# SLOVENSKI STANDARD
# SIST EN IEC 62153-4-7:2021/oprA1:2025

**01-april-2025**

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**Preskusne metode za kovinske kable in druge pasivne komponente - 4-7. del: Elektromagnetna združljivost (EMC) - Preskusna metoda za meritve prehodne impedance ZT in zaslonskega slabljenja aS ali sklopnega slabljenja aC konektorjev in sestavov - Metoda "cev v cevi" - Dopolnilo A1**

Amendment 1 - 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



Amendement 1 - 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, ZT,et l'affaiblissement d'écrantage, aS,ou l'affaiblissement de couplage, aC, des connecteurs et des cordons - Méthode triaxiale en tubes concentriques



**Ta slovenski standard je istoveten z:** **EN IEC 62153-4-7:2021/prA1:2025**

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**ICS:**

| | | |
|---|---|---|
| 33.100.01 | Elektromagnetna združljivost na splošno | Electromagnetic compatibility in general |
| 33.120.10 | Koaksialni kabli. Valovodi | Coaxial cables. Waveguides |

**SIST EN IEC 62153-4-7:2021/oprA1:2025 en**

# 46/1031/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

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|---|---|
| PROJECT NUMBER: **IEC 62153-4-7/AMD1 ED3** | |
| DATE OF CIRCULATION: **2025-01-31** | CLOSING DATE FOR VOTING: **2025-04-25** |
| SUPERSEDES DOCUMENTS: **46/1009/CD, 46/1027/CC** | |

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|---|---|
| IEC TC 46 : CABLES, WIRES, WAVEGUIDES, RF CONNECTORS, RF AND MICROWAVE PASSIVE COMPONENTS AND ACCESSORIES | |
| SECRETARIAT: United States of America | SECRETARY: Mr David Hess |
| OF INTEREST TO THE FOLLOWING COMMITTEES: SC 18A, TC 20, SC 46A, SC 46C, SC 46F, SC 48B | HORIZONTAL FUNCTION(S): |
| ASPECTS CONCERNED: | |
| ☒ SUBMITTED FOR CENELEC PARALLEL VOTING<br>**Attention IEC-CENELEC parallel voting**<br>The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.<br>The CENELEC members are invited to vote through the CENELEC online voting system. | ☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING |



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Recipients of this document are invited to submit, with their comments, notification of any relevant “In Some Countries” clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

**Amendment 1 – 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**

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

# FOREWORD

This amendment has been prepared by IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories.

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

| Draft | Report |
|---|---|
| 46/xxxx/xx | 46/xxxx/xx |

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

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website 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.

**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 document using a colour printer.**

**Introductory note:**

The goal of this amendment is:

– to extend coupling attenuation measurements to unscreened connectors and cable assemblies

– to extend coupling attenuation measurements of connectors and cable assemblies to low frequencies by introducing the LFCA

– to extend the clause 10.5, expression of results by a conversion formula between scattering parameter and coupling attenuation

– to introduce the application of a 20 dB/dec envelope curve for coupling attenuation

– to introduce the effect and the mitigation techniques of higher order modes when doing high frequency measurements beyond the higher order mode cutoff-frequency of the triaxial outer system

**Rationale:**

In the triaxial methods the formula to convert from measured voltage ratio to coupling attenuation is not always correctly applied. The formula will therefore be extended to the measured S-parameter.

To make test results comparable, an envelope curve is introduced.

*Add, after Annex H, the following new Annexes I, J, K, and L:*

# Annex I
# (normative)

## Coupling attenuation of unscreened single or multiple pairs

### I.1 General

Annex D of IEC 62153-4-9 describes the measurement of the coupling attenuation of unscreened single or multiple balanced pairs within balanced cables with a test set-up as depicted in Figure I.1.

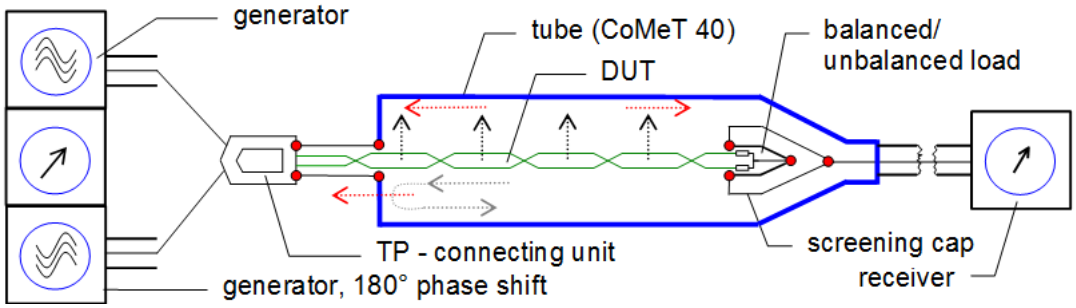


**Figure I.1 Coupling attenuation of unscreened balanced pairs/cables**

The triaxial test-set-up of screened coaxial or balanced cables under test (CUT) forms a short circuit between the screen of the CUT and the outer tube at the near end. In case of unscreened balanced cables, a short to the outer tube is not possible. Here the inner system is formed by the CUT driven in differential mode and the outer system is formed by the tube and the and the common mode of the CUT.

Annex D of IEC 62153-4-9 describes the following measurements for unscreened pairs:

- Near-end coupling attenuation of a single unscreened balanced pair
- Far end screening attenuation and coupling attenuation of single unscreened balanced pairs
- Screening- and coupling attenuation measurement of multiple unscreened balanced pairs

The measurement principles for unscreened balanced pairs/cables can also be applied to connectors and cable assemblies.

This annex describes the specific procedures for measuring coupling attenuation of connectors or cable assemblies applying unscreened single or multiple balanced pairs.

### I.2 Coupling attenuation of unscreened connector

The measurement of the coupling attenuation of an unscreened connector is shown in figure I.2. The signal feeding section can be realised by two coaxial feeding cables of the same electrical length because of the needed symmetry. The feeding cables are located in a tube in tube section. This provides additional shielding and ensures that no coupling is introduced by the feeder cables. The test adapter provides an interface to the connector under test (DUT).

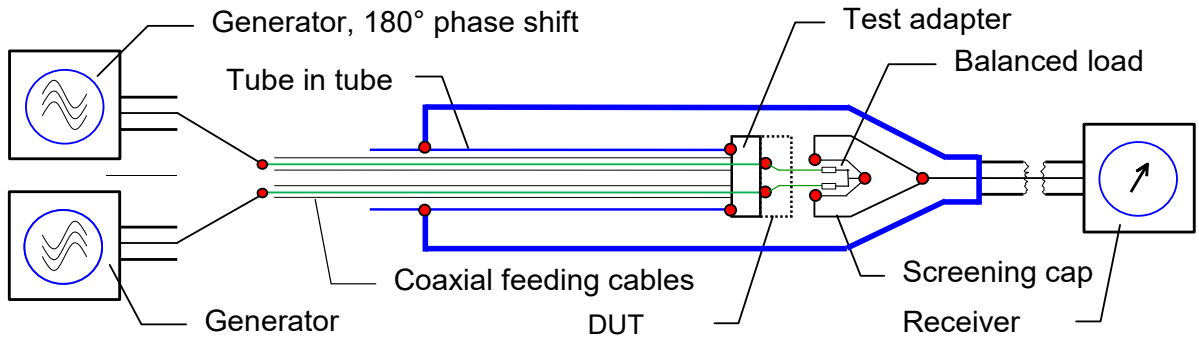


**Figure I.2 Coupling attenuation of an unscreened connector**