



IEC 62153-4-12

Edition 1.0 2009-08

# INTERNATIONAL STANDARD



---

**Metallic communication cable test methods –  
Part 4-12: Electromagnetic compatibility (EMC) – Coupling attenuation or  
screening attenuation of connecting hardware – Absorbing clamp method**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

**M**

---

ICS 33.100; 33.120.20

ISBN 2-8318-1053-8

## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions .....	5
4 Test method .....	5
4.1 Equipment .....	5
4.1.1 General .....	5
4.1.2 Balun requirements.....	6
4.1.3 Test head and extension cable requirements.....	7
4.1.4 Impedance matching.....	8
4.2 Test sample.....	8
4.2.1 Length of the extension cables.....	8
4.2.2 Tested length.....	8
4.2.3 Preparation of extension cable and test head .....	8
4.2.4 Balanced connecting hardware.....	8
4.3 Calibration procedure .....	9
4.4 Test set-up .....	9
4.4.1 General .....	9
4.4.2 Test set-up verification.....	10
4.5 Measuring procedure .....	11
5 Expression of test results.....	11
6 Test report.....	11
6.1 General .....	11
6.2 Evaluation of test results.....	11
Figure 1 – Measurement of surface wave at near end of connecting hardware .....	6
Figure 2 – Termination of extension cables.....	9
Figure 3 – Test set-up for a near end measurement of connecting hardware .....	10
Figure 4 – Test set-up for a near end measurement of connecting hardware .....	10
Figure 5 – Typical measurement of screened connecting hardware.....	12
Figure 6 – Typical measurement of an unscreened balanced connecting hardware .....	13
Figure 7 – Typical measurement of a screened balanced connecting hardware .....	13
Table 1 – Balun performance characteristics (30 MHz to 1 GHz).....	7

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**METALLIC COMMUNICATION CABLE TEST METHODS –****Part 4-12: Electromagnetic compatibility (EMC) –  
Coupling attenuation or screening attenuation  
of connecting hardware – Absorbing clamp method**

## 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 provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 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) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62153-4-12 has been prepared by IEC technical committee 46: Cables, wires, waveguides, R.F. connectors, R.F. and microwave passive components and accessories.

The text of this standard is based on the following documents:

CDV	Report on voting
46/312/CDV	46/328/RVC

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

This publication is to be read in conjunction with IEC 62153-4-5 (2006).

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

A list of all parts of the IEC 62153 series, under the general title: *Metallic communication cable test methods*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version may be issued at a later date.

**IMPORTANT – The “colour inside” logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.**

## **METALLIC COMMUNICATION CABLE TEST METHODS –**

### **Part 4-12: Electromagnetic compatibility (EMC) – Coupling attenuation or screening attenuation of connecting hardware – Absorbing clamp method**

#### **1 Scope**

This part of IEC 62153 details the method of test to determine the coupling attenuation or screening attenuation for connecting hardware used in analogue and digital communication systems. The test method details means to test one part of a connecting hardware (e. g. wall outlet or plug alone) as well as testing a mated pair of connecting hardware.

#### **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.

IEC 60050-726, *International Electrotechnical Vocabulary – Chapter 726: Transmission lines and waveguides*

IEC 61196-1, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

IEC 62153-4-5:2006, *Metallic communication cables test methods – Part 4-5: Electromagnetic compatibility (EMC) – Coupling or screening attenuation – Absorbing clamp method*

ITU-T Recommendation G.117:1996, *Transmission aspects of unbalance about earth*

ITU-T Recommendation O.9:1999, *Measuring arrangements to assess the degree of unbalance about earth*