SVENSK STANDARD SS-EN 50121-3-2

Fastställd	Utgåva	Sida	Ansvarig kommitté
2017-01-18	4	1 (1+24)	SEK TK 9

Järnvägstillämpningar – Elektromagnetisk kompatibilitet (EMC) – Del 3-2: Fordon – Apparater

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

Som svensk standard gäller europastandarden EN 50121-3-2:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 50121-3-2:2016.

Nationellt förord

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

Tidigare fastställd svensk standard SS-EN 50121-3-2, utgåva 3, 2015, gäller ej fr o m 2019-10-24.

ICS 33.100.01; 45.060.01

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1284, 164 29 KISTA
Telefon: 08 - 444 14 00.
E-post: sek@elstandard.se. Internet: www.elstandard.se

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

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.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

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.

SEK Svensk Elstandard
Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 50121-3-2

December 2016

ICS 33.100.01; 45.060.01

Supersedes EN 50121-3-2:2015

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

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 50121-3-2:2016 E

SEK Svensk Elstandard

Contents

Page

European foreword 3
1 Scope 5
2 Normative references 5
3 Terms, definitions and abbreviations 6
3.1 Terms and definitions 6
3.2 Abbreviations 7
4 Performance criteria 7
5 Conditions during testing 8
6 Applicability 8
7 Emission tests and limits 8
8 Immunity requirements 11
Annex A (informative) Examples of apparatus and ports 16
Annex B (informative) Conducted disturbances generated by power converters 22
Annex ZZ (informative) Relationship between this European Standard and the essential requirements of Directive 2014/30/EU [2014 OJ L96] aimed to be covered 23
Bibliography 24

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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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.*

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)*

EN 55022:2010, *Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 22:2008, modified)*

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 61000-6-4:2007[1], *Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (IEC 61000-6-4:2006)*

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