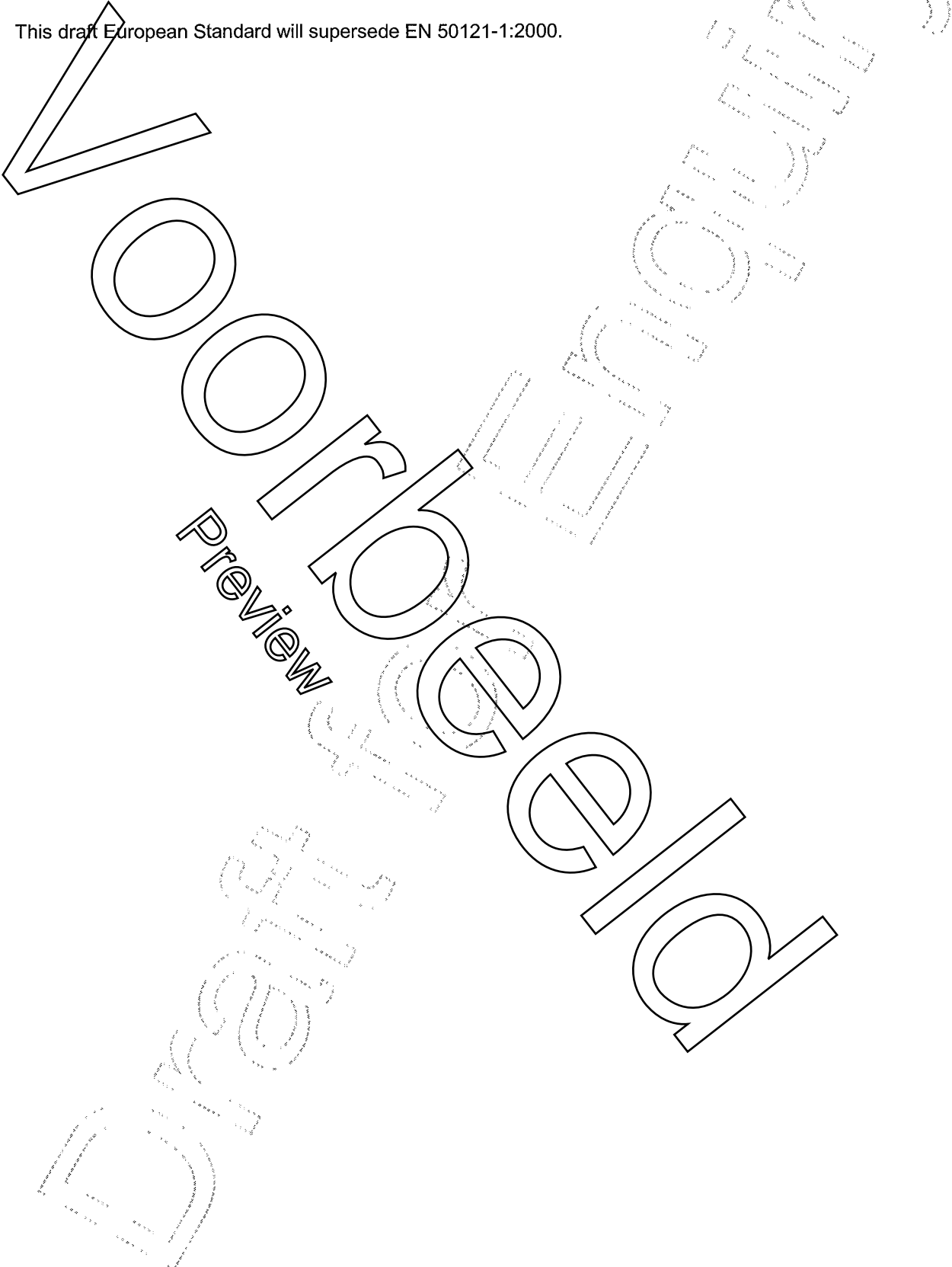
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Foreword

This draft European Standard was prepared by the Technical Committee CENELEC TC 9X, Electrical and electronic applications for railways.

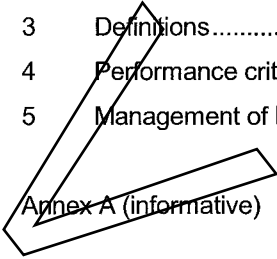
It is submitted to the CENELEC enquiry.

This draft European Standard will supersede EN 50121-1:2000.



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Preview

Introduction

The railway EMC set of product-specific European Standards is intended, in the main, to permit compliance with the EMC Directive (EC Directive 89/336), but also to provide a means of prescribing compatibility between internal parts of the railway. It consists of five parts described at the end of this introduction.

The set of standards provides both a framework for managing the EMC for railways and also specifies the limits for the electromagnetic (EM) emission of the railway as a whole to the outside world and of the EM emission and immunity for equipment operating within the railway. The latter must be compatible with the emission limits set for the railway as a whole and also provides for establishing confidence in equipment being fit for purpose in the railway environment. There are different stationary emission limits set for trams/trolleybuses and metro/mainline railways. The frequency covered by the standards is in the range of d.c. to 400 GHz. At present testing is not defined for frequencies exceeding 2 GHz. The limits for EMC phenomena are set so that the railway as a whole satisfies the EU Directive 89/336 on electromagnetic compatibility with the outside world, and so that EMC is achieved between the various parts of the railway. Throughout the set of the standards, the immunity levels are chosen to ensure a reasonable level of EMC with other apparatus within the local railway environment and with emissions which enter the railway from the outside world. Limits are also placed on EM emission by railways into the outside world.

The compatibility between railway emissions and their external environment is based upon emission limits from the railways being set by considering the results from measurements at the time that the EMC Directive became enforceable. Given that the general compatibility between railways and their environment was satisfactory at the time these measurements were made, compliance with this standard has been judged to give satisfactory compatibility. The immunity and emission levels do not of themselves guarantee that the railway will have satisfactory compliance with its neighbours. In exceptional circumstances, for instance near a "special location" (as defined in the EMC directive) which has unusually high levels of EM interference, the railway system may require additional measures to be taken to ensure proper compatibility. Particular care should be taken when in proximity to equipment not covered by the EMC Directive such as radio transmission equipment, military or medical installations. Attention is particularly drawn to any magnetic imaging equipment in hospitals that may be near to urban transport. In all these cases, compatibility must be achieved with consultation and co-operation between the interested parties.

The immunity and emission levels do not of themselves guarantee that integration of the apparatus within the railway will necessarily be satisfactory. The standard cannot cover all the possible configurations of apparatus, but the test levels are sufficient to achieve satisfactory EMC in the majority of cases. In exceptional circumstances, for instance near a "special location" (as defined in the EMC Directive) which has unusually high levels of EM interference, the system may require additional measures to be taken to ensure proper operation. The resolution of this is a matter for discussion between the equipment supplier and the project manager, infrastructure controller or equivalent.

The railway apparatus is assembled into large systems and installations, such as trains and signalling control centres. Details are given in Annex A. It is not, therefore, possible to establish immunity tests and limits for these large assemblies. The immunity levels for the apparatus will normally ensure reliable operation, but it is necessary to prepare an EMC management plan to deal with complex situations or to deal with specific circumstances. For example, the passage of the railway line close to a high power radio transmitter which produces abnormally high field strengths. Special conditions may have to be applied for railway equipment which has to work near such a transmitter and these will be accepted as national conditions for the specification.

The series of standards EN 50121, Railway applications - Electromagnetic compatibility, contains the following parts:

Part 1: General

This part gives a description of the electromagnetic behaviour of a railway; it specifies the performance criteria for the whole set. A management process to achieve EMC at the interface between the railway infrastructure and trains is referenced.

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