

This is a preview of "ISO/TR 16764:2003". [Click here to purchase the full version from the ANSI store.](#)

First edition
2003-09-15

Lifts, escalators and passenger conveyors — Comparison of worldwide standards on electromagnetic interference/electromagnetic compatibility

Ascenseurs, escaliers mécaniques et trottoirs roulants — Comparaison des normes mondiales relatives à l'interférence électromagnétique/la compatibilité électromagnétique



Reference number
ISO/TR 16764:2003(E)

© ISO 2003

This is a preview of "ISO/TR 16764:2003". [Click here to purchase the full version from the ANSI store.](#)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2003

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

This is a preview of "ISO/TR 16764:2003". [Click here to purchase the full version from the ANSI store.](#)

Contents

Page

Foreword	iv
0 Introduction	v
0.1 Background	v
0.2 Understanding electromagnetic interference/electromagnetic compatibility (EMI/EMC)	v
1 Scope	1
2 Electromagnetic interference/electromagnetic compatibility standards	1
2.1 Background	1
2.2 CISPR/IEC	1
2.3 National committees/standards	3
2.4 CENELEC	5
2.5 Military	5
3 Sources of electromagnetic disturbances	5
3.1 General	5
3.2 Classification of electromagnetic interference (EMI)	6
3.3 Typical EMC phenomena	7
4 EMI/EMC comparison	11
4.1 Emissions standards comparison	11
4.2 Susceptibility/immunity standards comparison	11
5 Test and measurement requirements	11
6 Future development	12
6.1 Europe	12
6.2 China	13
6.3 United States	13
7 Observations and recommendations	13
7.1 General	13
7.2 Emission	14
7.3 Immunity	14
Annex A (normative) Conducted and radiated emission limits	15
Annex B (normative) Susceptibility/Immunity	26
Annex C (normative) Emissions/Immunity	30
Annex D (informative) EMI/EMC units	34
Annex E (informative) Frequency spectrum	35
Bibliography	36

This is a preview of "ISO/TR 16764:2003". [Click here to purchase the full version from the ANSI store.](#)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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

ISO/TR 16764 was prepared by Technical Committee ISO/TC 178, *Lifts, escalators, passenger conveyors*.

This is a preview of "ISO/TR 16764:2003". [Click here to purchase the full version from the ANSI store.](#)

0 Introduction

0.1 Background

International standardizing bodies such as IEC, ISO, CISPR, CENELEC, have been involved in drawing up common normative and technical documents to bring international markets closer together.

At the 1996 plenary meeting of ISO/TC 178, it was decided to carry out a comparison between various national and international electrical requirements applicable to lifts (elevators) and escalators. The first objective was to identify and compare the major EMC requirements applicable in the countries of the Working Group members (Resolution 1996/134).

The content of this Technical Report is based on the information provided by ISO/TC 178/WG 8 members.

0.2 Understanding electromagnetic interference/electromagnetic compatibility (EMI/EMC)

An electromagnetic disturbance (noise that is not sinusoidal or unwanted signal) is any electromagnetic phenomenon which may degrade the performance of a device, equipment or system. Electromagnetic interference (EMI) is the degradation in the performance of a device, equipment or system caused by an electromagnetic disturbance. The cause of EMI is unplanned coupling between a source and a receptor by means of a transmission path. Transmission paths may be conducted or radiated. See, for example, Figure 1.

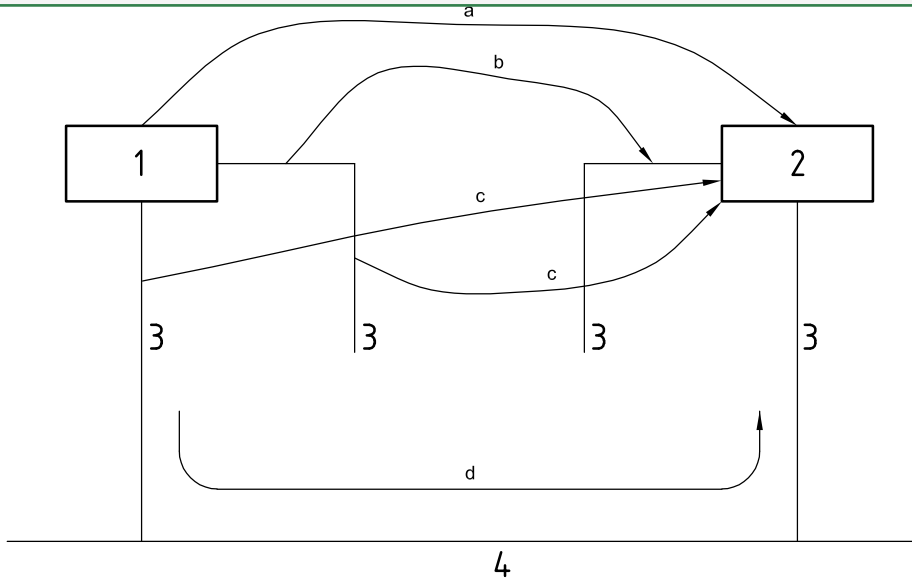
The ability of the device, equipment or system to function satisfactorily in an electromagnetic environment, without introducing intolerable disturbances to that environment is called electromagnetic compatibility (EMC).

EMC has three elements:

- a) a source of energy
- b) a receptor that is disrupted by this energy
- c) a coupling path between the source of energy and receptor.

Methods of coupling electromagnetic energy from a source to a receptor fall into one of four categories:

- a) conducted (electric current)
- b) inductively coupled (magnetic field)
- c) capacitively coupled (electric field)
- d) radiated (electromagnetic field).



Key

- 1 source
- 2 receptor
- 3 cable
- 4 power line

- a Path 1: direct radiation from source to receptor.
- b Path 2: direct radiation from source, picked up by cables (power, signal and control) connected to the receptor, which reaches the receptor via conduction path.
- c Path 3: EMI radiated by cables (power, signal or control) of the source.
- d Path 4: EMI conducted from source to receptor via cables (common power supply, signal/control).

NOTE 1 Source: Engineering EMC-IEEE Press.

NOTE 2 EMI carried by power/signal/control cables that are connected to the source can be coupled to the power/signal/control cables of the receptor, especially when cable harnesses are bundled, even when common power/signal/control cables do not exist.

Figure 1 — Mechanisms of electromagnetic interference