Metallic cables and other passive components test methods - Part 4-7: Electromagnetic compatibility (EMC) -Test method for measuring of transfer impedance ZT and screening attenuation aS or coupling attenuation aC of connectors and assemblies - Triaxial tube in tube method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 62153-4-7:2021 sisaldab Euroopa standardi EN IEC 62153-4-7:2021 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 62153-4-7:2021 consists of the English text of the European standard EN IEC 62153-4-7:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.09.2021.	Date of Availability of the European standard is 03.09.2021.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.100, 33.120.10

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 62153-4-7

September 2021

ICS 33.100.10; 33.120.10

Supersedes EN 62153-4-7:2016 and all of its amendments and corrigenda (if any)

English Version

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 (IEC 62153-4-7:2021)

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 (IEC 62153-4-7:2021)

Prüfverfahren für metallische Kommunikationskabel - Teil 4-7: Elektromagnetische Verträglichkeit (EMV) - Prüfverfahren zur Messung von Kopplungswiderstand Z_T und von Schirm a_S- oder Kopplungsdämpfung a_C von HF-Steckverbindern und konfektionierten Kabeln bis zu und über 3 GHz - Rohr-im-Rohr-Verfahren (IEC 62153-4-7:2021)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

The text of document 46/812/FDIS, future edition 3 of IEC 62153-4-7, prepared by IEC/TC 46 “Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62153-4-7:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2022–05–27
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024–08–27

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This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association.

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Endorsement notice

The text of the International Standard IEC 62153-4-7:2021 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 62153-4-16 NOTE Harmonized as EN IEC 62153-4-16[1]

[1] To be published. Stage at time of publication: FprEN IEC 62153-4-16:2021.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC/TS 62153-4-1	2014	Metallic communication cable test methods - Part 4–1: Electromagnetic compatibility (EMC) - Introduction to electromagnetic screening measurements		
IEC 62153-4-3	-	Metallic communication cable test methods- - Part 4–3: Electromagnetic compatibility (EMC) - Surface transfer impedance - Triaxial method		-
IEC 62153-4-4	-	Metallic communication cable test methods- - Part 4–4: Electromagnetic compatibility (EMC) - Test method for measuring of the screening attenuation as up to and above 3 GHz, triaxial method		-
IEC 62153-4-8	-	Metallic cables and other passive-components - Test methods - Part 4–8: Electromagnetic compatibility (EMC) - Capacitive coupling admittance		-
IEC 62153-4-9	2018	Metallic communication cable test methods - Part 4–9: Electromagnetic compatibility (EMC) - Coupling attenuation of screened balanced cables, triaxial method		
IEC 62153-4-10		Metallic communication cable test methods - Part 4–10: Electromagnetic compatibility (EMC) - Transfer impedance and screening attenuation of feed-throughs and electromagnetic gaskets - Double coaxial test method		
IEC 62153-4-15	2015	Metallic communication cable test methods- - Part 4–15: Electromagnetic compatibility (EMC) - Test method for measuring transfer impedance and screening attenuation - or coupling attenuation with triaxial cell		-

IEC 62153-4-16	-	Metallic cables and other passive-components test methods - Part 4–16: Electromagnetic compatibility (EMC) - Extension of the frequency range to higher frequencies for transfer impedance and to lower frequencies for screening attenuation measurements using the triaxial set-up		-
-	-	Coaxial cables - Part 9–2: Sectional specification for coaxial cables for analogue and digital transmission - Indoor droop cables for systems operating at 5 MHz – 3 000 MHz	EN 50117-9-2	2019

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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

IEC 62153-4-7:2021-07(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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

FOREWORD

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IEC 62153-4-7 has been prepared by IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all parts of the IEC 62153 series, 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 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,
- replaced by a revised edition, or
- amended.

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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.