

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Metallic cables and other passive components test methods –  
Part 4-7: Electromagnetic compatibility (EMC) – Test method for measuring  
of transfer impedance  $Z_T$  and screening attenuation  $a_S$  or coupling attenuation  
 $a_C$  of connectors and assemblies – Triaxial tube in tube method**

**Méthodes d'essai des câbles métalliques et autres composants passifs –  
Partie 4-7: Compatibilité électromagnétique (CEM) – Méthode d'essai pour  
mesurer l'impédance de transfert,  $Z_T$ , et l'affaiblissement d'écrantage,  $a_S$ , ou  
l'affaiblissement de couplage,  $a_C$ , des connecteurs et des cordons – Méthode  
triaxiale en tubes concentriques**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**METALLIC CABLES AND OTHER PASSIVE  
COMPONENTS TEST METHODS –**
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Test method for measuring of transfer impedance  $Z_T$  and screening  
attenuation  $a_S$  or coupling attenuation  $a_C$  of connectors and assemblies –  
Triaxial tube in tube method**

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This third edition cancels and replaces the second edition published in 2015 and its Amendment 1:2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

The document is revised and updated. It now includes IEC 62153-4-7:2015/COR1:2016 and IEC 62153-4-7:2015/AMD1:2018. Furthermore, the changes of the revised IEC 62153-4-9:2018 are included.

Measurements of the coupling attenuation can be achieved now by using a mixed mode network analyser (virtual balun). The following new annexes have been added:

- Annex E contains informative information about the direct measurement of screening effectiveness of connectors;
- Annex F gives normative information about mixed mode parameters;
- Annex G contains normative information about accessories for measuring coupling attenuation;
- Annex H discusses the low frequency screening attenuation.

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

FDIS	Report on voting
46/812/FDIS	46/820/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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## INTRODUCTION

The shielded screening attenuation test set-up according to IEC 62153-4-3 and IEC 62153-4-4 have been extended to take into account the particularities of electrically short elements like connectors and cable assemblies. Due to the concentric outer tube of the triaxial set-up, measurements are independent of irregularities on the circumference and outer electromagnetic fields.

With the use of an additional resonator tube (inner tube respectively tube in tube), a system is created where the screening effectiveness of an electrically short device is measured in realistic and controlled conditions. Also, a lower cut off frequency for the transition between electrically short (transfer impedance  $Z_T$ ) and electrically long (screening attenuation  $a_S$ ) can be achieved.

A wide dynamic and frequency range can be applied to test even super screened connectors and assemblies with normal instrumentation from low frequencies up to the limit of defined transversal waves in the outer circuit at approximately 4 GHz.