



SLOVENSKI STANDARD  
SIST EN 4604-009:2009

01-junij-2009

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Aerospace series - Cable, electrical, for signal transmission - Part 009: Cable, coaxial, light weight, 50 ohms, 180 °C, type KW (light WN) - Product standard

Luft- und Raumfahrt - Elektrische Leitungen für Signalübertragungen - Teil 009: Koaxialkabel, leicht 50-Ohm, 180 °C, Typ KW (WN leicht) - Produktnorm

Série aérospatiale - Câbles électriques pour transmission de signaux - Partie 009 : Câble, coaxial, allégé 50 ohms, 180 °C, Type KW (WN allégé) - Norme de produit

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Ta slovenski standard je istoveten z: EN 4604-009:2009

**ICS:**

49.060 Š^æ\ æš Ā^•[ |b\ æ Aerospace electric  
^|\ dā} æ[ ]!^ { æš Ā ã c^ { ã equipment and systems

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en

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EUROPEAN STANDARD

EN 4604-009

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2009

ICS 49.060

English Version

Aerospace series - Cable, electrical, for signal transmission -  
Part 009: Cable, coaxial, light weight, 50 ohms, 180 °C, type KW  
(light WN) - Product standard

Série aéronautique - Câbles électriques pour transmission  
de signaux - Partie 009 : Câble, coaxial allégé, 50 ohms,  
180 °C, Type KW (WN allégé) - Norme de produit

Luft- und Raumfahrt - Elektrische Leitungen für  
Signalübertragungen - Teil 009: Koaxialkabel, leicht 50  
Ohm, 180 °C, Typ KW (WN leicht) - Produktnorm

This European Standard was approved by CEN on 7 February 2009.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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**Contents**

Page

Foreword.....	3
1 Scope .....	4
2 Normative references .....	4
3 Terms and definitions .....	4
4 Required characteristics .....	4
5 Quality assurance .....	11
6 Designation .....	11
7 Identification and marking .....	11
8 Colours of components and jacket.....	12
9 Packaging, labelling and delivery lengths .....	12
10 Technical specification .....	12

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## Foreword

This document (EN 4604-009:2009) 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 Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2009, and conflicting national standards shall be withdrawn at the latest by October 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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**EN 4604-009:2009 (E)****1 Scope**

This standard specifies the required characteristics of a light weight coaxial cable, 50  $\Omega$ , type KW for use in aircraft electrical systems at operating temperature between  $-55\text{ }^{\circ}\text{C}$  and  $180\text{ }^{\circ}\text{C}$  and specially for high frequency up to 6 GHz. Nevertheless, if needed,  $-65\text{ }^{\circ}\text{C}$  is also acceptable as shown by thermal stability test.

**2 Normative references**

The following referenced documents are indispensable for the application 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 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 and identification list.* <sup>1)</sup>

ASTM-B-566, *Standard specification for copper-clad aluminium wire.* <sup>2)</sup>

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**3 Terms and definitions**

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

**epsilon**

$\epsilon$  [https://standards.iteh.ai/catalog/standards/sist/48efd98c-3b0b-474a-bbbe-](https://standards.iteh.ai/catalog/standards/sist/48efd98c-3b0b-474a-bbbe-fa82d8a71b4b/sist-en-4604-009-2009)

value of dielectric constant

[fa82d8a71b4b/sist-en-4604-009-2009](https://standards.iteh.ai/catalog/standards/sist/48efd98c-3b0b-474a-bbbe-fa82d8a71b4b/sist-en-4604-009-2009)

**4 Required characteristics****4.1 Material, constructions, dimension and mass****4.1.1 Material**

See Table 1.

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\* And all parts quoted in this standard.

1) Published as ASD Technical Report at the date of publication of this standard.

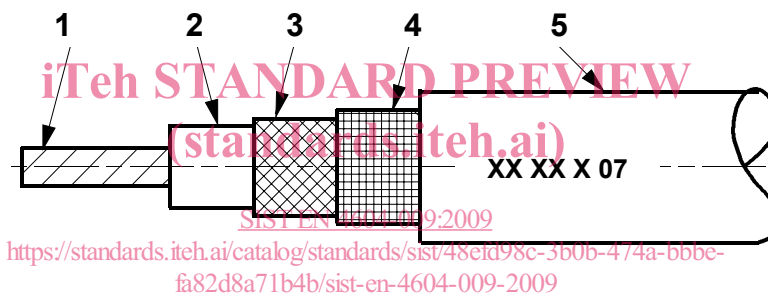
2) Published by: American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959 USA.

Table 1 — Material

	Material	Finish	Colour
Conductor	Single-strand copper clad aluminium as per ASTM-B-566 class 15 A	1 µm silver plated	—
Dielectric	Fluorocarbon dielectric with low epsilon (PTFE)	—	—
Screen (foil)	Foil, silver plated copper or silver alloy		—
Shield	Reinforced braid (copper clad aluminium as per ASTM-B-566 class 15 A)	1 µm silver plated	—
Jacket	Fluorocarbon	—	Turquoise

#### 4.1.2 Construction, dimensions and mass

See Figure 1 and Table 2.



#### Key

- 1 Conductor
- 2 Dielectric
- 3 Screen
- 4 Shield
- 5 Jacket

Figure 1 — Construction

Table 2 — Dimensions and mass

Diameter (mm)									Mass	
Conductor			Dielectric		Shield	Cable			g/m	
min.	nom.	max.	min.	max.		min.	nom.	max.	nom.	max.
2,28	2,30	2,32	6,1	6,3	6,87 ± 0,2	7,5	7,65	7,8	85	95

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

## EN 4604-009:2009 (E)

## 4.2 General characteristics

- Operating temperature: – 55 °C to 180 °C.
- Minimum bend radius:
  - in static use: 80 mm,
  - in dynamic use: 120 mm.
- Performances are guaranteed up to 6 GHz.

## 4.3 Electrical characteristics

- Characteristic impedance:  $Z_c = (50 \pm 3) \Omega$  at 200 MHz
- Capacitance per unit length:  $C_p = 88 \text{ pF/m}$  max.
- Transfer impedance up to 400 MHz:  $20 \text{ m}\Omega/\text{m}$  max.
- Operating voltage: 1 000 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  $\geq 225\,000 \text{ km/s}$

**Table 3 — Maximum attenuation, power handling and return loss**

Frequency MHz	50	100	400	1 000	5 000	6 000
Attenuation dB/100 m	3,5	5,5	10	15	35	41
Power handling W	8 000	5 000	3 000	2 000	800	700
Return loss	1,1	1,1	1,15	1,15	1,2	1,35



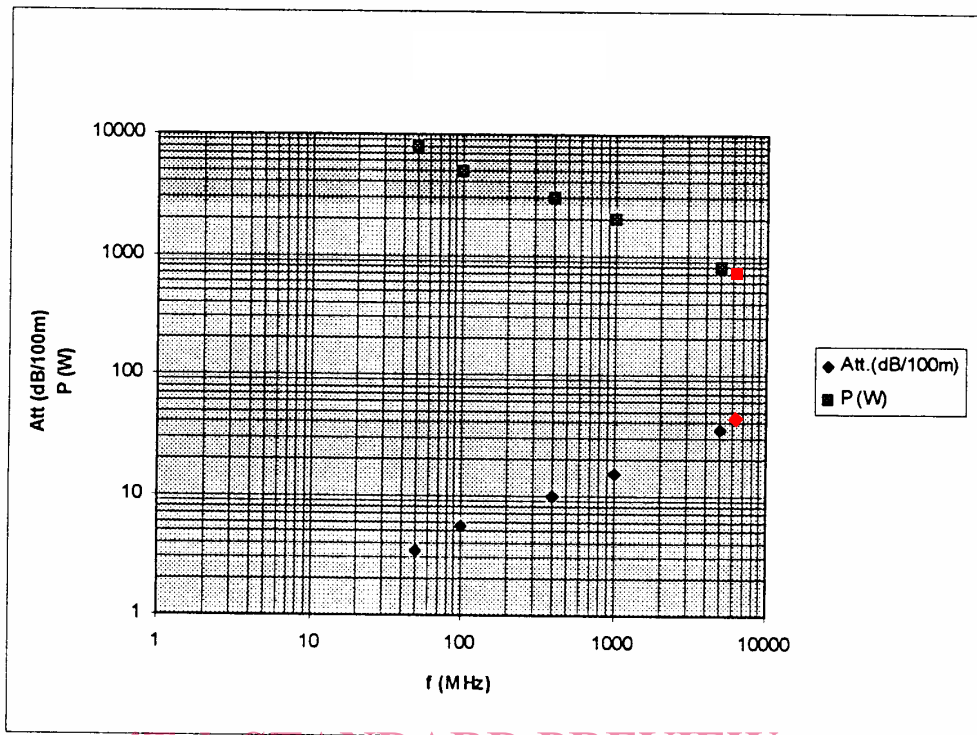


Figure 2 — Maximum attenuation curve (ascending) – Power curve (descending)

#### 4.4 Tests

See Table 4.

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