



**SLOVENSKI STANDARD**  
**oSIST prEN 4709-007:2024**  
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**Aeronavtika - Letalski sistemi brez posadke - 007. del: Splošne zahteve za proizvode za UAS razredov C5 in C6**

Aerospace series - Unmanned Aircraft Systems - Part 007: General product requirements for UAS of classes C5 and C6

Luft- und Raumfahrt - Unbemannte Luftfahrzeugsysteme - Teil 007: Allgemeine Produkthanforderungen für UAS der Klassen C5 und C6

Série aérospatiale - Aéronefs télépilotés - Partie 007 : Exigences produit générales pour les classes d'UAS C5 et C6

**Ta slovenski standard je istoveten z: prEN 4709-007**

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**ICS:**

49.020	Letala in vesoljska vozila na splošno	Aircraft and space vehicles in general
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ICS

English Version

**Aerospace series - Unmanned Aircraft Systems - Part 007:  
General product requirements for UAS of classes C5 and  
C6**

Luft- und Raumfahrt - Unbemannte  
Luftfahrzeugsysteme - Teil 007: Allgemeine  
Produktanforderungen für UAS der Klassen C5 und C6

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 471.

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.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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**prEN 4709-007:2023 (E)****European foreword**

This document (prEN 4709-007:2023) has been prepared by Technical Committee CEN/TC 471 UAS, the secretariat of which is held by BNAE.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

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## 1 Scope

This document provides technical specification and verification methods to support compliance with Commission Delegated Regulation (EU) 2019/945 of 12 March 2019 amended by Commission Delegated Regulation (EU) 2020/1058 of 27 April 2020 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems.

This includes compliance with product requirements for UAS intended to be operated under a standard scenario in the 'specific' category (class C5 and class C6 UAS).

This document covers neither UAS intended to be operated in the "Specific" or "Certified" categories of UAS operations nor UAS lighter than air (e.g. airships and balloons).

Compliance with this document assists in complying with CE marking technical requirements.

This document is only applicable for UA with energy sources based on electro-chemical technologies.

Additional hazards that occur from the characteristics of the payload are excluded and are under the responsibility of the manufacturer and operator.

The present document covers requirements expressed in Annex, Part 16 requirements (1), (3), (4) and (6) and Part 17 requirements (1), (3), (6) and (7) of the Regulation 2020/1058.

## 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 4709-001:—,<sup>1</sup> *Aerospace series — Unmanned Aircraft Systems — Part 001: Product requirements and verification*

EN 4709-005:—,<sup>2</sup> *Aerospace series — Unmanned Aircraft Systems — Part 005: Verification method for the Geocaging function*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 4709-001 and the following apply.

ISO and IEC maintain terminology 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 alert

indication on the equipment to control the UA remotely meant to attract the attention of and identify to the remote pilot a non-normal operational or system condition

Note 1 to entry: alerts are classified at levels or categories corresponding to Warning and Caution.

Note 2 to entry: alert indications also include non-normal range markings.

<sup>1</sup> Under preparation. Stage at the time of publication: prEN 4709-001:2021.

<sup>2</sup> Under preparation. Stage at the time of publication: prEN 4709-005:2023.

**prEN 4709-007:2023 (E)****3.2****caution**

level or category of alert for conditions that require immediate remote pilot awareness and a less urgent subsequent remote pilot response than a warning alert

**3.3****haptic signal**

any type of signal that is transferred to the hand of the user through the handheld equipment to control the UA remotely in the form of vibrations

**3.4****nominal mode**

basic modes of operation encountered in normal operation in the absence of any loss of features, functions or capabilities, or degradation of performance

**3.5****warning**

level or category of alert for conditions that require immediate remote pilot awareness and immediate remote pilot response

**3.6****orientation reference**

reference providing the orientation or direction of a given map with respect to the directions on the ground or any other reference specified by the manufacturer

EXAMPLE Magnetic north.

**3.7****controlled ground area**

ground area where the UAS is operated and within which the UAS operator can ensure that only involved persons are present

**3.8****positioning system**

system of instrumental and computational components for determining position

EXAMPLES Inertial, integrated, linear, optical and satellite positioning systems

**3.9****view**

visual content displayed on the graphical interface, which allows the adjustable display of all the required and supportive visual information by the usage of different windows and zoom levels

**3.10****field of view**

geographical area that is currently displayed on the view

**3.11****total station****electronic tachymeter**

tachymeter with microprocessor(s), display and memory for opto-electronic distance measurement, angle reading, processing, displaying and storing of measurement data

[SOURCE: ISO 9849:2017(en), 3.1.20]



**3.12****global navigation satellite system  
GNSS**

system that comprises several networks of satellites that transmit radio signals containing time and distance data that can be picked up by a receiver, allowing the user to identify the location of the receiver anywhere around the world

[SOURCE: ISO 7078:2020, 3.1.26]

**3.13****GNSS receiver**

electronic device that receives and digitally processes signals from GNSS satellites in order to provide position, velocity and time (of the receiver)

[SOURCE: ISO 7078:2020, 3.5.27]

**3.14****clear and concise information**

extent to which an information is presented

Note 1 to entry: the information considered in this document is the geographical position (i.e. latitude and longitude, WGS 84, ...) of the UA, its speed and its height above the surface or take-off point according to Commission Delegated Regulation (EU) 2020/1058 of 27 April 2020 Annex, Part 16 and Part 17.

Note 2 to entry: the attributes considered are visibility, character height, object size, syntax for physical quantities and units and accuracy.

**4 Product requirements and compliance for Class 5 UAS****4.1 UA configuration****4.1.1 Design requirements**

Unless the UA is tethered, the UA is not equipped with fixed wings, whether or not equipped with VTOL capabilities.

**4.1.2 Design verification**

Unless tethered, verify by visual inspection that the UA is not equipped with fixed wings.

**4.1.3 Pass criteria**

The UA is not equipped with fixed wings.

**4.2 Information about height of the UA****4.2.1 Performance requirements****4.2.1.1 Update rate**

Refer to 5.2 for the height of the UA.

**4.2.1.2 Height of the UA**

Refer to 5.2 for the height of the UA.

**prEN 4709-007:2023 (E)****4.2.2 Verification method**

Refer to 5.2 for the height of the UA.

**4.2.3 Pass criteria**

Compliance with pass criteria, refer to 5.2 for the height of the UA.

**4.3 Low-speed mode****4.3.1 Performance requirements**

- (1) Unless tethered, the UA shall be equipped with a selectable “low-speed mode” limiting the ground speed to not more than 5 m/s.
- (2) The manufacturer shall provide in the manufacturer’s instructions:
  - a. the procedure how to set the speed, how to select (“activate”) and de-select (“deactivate”) the “low-speed mode”;
  - b. conditions and limitations that affect the “Low-speed mode”.

**4.3.2 Verification method**

- Verify by review of the manufacturers’ instructions that the UA is equipped with a “Low-speed mode”.
- Determine the maximum horizontal speed of the UA when “Low-speed mode” is selected by any of the tests described in EN 4709-001:—<sup>1</sup>, 4.2.2.
- Verify that the maximum horizontal speed in all possible flight modes and in any possible direction of level flight is not exceeded.
- Repeat the selected test 3 times and consider the maximum value measured.

**4.3.3 Pass criteria**

- (1) Compliance with the low-speed mode requirement.
- (2) Verify by review of the manufacturer’s instructions that the following is provided:
  - a. the procedure how to set the speed, how to select (“activate”) and de-select (“deactivate”) the “low speed mode”;
  - b. conditions and limitations that affect the “Low-speed mode”.

**4.4 C2 link monitoring and alerting****4.4.1 Performance requirements**

The UAS shall monitor the command-and-control link and shall provide to the remote pilot:

- (1) a visual signal strength indication with at least four levels (strong, medium, weak, loss of C2 link);
- (2) a visual caution signal accompanied by an aural and/or haptic alert in case of weak signal strength indication;

(3) a visual warning signal accompanied by an aural and/or haptic alert within a period of time defined in the manufacturer's instructions after loss of C2 link. A delay of up to 5 seconds is considered as an acceptable delay. Otherwise, the manufacturer should provide a risk assessment proving the safe operation in case of C2 link loss.

(4) (2) and (3) requirements shall be distinguishable;

(5) The signal strength indication shall be based on an index value (or a fusion of several signal metrics) and appropriate threshold determined by the manufacturer;

NOTE 1 Examples of these values and thresholds for different transmission technologies are given in Annex A.

NOTE 2 For the display of the alert, colours and size recommendations are presented in Annex C.

NOTE 3 For aural, visual and haptic alerts, guidance can be found in EN 61310-1.

NOTE 4 Examples of visual indications:

- warning light at the equipment to control the UA remotely;
- text message on the display of the equipment to control the UA remotely;
- depiction indicating the need for action on the equipment to control the UA remotely.

(6) the manufacturer's instructions shall include detailed information and specification. The manufacturer shall define the visual signal strength indication, visual caution signal and visual warning. Aural and haptic alerts should also be described in the manufacturer's instructions with their expected scheme (such as type, frequency, duration and pattern).

#### 4.4.2 Verification method

Carry out the following tests for each of the requirements three times:

(1) visual signal strength indication;

Turn on the UA and the equipment to control the UA remotely and check that the signal strength is visually provided. Observe the signal strength indication during the tests described in EN 4709-001:—<sup>1</sup>, 6.7.1 and verify that the indication is continuously provided and reflects a reduced link quality.

(2) caution signal;

Reduce the signal strength.

NOTE 1 The test can consist of using shielding e.g. entering into building or using a shielded box without closing to reduce signal strength reception or place UA at the limits of the signal range and move away from UA with the equipment to control the UA remotely.

(3) warning signal;

Reduce signal strength to loss of connection.

NOTE 2 Perform the test per EN 4709-001:—<sup>1</sup>, 6.7.1.2.1.

(4) characteristics of caution and warning signals;