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)

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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

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

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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.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
reduction factor
voltage ratio describing the effectiveness of a screen by relating the screened and unscreened situation using a specific current loop

3.2
metallic screen
interconnection of all electric and magnetic screens, where applicable

4 Test procedure

4.1 General

The general test set-up is shown in Figure 1. Test is performed under following conditions:

Temp = 20 °C ± 10 °C, RH = 55 % ± 25 %

The cable is set up on a non-conductive and non-metallic table and at least 1 m away from any metallic part. The cable shall be demagnetised. The test method described in this document is intended, in the first instance, to be used as type test.

It is possible to use a sample length different from 1 m as described in DIN VDE 0472-507 [2], e.g. 2 m as described in NF F07-024 [3]. In this case, the inductance of the feeding loop shall be verified according to the method described in Annex A.

[1] Figures in square brackets refer to the Bibliography.