

**RAUDTEEALASED RAKENDUSED.
ELEKTROMAGNETILINE ÜHILDUVUS. OSA 3-2: VEEREM.
APPARATUS**

**Railway applications - Electromagnetic compatibility -
Part 3-2: Rolling stock - Apparatus**

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

See Eesti standard EVS-EN 50121-3-2:2016 sisaldab Euroopa standardi EN 50121-3-2:2016 ingliskeelset teksti ja selle muudatuse A1:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 50121-3-2:2016 consists of the English text of the European standard EN 50121-3-2:2016 and its amendment A1:2019.
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English Version

**Railway applications - Electromagnetic compatibility - Part 3-2:
Rolling stock - Apparatus**

Applications ferroviaires - Compatibilité électromagnétique -
Partie 3-2: Matériel roulant - Appareils

Bahnanwendungen - Elektromagnetische Verträglichkeit -
Teil 3-2: Bahnfahrzeuge - Geräte

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Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50121-3-2:2016) has been prepared by CLC/TC 9X: "Electrical and electronic applications for railways".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) [2017-07-24]
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) [2019-10-24]

This document supersedes EN 50121-3-2:2015.

EN 50121-3-2:2016 includes the following significant technical changes with respect to EN 50121-3-2:2015:

- clarification of scope (Clause 1);
- set dated normative references (Clause 2);
- new definition of ports and clarification in Tables 1 to 5;
- emission requirement extended in the frequency range 1 GHz to 6 GHz following EN 61000-6-4;
- immunity requirement extended in the frequency range 5,1 GHz to 6 GHz;
- revision of Annex B;
- editorial corrections in Figure 1 and Table B.1;
- revision of Annex ZZ.

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

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For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

This standard forms Part 3-2 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*.

EN 50121-3-2:2016/A1:2019 European foreword

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For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of EN 50121-3-2:2016. **A1**

1 Scope

This European Standard applies to emission and immunity aspects of EMC for electrical and electronic apparatus intended for use on railway rolling stock. EN 50121-3-2 applies for the integration of apparatus on rolling stock.

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

The application of tests shall depend on the particular apparatus, its configuration, its ports, its technology and its operating conditions.

This standard takes into account the internal environment of the railway rolling stock and the external environment of the railway, and interference to the apparatus from equipment such as hand-held radio-transmitters.

If a port is intended to transmit or receive for the purpose of radio communication (intentional radiators, e.g. transponder systems), then the radiated emission requirement in this standard is not intended to be applicable to the intentional transmission from a radio-transmitter as defined by the ITU.

Immunity limits do not apply in the exclusion bands as defined in the corresponding EMC related standard for radio equipment.

This standard does not apply to transient emissions when starting or stopping the apparatus.

The objective of this standard is to define limits and test methods for electromagnetic emissions and immunity test requirements in relation to conducted and radiated disturbances.

These limits and tests represent essential electromagnetic compatibility requirements.

Emission requirements have been selected so as to ensure that disturbances generated by the apparatus operated normally on railway rolling stock do not exceed a level which could prevent other apparatus from operating as intended. The emission limits given in this standard take precedence over emission requirements for individual apparatus on board the rolling stock given in other standards.

Likewise, the immunity requirements have been selected so as to ensure an adequate level of immunity for rolling stock apparatus.

The levels do not however cover all cases which may occur with an extremely low probability of occurrence in any location. Specific requirements which deviate from this standard shall be specified.

Test requirements are specified for each port considered.

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

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 50121-1:2017, *Railway applications - Electromagnetic compatibility - Part 1: General*

EN 50121-3-1:2017, *Railway applications - Electromagnetic compatibility - Part 3-1: Rolling stock - Train and complete vehicle*

EN 50155:2007, *Railway applications - Electronic equipment used on rolling stock*

EN 55016-2-1:2014, *Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements (CISPR 16-2:2014)*

A1 deleted text A1

EN 61000-4-2:2009, *Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test (IEC 61000-4-2:2008)*

EN 61000-4-3:2006, *Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test (IEC 61000-4-3:2006)*

EN 61000-4-4:2012, *Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test (IEC 61000-4-4:2012)*

EN 61000-4-5:2014, *Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test (IEC 61000-4-5:2014)*

EN 61000-4-6:2014, *Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields (IEC 61000-4-5:2013)*

EN 61000-4-30:2015, *Electromagnetic compatibility (EMC) - Part 4-30: Testing and measurement techniques - Power quality measurement methods (IEC 61000-4-30:2015)*

EN 61000-6-4:2007¹, *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (IEC 61000-6-4:2006)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

rolling stock apparatus

finished product with an intrinsic function intended for implementation into the rolling stock installation

3.1.2

port

particular interface of the specified apparatus with the external environment

EXAMPLE AC power port, DC power port, I/O (input/output) port, earth port.

[SOURCE: IEC 60050-821:2015, 821-11-36]

¹ As impacted by EN 61000-6-4:2007/A1.