SLOVENSKI STANDARD
SIST EN IEC 62153-4-15:2021/oprA1:2023

01-april-2023

Preskusne metode za kovinske kable in druge pasivne komponente - 4-15. del: Elektromagnetna združljivost (EMC) - Preskusna metoda za meritve prenosne impedance in zaslonskega slabljenja ali sklopnega slabljenja s triosno celico - Dopolnilo A1

Metallic cables and other passive components test methods - Part 4-15: Electromagnetic compatibility (EMC) - Test method for measuring transfer impedance and screening attenuation - or coupling attenuation with triaxial cell

Prüfverfahren für metallische Kommunikationskabel - Teil 4-15: Elektromagnetische Verträglichkeit (EMV) - Prüfverfahren zur Messung des Kopplungswiderstandes und der Schirmdämpfung oder der Kopplungsdämpfung mit der Triaxialen Zelle

Méthodes d'essais des câbles métalliques et autres composants passifs - Partie 4-15 : Compatibilité électromagnétique (CEM) - Méthode d'essai pour le mesurage de l'impédance de transfert et de l'affaiblissement d'écran - ou de l'affaiblissement de couplage avec cellule triaxiale

Ta slovenski standard je istoveten z: **EN IEC 62153-4-15:2021/prA1:2023**

ICS:

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

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46/924/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 62153-4-15/AMD1 ED2**	
DATE OF CIRCULATION: **2023-01-27**	CLOSING DATE FOR VOTING: **2023-04-21**
SUPERSEDES DOCUMENTS: **46/919/RR**	

IEC TC 46 : CABLES, WIRES, WAVEGUIDES, RF CONNECTORS, RF AND MICROWAVE PASSIVE COMPONENTS AND ACCESSORIES	
SECRETARIAT: United States of America	SECRETARY: Mr David Wilson
OF INTEREST TO THE FOLLOWING COMMITTEES: SC 46A,SC 46C,SC 46F,TC 48,SC 48B	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☒ EMC ☐ ENVIRONMENT	☐ QUALITY ASSURANCE ☐ SAFETY
☒ SUBMITTED FOR CENELEC PARALLEL VOTING **Attention IEC-CENELEC parallel voting** 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. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of

- any relevant patent rights of which they are aware and to provide supporting documentation,
- any relevant “in some countries” clauses to be included should this proposal proceed. Recipients are reminded that the enquiry stage is the final stage for submitting "in some countries" clauses. See AC/22/2007.

TITLE:

Amendment 1 - Metallic cables and other passive components test methods - Part 4-15: Electromagnetic compatibility (EMC) - Test method for measuring transfer impedance and screening attenuation - or coupling attenuation with triaxial cell

PROPOSED STABILITY DATE: 2029

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:

FDIS	Report of voting
46/XX/FDIS	46/XX/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

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

A bilingual version of this publication may be issued at a later date.

Introductory note:

The goal of this amendment is:

– to extend the clause 10.3, expression of results by a conversion formula between scattering parameter and coupling attenuation

– to include the 20 dB envelope curve:

Rationale:

In the triaxial cell method the formula to convert from measured voltage ratio to coupling attenuation is not always correctly applied (see IEC TC 46/WG5: Web_201030_02). The formula will therefore be extended to the measured S-parameter.

To make test results comparable, an envelope curve is introduced, see figures 7 and 8.

Add, after Annex G, the following new Annex H

Annex H
(normative)

Coupling attenuation expressed by mixed mode scattering parameter and an envelope line

H.1 General

Coupling attenuation is often measured with a multiport network analyser with mixed mode scattering parameters. In this case the formulae for the conversion from voltage ratio to the coupling attenuation shall be rearranged.

An envelope curve shall be drawn for the coupling attenuation. This simplifies the comparison of test results.

H.1.1 Coupling attenuation expressed by mixed mode scattering parameter

The formula (195) is rearranged and expressed by a mixed mode scattering parameter.

$$a_c = -20\log_{10}\left|S_{\text{sd21}}\right| + 10\log_{10}\left|\frac{Z_{\text{diff}}}{Z_0}\right| + 10\log_{10}\left|\frac{2Z_{\text{s}}}{Z_{\text{diff}}}\right| = -20\log_{10}\left|S_{\text{sd21}}\right| + 10\log_{10}\left|\frac{2Z_{\text{s}}}{Z_0}\right| \quad \text{(F.1)}$$

where

a_c is the coupling attenuation

S_{sd21} is the forward transmission scattering parameter; DUT exited in differential mode; received power in single ended mode

Z_{diff} is differential mode impedance

Z_s is the normalised value of the characteristic impedance of the environment of the cable; Z_S=150Ω

Z_0 is the system impedance; Z_0=50Ω

H.1.2 Envelope line of coupling attenuation

The coupling attenuation is expressed by a value A of an envelope line. The value A shall be deduced by drawing a curve derived from the following equation:

$$E_{\text{c}} = \begin{cases} A \text{ if } 30\text{MHz} \le f < 100\text{MHz} \\ A - 20\log_{10}\left(\dfrac{f}{100}\right) \end{cases} \quad \text{(F.2)}$$

Where

f is the frequency in MHz

E_c is the envelop line of coupling attenuation in dB

A is the starting value of the envelope in dB

This curve shall be raised until the first peak of the measurement trace is intersected. The value A (in dB) is read where the curve intersects the Y axis, see.