IEC 62153-4-17

Edition 1.1 2026-09

INTERNATIONAL STANDARD

CONSOLIDATED VERSION

Metallic cables and other passive components - Test methods -
Part 4-17: Electromagnetic compatibility (EMC) - Reduction Factor

ICS 33.120.10

ISBN 978-2-8327-1529-1

IEC 62153-4-17:2018-08+AMD1:2026-09 CSV(en)

CONTENTS

FOREWORD 2
INTRODUCTION to Amendment 1 4
1 Scope 5
2 Normative references 5
3 Terms and definitions 5
4 Test procedure 5
4.1 General 5
4.2 Test samples 6
4.3 Test sample preparation 6
4.4 Test equipment 6
4.5 Test setup 7
4.6 Testing 7
4.7 Expression of test results 8
5 Requirement 8
Annex A (normative) Verification of feeding loop inductance 9
Bibliography 10

Figure 1 – Test configuration for reduction factor 6
Figure A.1 – Set-up for inductance measurement of feeding loop 9

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

Metallic cables and other passive components - Test methods - Part 4-17: Electromagnetic compatibility (EMC) - Reduction Factor

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 62153-4-17 edition 1.1 contains the first edition (2018-08) [documents 46/689/FDIS and 46/694/RVD] and its amendment 1 (2026-09) [documents 46/1062/CDV and 46/1086/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62153-4-17 has been prepared by technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
46/689/FDIS	46/694/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62153 series, published under the general title *Metallic cables and other passive components test methods*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION to Amendment 1

The goal of this amendment is to allow in the test equipment the use of a filter at the relevant frequency instead of imposing a fully sinusoidal input wave.

A new sentence is therefore added in the "test equipment" subclause to describe this.

1 Scope

Multi-element metallic communication and control cables are often designed with metallic screen against harmful effects of electromagnetic fields e.g. generated in the environment of electric power and electrified railway lines [1][1].

This part of IEC 62153 applies to the testing of the reduction factor of multi-element metallic cables used in analogue and digital communication and control. The described method is generally applicable to all screened metallic cables.

The reduction factor describes the screening effectiveness of a cable screen at frequencies below 1 kHz with a ratio of voltages describing the screened and unscreened situation. During the measurement, the cable under test is connected to a specific current loop arrangement.

2 Normative references

There are no normative references in this document.

Bibliography

[1] ITU-T Recommendation K.26 (04/2008), *Protection of telecommunication lines against harmful effects from electric power and electrified railway lines*, Vol. IX: TESTING METHODS AND MEASURING APPARATUS, Geneva 1989

[2] DIN 57472-507/VDE 0472-507: April 1983, *Prüfung an Kabeln und isolierten Leitungen – Reduktionsfaktor* (available in German only)

[3] NF F07-024 Octobre 1992, *Installations fixes et matériel roulant ferroviaires – Perturbations électromagnétiques – Détermination et mesurage du facteur réducteur à la fréquence de 50 Hz des câbles de signalisation et des câbles de télécommunication ferroviaires* (available in French only)

_____