SLOVENSKI STANDARD
oSIST prEN 4604-006:2022

01-november-2022

Aeronavtika - Kabli, električni, za prenos signala - 006. del: Kabli, koaksialni, 50 ohm, 200 °C, tip WM - Standard za proizvod

Aerospace series - Cable, electrical, for signal transmission - Part 006: Cable, coaxial, 50 Ohms, 200 °C, type WM - Product standard

Luft- und Raumfahrt - Elektrische Leitungen für Signalübertragungen - Teil 006: Koaxialkabel, 50 Ohm, 200 °C, Typ WM - Produktnorm

Série aérospatiale - Câbles électriques pour transmission de signaux - Partie 006 : Câble coaxial, 50 ohms, 200 °C, type WM - Norme de produit

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Ta slovenski standard je istoveten z: prEN 4604-006

ICS:

33.120.10	Koaksialni kabli. Valovodi	Coaxial cables. Waveguides
49.060	Letalska in vesoljska električna oprema in sistemi	Aerospace electric equipment and systems

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 4604-006

September 2022

ICS 49.060

Will supersede EN 4604-006:2019

English Version

Aerospace series - Cable, electrical, for signal transmission - Part 006: Cable, coaxial, 50 Ohms, 200 °C, type WM - Product standard

Série aérospatiale - Câbles électriques pour transmission de signaux - Partie 006 : Câble coaxial, 50 ohms, 200 °C, type WM - Norme de produit

Luft- und Raumfahrt - Elektrische Leitungen für Signalübertragungen - Teil 006: Koaxialkabel, 50 Ohm, 200 °C, Typ WM - Produktnorm

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. prEN 4604-006:2022 E

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European foreword

This document (prEN 4604-006:2022) has been prepared by the Aerospace and Defence Industries Association of Europe — Standardization (ASD-STAN).

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 4604-006:2019.

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1 Scope

This document specifies the required characteristics of a coaxial cable, 50 Ω, type WM, for use in aircraft electrical systems at operating temperature between -55 °C and 200 °C and specially for high frequency up to 6 GHz.

The document encloses also a regular and reinforced cable version (code R) which is used for sensitive systems with controlled VSWR.

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 3475-100:2010, *Aerospace series — Cables, electrical, aircraft use — Test methods — Part 100: General*

EN 3475 (all parts), *Aerospace series — Cables, electrical, aircraft use — Test methods*

EN 4604-001, *Aerospace series — Cable, electrical, for signal transmission — Part 001: Technical specification*

EN 4604-002, *Aerospace series — Cable, electrical, for signal transmission — Part 002: General*

TR 6058, *Aerospace series — Cable code identification list* [1)]

ASTM B 298-99, *Standard specification for silver-coated soft or annealed copper wire* [2)]

MIL-PRF-39012, *Performance specification: connectors, coaxial, radio frequency, general specification for* [3)]

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 3475-100:2010 and the following apply.

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

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

3.1
epsilon (ε)
value of dielectric constant

[1)] Published as ASD-STAN Technical Report at the date of publication of this document by AeroSpace and Defence industries Association of Europe — Standardization (ASD-STAN), https://www.asd-stan.org/.
[2)] Published by: ASTM International (US) American Society for Testing and Materials https://www.astm.org/.
[3)] Published by: DoD National (US) Mil. Department of Defense https://www.defense.gov/.

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4 Required characteristics

4.1 Material, construction, dimensions and mass

4.1.1 Material

See Table 1.

Table 1 — Material

	Material	Finish	Colour
Conductor	Single-strand copper per ASTM-B298-99	1 µm silver plated	—
Dielectric	Fluorocarbon dielectric with low epsilon (PTFE)	—	—
Screen (foil)	Tape, silver plated copper or silver alloy	—	—
Shield	Braid, copper per ASTM-B298-99	1 µm silver plated	—
Jacket	Extruded Fluorinated Ethylene Propylene (FEP)	—	Violet

4.1.2 Construction, dimensions and mass

See Figure 1 and Table 2.

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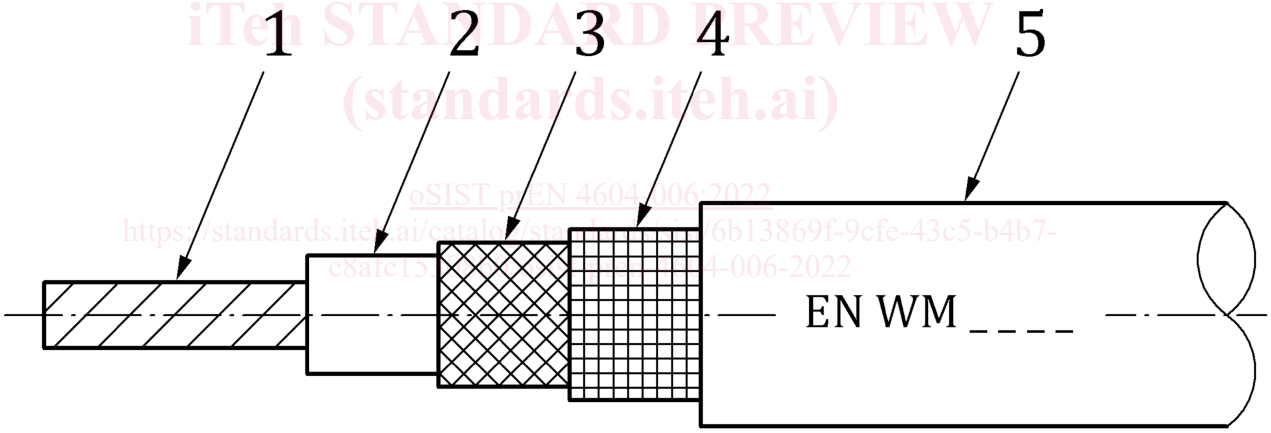

Key

1 Conductor
2 Dielectric
3 Screen
4 Shield
5 Jacket

Figure 1 — Construction

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Table 2 — Dimensions and mass

Diameter mm										Mass g/m
Conductor			Dielectric		Shield		Cable			
min.	nom.	max.	min.	max.	min.	max.	min.	nom.	max.	max.
0,99	1,02	1,05	2,74	2,94	3,30	3,70	3,70	3,85	4,00	35 (TBC)

In order to ensure mechanical integrity (connection strength as per MIL-PRF-39012) the minimum diameter of the shielding strands shall be 0,10 mm.

The dielectric diameter (min. – max.) shall be maintained during connection (after unwrapping screen).

4.2 General characteristics

— Operating temperature: -55 °C to 200 °C.

— Minimum bend radius:

  — in static use: 25 mm;

  — in dynamic use: 70 mm.

— Performances are guaranteed up to 6 GHz.

4.3 Electrical characteristics

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— Characteristic impedance: Zc = 50 Ω; see details in Table 4.

— Capacitance per unit length: Cp = 82 pF/m max. TBC.

— Transfer impedance up to 400 MHz: 20 mΩ/m max.

— Operating voltage: 750 V RMS max.

— Maximum power handling (at sea level): see Table 3 and Figure 2.

— Attenuation versus frequency: see Table 3 and Figure 2.

— Velocity of propagation: v ≥ 243 000 km/s (vr = 0,81 % min). TBC.

Table 3 — Frequency, attenuation, power handling and return loss

Frequency **MHz**	50	100	200	400	1 000	5 000	6 000
Attenuation max **dB/100 m**	8	11,5	17	20,5	40	85	92
Power handling min W	2 800	2 000	1 200	1 100	600	300	260
Return Loss max VSWR [a]	1,1	1,1	1,15	1,15	1,15	1,35	1,35

[a] Applicable to regular and reinforced cable version (code R) only.

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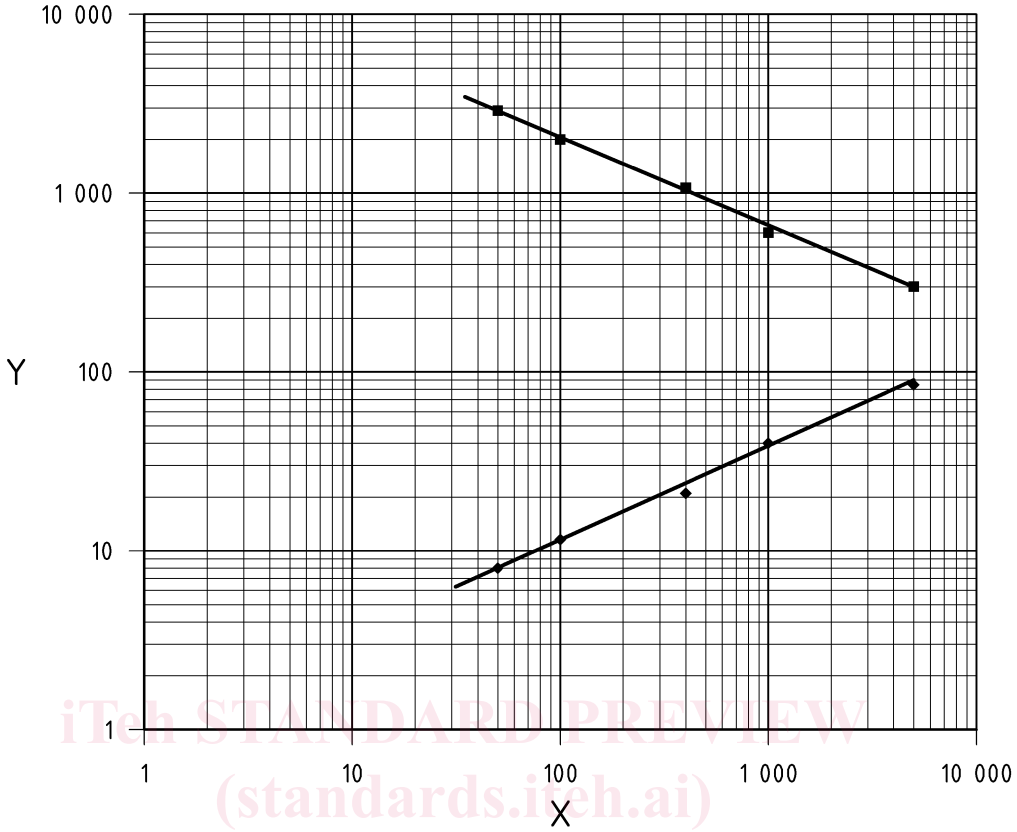
CABLE WM



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Key

X	f(MHz)	◆	Att.(dB/100 m)
Y	Att.(dB/100 m) P(W)	■	P(W)

Figure 2 — Maximum attenuation curve (ascending) — Power curve (descending)

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4.4 Tests

See Table 4.

Table 4 — Tests *(1 of 4)*

EN 3475-	Designation of the test	Remarks
201	Visual examination	Applicable
202	Mass	Applicable
203	Dimensions	Applicable See 4.1.2, Table 2
301	Ohmic resistance per unit length	Applicable 21,5 Ω/km max.
302	Voltage proof test	Applicable Dielectric: — Dry test: 2 500 VAC Jacket: — Dry impulse: 5 000 V Immersion test: 1 750 VAC
303	Insulation resistance	Applicable > 5 000 MΩ.km between conductor and shield
304	Surface resistance	Not applicable

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