



SLOVENSKI STANDARD

SIST EN 12015:2005

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Electromagnetic compatibility - Product family standard for lifts, escalators and moving walks - Emission

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Elektromagnetische Verträglichkeit - Produktfamilien-Norm für Aufzüge, Fahrtreppen und Fahrsteige - Störaussendung

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Compatibilité électromagnétique - Norme famille de produits pour ascenseurs, escaliers mécaniques et trottoirs roulants - Émission

Ta slovenski standard je istoveten z: EN 12015:2004

ICS:

33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general
91.140.90	Öçã aãZ`^`[^`Á`ç`]} &^	Lifts. Escalators

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12015

December 2004

ICS 33.100.10; 91.140.90

Supersedes EN 12015:1998

English version

Electromagnetic compatibility - Product family standard for lifts, escalators and moving walks - Emission

Compatibilité électromagnétique - Norme famille de
produits pour ascenseurs, escaliers mécaniques et trottoirs
roulants - Emission

Elektromagnetische Verträglichkeit - Produktfamilien-Norm
für Aufzüge, Fahrtreppen und Fahrsteige - Störaussendung

This European Standard was approved by CEN on 1 April 2004.

CEN 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 CEN 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 CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 12015:2004) has been prepared by Technical Committee CEN/TC 10 “Lifts, escalators and moving walks”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2005, and conflicting national standards shall be withdrawn at the latest by June 2006.

This document supersedes EN 12015:1998.

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

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

The limits given in this standard recognize the fact that the product family covers a total range of lifts, escalators and moving walks used in residential buildings, offices, hospitals, hotels, industrial plants etc. and that lifts, escalators and moving walks are deemed to have their own dedicated power supply and be connected with the consent of the supply authority to a low impedance source.

The related EMC product family standard for immunity is:

EN 12016, *Electromagnetic compatibility — Product family standard for lifts, escalators and passenger conveyors — Immunity*.

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According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

This European Standard has been prepared to provide one means of complying with the requirements of the Electromagnetic Compatibility (EMC) Directive. The requirements of this European Standard have been specified so as to ensure a level of electromagnetic emission which will cause minimal disturbance to other equipment. The levels, however, do not cover the following cases:

- where the probability of an occurrence likely to produce emissions in excess of those which would normally be experienced is extremely low, e.g. the emergency stopping of a lift, escalator or moving walk under a fault condition;
- where highly susceptible apparatus will be used in the close proximity of the equipment covered by this standard, in which case further measures may have to be taken to:
 - reduce the level of electromagnetic emission to below that specified in this standard; or
 - increase the immunity of the affected apparatus.

The given emission limits, are on the basis that equipment of the product family range may be installed both indoor and outdoor in all types of building, involves the switching of heavy currents and high inductive loads and, generally, is connected to a low voltage system.

Due to the size of an installed lift, it becomes impracticable to test the total assembly either in a test laboratory or in situ where the uncontrolled environment may also influence the test procedures and results. This applies also to measurements within the car. Similar considerations regarding dimensions apply equally to the testing of escalators and moving walks.

The following explains the rationale to the revision of the standard EN 12015:1998.

a) Important changes

Introduced requirements to control the emissions below 30 MHz of the drive to machine/motor connection. The emission limits are independent of the magnitude of the conducted current. Limits and test method are referred to EN 55014-1. Regarding other ports, the radiated tests above 30 MHz cover the cable connections and there are no known problems below 30 MHz.

Introduced requirements to control mains electricity supply harmonic emissions and voltage fluctuations.

NOTE The radiation measurements in Table 1 have been harmonised with EN 55011.

The term "installation" has been changed to "system". This is due to the fact that official interpretation defines that fixed installations are not covered by the conformity assessment requirements of the EMC Directive, valid for apparatus and systems. The scope of the standard is applicable to the apparatus and assembly of apparatus of lifts and escalators and assembly into systems.

b) Environmental issues

Lifts, escalators and moving walks are systems whose apparatus and assembly of apparatus are distributed (and some of which move) throughout the building. The definition in EMC terms of the use of the building (residential or industrial) cannot be predetermined or assumed to be fixed. Therefore, to cover requirements in all cases, no differentiation between environments has been made and a single set of limits has been maintained. This set of high frequency limits is based on the industrial limits of EN 61000-6-4 and is known to be above the usual limits for the residential environment. This is justified by the experience that systems in compliance with EN 12015:1998 have not been known to cause EMC interference with regard to mains and radiated emissions above 30 MHz.

Regarding conducted limits, these are also based on the fact that the supply cabling is separated from other building supplies at least up to the point of common coupling (PCC). Additionally, system wiring is segregated in accordance with the manufacturers' specifications.

Regarding radiated emission limits above 30 MHz, the lift, escalator or moving walk area is separated, to a large extent, from domestic appliances.

All the limits used take into account that systems have to comply with the safety protection requirements regarding earth leakage currents. The application of more stringent limits than have been shown to be adequate, would require the use of larger filters (both inductance and capacitance). The use of these will increase the susceptibility of the system to low electricity mains supply conditions and increase earth leakage currents. There is also an increase in power dissipation in the filter, causing (in the general case) increased energy consumption, additional ventilation and/or cooling requirement for the building. This is especially valid for higher duty systems.

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EN 12015:2004 (E)**1 Scope**

This European Standard specifies the emission limits in relation to electromagnetic disturbances and test conditions for lifts, escalators and moving walks, which are intended to be permanently installed in buildings. These limits however, may not provide full protection against disturbances caused to radio and TV reception when such equipment is used within distances given in Table 1.

This standard addresses the environmental conditions stated in the EN 81 series of standards and EN 115 (humidity, temperature, etc.), so far as they are related to EMC performance.

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 81, *Safety rules for the construction and installation of lifts.*

EN 115, *Safety rules for the construction and installation of escalators and passenger conveyors.*

EN 55011, *Industrial, scientific and medical (ISM) radio-frequency equipment - Radio disturbance characteristics - Limits and methods of measurement (CISPR 11:1997, modified).*

EN 55014-1:2000, *Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission (CISPR 14-1:2000).*

EN 61000-3-11, *Electromagnetic compatibility (EMC) — Part 3-11: Limits — Limitation of voltage changes, voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 75A and subject to conditional connection (IEC 61000-3-11:2000).* [SIST EN 12015:2005](https://standards.iteh.ai/catalog/standards/sist/6d498ef4-5887-46bc-8955-4d70440d167a/sist-en-12015-2005)

EN 61000-6-3, *Electromagnetic compatibility (EMC) — Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments (IEC 61000-6-3:1996, modified).*

EN 61000-6-4, *Electromagnetic compatibility (EMC) — Part 6-4: Generic standards — Emission standard for industrial environments (IEC 61000-6-3:1997, modified).*

IEC 60050-161, *International Electrotechnical Vocabulary; chapter 161: Electromagnetic compatibility.*

IEC/TR2 61000-3-4:1998, *Electromagnetic compatibility (EMC) - Part 3-4: Limits - Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 61000-6-3, EN 61000-6-4 and IEC 60050-161 and the following apply.

3.1 system

lift, escalator or moving walk comprising assembly of apparatus with electrical and electronic equipment and interconnections

NOTE See Figure 1 and Figure 2 as examples.

3.2**assembly of apparatus**

arrangement of interconnected apparatus, which can be tested together

NOTE See Figure 1 and Figure 2 as examples.

3.3**apparatus**

assembly of components with an intrinsic function as defined by its manufacturer

NOTE 1 See Figure 1 and Figure 2 as examples.

NOTE 2 Safety components defined by annex IV of the Lifts Directive are considered as apparatus.

3.4**Root Mean Square (rms)**

effective value of the current

3.5**Total Harmonic Distortion (THD)**

ratio of the rms value of the harmonics to the rms value of the fundamental

NOTE THD is calculated from the equation below. I_n means the rms value of the current of the n^{th} harmonic and I_1 means the rms value of the fundamental current:

$$THD = \sqrt{\sum_{n=2}^{40} \left(\frac{I_n}{I_1}\right)^2}$$

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3.6**Partial Weighted Harmonic Distortion (PWHd)**

ratio of the rms value of a selected group of higher order harmonics (here beginning from the 14th harmonic), weighted with the harmonic order n , to the rms value of the fundamental

NOTE PWHd is calculated from the equation below. L_n means the rms value of the current of the n^{th} harmonic and I_1 means the rms value of the fundamental current:

$$PWHd = \sqrt{\sum_{n=14}^{40} n \left(\frac{I_n}{I_1}\right)^2}$$

3.7**balanced three phase system**

system connected to the three phases and designed in such a way that, for rated conditions, the rms value of the current in each of the three phases differs by not more than 20 %.

NOTE The neutral conductor is not used as a current carrying conductor under normal operating conditions.

3.8**Point of Common Coupling (PCC)**

point in the public mains network which is nearest to the system and to which, other equipment may be connected

3.9**short circuit power (S_{sc})**

value of the three phase short circuit power calculated from nominal voltage of the system U_n and impedance Z at PCC:

$$S_{sc} = \frac{U_n^2}{Z}$$