

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



AMENDMENT 1  
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**Metallic communication cable 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 up to and above 3 GHz – Triaxial tube in tube  
method**

<https://standards.iteh.ai/catalog/standards/sist/f6e87aad-3c0a-4b61-94e8-7d8a6e197fff/iec-62153-4-7-2015-amd1-2018>

**Méthodes d'essai des câbles métalliques de communication –  
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 jusqu'à 3 GHz  
et au-dessus – Méthode triaxiale en tubes concentriques**



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## 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:

FDIS	Report on voting
46/679/FDIS	46/682/RVD

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

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*Add, after Annex D, the following new Annex E:*

## Annex E (informative)

### Direct measurement of screening effectiveness of connectors

#### E.1 General

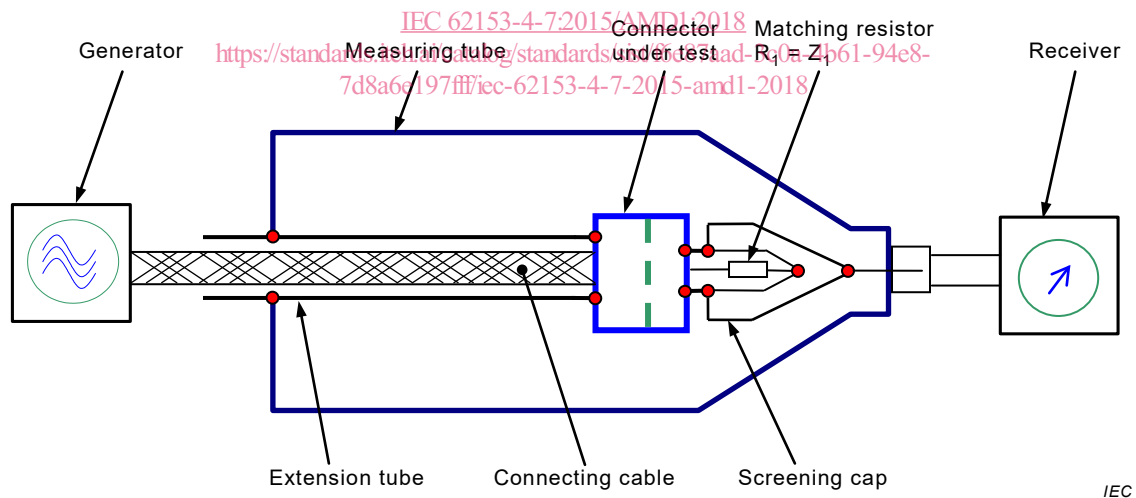
IEC 62153-4-7 describes the measurement of transfer impedance and screening or coupling attenuation of connectors and cable assemblies with the tube in tube procedure. According to IEC 62153-4-7, connectors usually are measured with a short piece of connecting cable, see for example Figure 2.

In different cases it may be required to measure the screening effectiveness direct on the connector or without connecting cable, e.g. to evaluate the EMC of the interface of the mated connectors. The following describes the test set-up for direct connector measurement.

#### E.2 Test set-up

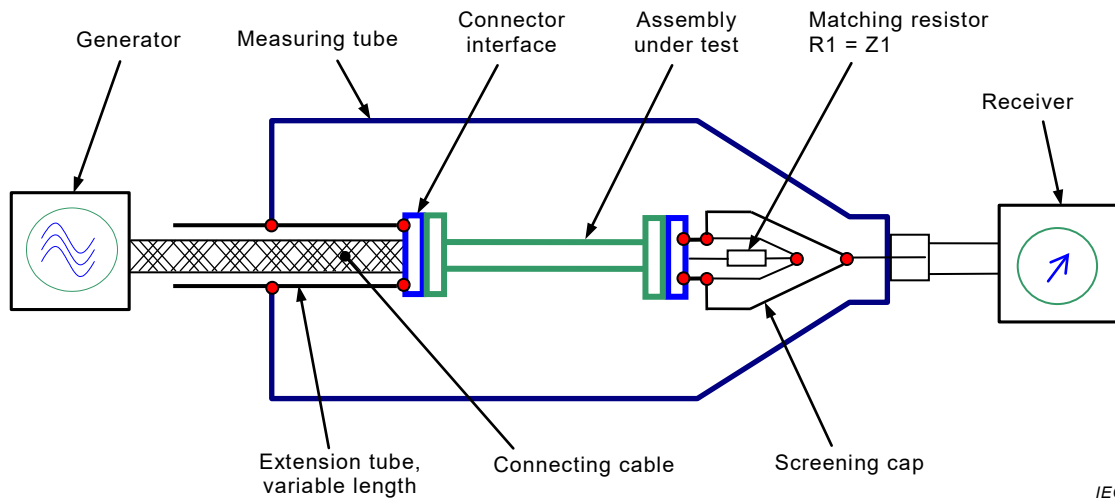
The test set-up and measurements are in principle the same than in Clauses 8 to 10 of this document.

Contrary to the set-ups in Clauses 8 to 10 of this document, the RF-tight tube in tube and the screening cap are direct connected to the connector under test (CUT), see Figure E.1; e.g. by a screwing joint of the connector under test to the extension tube and the screening cap. The torque of this screwing joint shall be specified by the connector manufacturer.



**Figure E.1 – Principle of the test set-up to measure transfer impedance and screening attenuation of a connector**

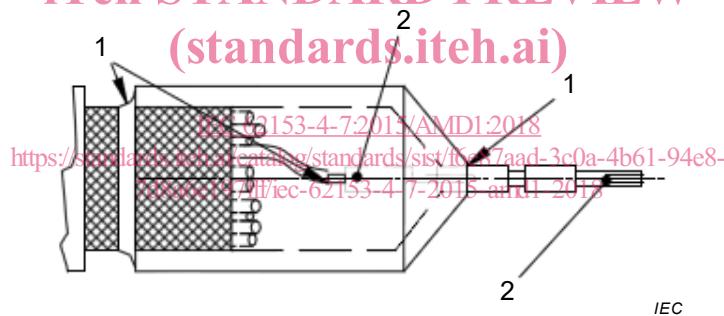
The same applies in principle to the set-up for measuring cable assemblies, see Figure E.2.



**Figure E.2 – Principle of the test set-up to measure transfer impedance and screening attenuation of a cable assembly**

If a multi conductor cable is tested instead of a single-conductor cable, a combination of inner conductors (cores) shall be selected such that their impedance to the screen is closest to the internal impedance of the test receiver, see Figure E.3 (e.g. determined by means of a reflectometer).

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**Key**

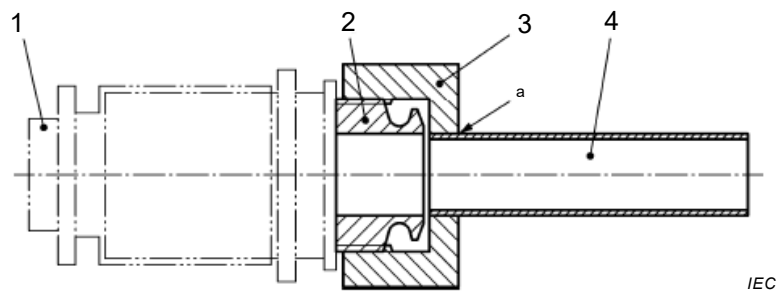
- 1 connection
- 2 terminating impedance 50 Ω
- 3 inner contact from RF connector connected to the shielded tube

**Figure E.3 – Example of sample preparing**

**E.3 Construction details of test set-up**

The connection of the RF-tight tube as well as the RF-tight connection of the screening cap may influence the test results considerably. Worse mounted connections may lead to leakages and to poor test results.

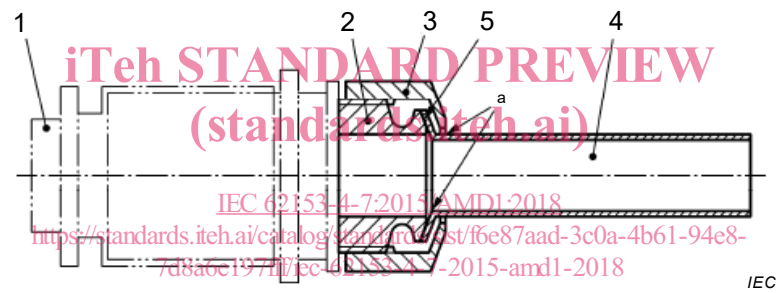
Figures E.4 and E.5 give examples of how to connect the tube in tube and the screening cap to the CUT.



**Key**

- 1 mating connector
- 2 coupling
- 3 bush (Cu-material)
- 4 copper tube
- <sup>a</sup> RF-density connection (soldered for example)

**Figure E.4 – Screening tube with separate nut**



**Key**

- 1 mating connector
- 2 coupling
- 3 nut
- 4 copper tube
- 5 cone
- <sup>a</sup> Matching edge-raised or chamfered

**Figure E.5 – Screening fixed with associated nut**

## Bibliography

*Add, at the end of the bibliography, the following new references:*

- [11] VG 95214-12, *Test of components – Part 12: Measuring methods for transfer impedance and screening attenuation, – transfer impedance of screened components (triaxial method, KS 12 B) and conductive gaskets (triaxial method, KS 22 B)*
- [12] VG 95214-13, *Test of components – Part 13: Measuring methods for transfer impedance and screening attenuation, screening attenuation of screened components (triaxial method, KS 13 B)*
- [13] VG 95319-2, *Electrical connectors and plug-and-socket devices – Part 2: Generic specification*
- [14] VG 95377-15, *Electromagnetic compatibility (EMC) – Measuring devices and measuring equipment – Part 15: Auxiliary measuring devices*

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