



SLOVENSKI STANDARD
oSIST prEN 3475-805:2023
01-maj-2023

Aeronavtika - Električni kabli za uporabo v zračnih plovilih - Preskusne metode - 805. del: Karakteristična impedanca

Aerospace series – Cables, electrical, aircraft use - Test methods - Part 805: Characteristic impedance

Luft- und Raumfahrt - Elektrische Leitungen für Luftfahrtverwendung - Prüfverfahren - Teil 805: Wellenwiderstand

Série aérospatiale - Câbles électriques à usage aéronautique - Méthodes d'essais - Partie 805: Impédance caractéristique

Ta slovenski standard je istoveten z: prEN 3475-805

ICS:

29.060.20	Kabli	Cables
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

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English Version

Aerospace series - Cables, electrical, aircraft use - Test methods - Part 805: Characteristic impedance

Série aérospatiale - Câbles électriques à usage
aéronautique - Méthodes d'essais - Partie 805:
Impédance caractéristique

Luft- und Raumfahrt - Elektrische Leitungen für
Luftfahrtverwendung - Prüfverfahren - Teil 805:
Wellenwiderstand

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee ASD-STAN.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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European foreword

This document (prEN 3475-805:2023) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this document has received the approval of the National Associations and the Official Services of the member countries of ASD-STAN, prior to its presentation to CEN.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 3475-805:2002.

The main changes compared to the previous edition are as follows:

- EN 50289-1-11 added as a normative reference.

This document is read in conjunction with EN 3475-100 and EN 50289-1-11.

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prEN 3475-805:2023 (E)**1 Scope**

This document specifies methods for measuring the characteristic impedance of a cable.

2 Normative references

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.

EN 3475-100, *Aerospace series - Cables, electrical, aircraft use - Test methods - Part 100: General*

EN 3475-804, *Aerospace series - Cables, electrical, aircraft use - Test methods - Part 804: Velocity of propagation*

EN 50289-1-11, *Communication cables - Specifications for test methods - Part 1-11: Electrical test methods - Characteristic impedance, input impedance, return loss*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Preparation of specimens

These shall be stripped and prepared for connection to the measuring device.

5 Methods**5.1 Method A: measurement with impedance bridge on coaxial cable**

Length of sample: > 3 m

Equipment: impedance measuring bridge

Frequency: as indicated in the product standard

Measuring principle: the input impedance of the sample shall be measured first with its end in open circuit (Z_{co}) and then with its end in short circuit (Z_{cc}).

The characteristic impedance of the cable shall be calculated from these two measurements using the following formula:

$$Z_c = \sqrt{Z_{co} \cdot Z_{cc}}$$

5.2 Method B: reflectometer measurement on coaxial cable

The measurement shall be taken using the same equipment and on the same sample as for the velocity of propagation, connected in the same way according to EN 3475-804.

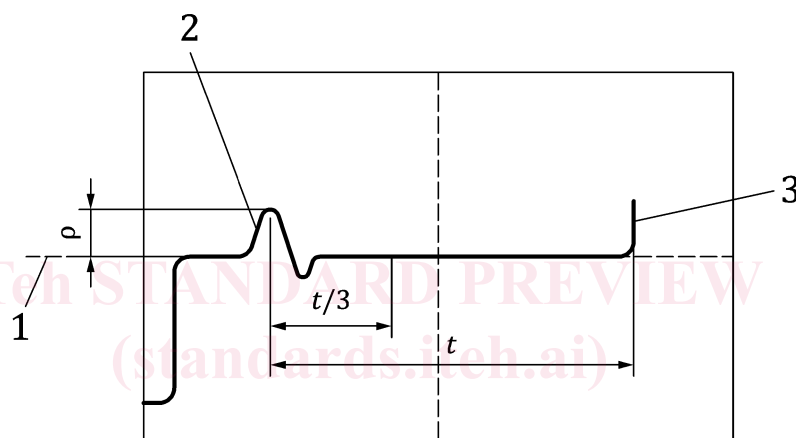
The characteristic impedance Z_c of the cable shall be calculated from the reflection coefficient shown on the oscilloscope screen using the formula:

$$Z_c = Z_o \frac{1+\rho}{1-\rho}$$

so that Z_o = value in ohms of characteristic impedance in common mode.

Measurement of ρ shall be taken one metre from the cable input ($t/3$).

See Figure 1.



Key

- 1 Reference level for precision coaxial air line
- 2 Mismatch at cable input
- 3 Open circuit at free end of cable

Figure 1 — Method B

5.3 Method C: shielded symmetric cable measurement

5.3.1 General

The characteristic impedance of the cable at the specified frequency shall be derived from the input impedance of a length of cable when its far end is put in open and short circuit, using the following formula:

$$Z_c = \sqrt{Z_{co} \cdot Z_{cc}} \quad (1)$$

Z_{co} and Z_{cc} shall be derived from the reflection coefficients ρ_{co} and ρ_{cc} at the input of the length of cable, using the following formulas:

$$Z_{co} = Z_b \cdot \frac{1+\rho_{co}}{1-\rho_{co}} \quad (2)$$