
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 Produktanforderungen für UAS der Klassen C5 und C6

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

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

Série aérospatiale - Aéronefs télépilotes - Partie 007 :
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et C6

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

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European foreword

This document (EN 4709-007:2026) has been prepared by Technical Committee CEN/TC 471 “Unmanned Aircraft Systems”, the secretariat of which is held by BNAE.

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of an identical text or by endorsement, at the latest by April 2027, and conflicting national standards shall be withdrawn at the latest by April 2027.

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

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.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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1 Scope

This document provides technical specification and specifies 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 (UAS) 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 is only applicable for unmanned aircraft (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 4709-001:2026, *Aerospace series — Unmanned Aircraft Systems — Part 001: Product requirements and verification*

EN 4709-003:2026, *Aerospace series — Unmanned Aircraft Systems — Part 003: Geo-awareness requirements*

3 Terms, definitions and abbreviations

3.1 Terms and definition

For the purposes of this document, the terms and definitions given in EN 4709-001:2026 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/>

3.1.1

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.

3.1.2

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

3.1.3

haptic signal

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

3.1.4

nominal mode

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

[SOURCE: EN 4709-001:2026]

3.1.5

degraded mode

any temporary, persistent, or permanent reduction in features, functions, and capabilities, including the ability to cope with adverse environmental conditions outside of the limitations of the service envelope defined by the manufacturer likely to occur when operating close to or at those limitations

Note 1 to entry: Such limitations are (but not limited to): GNSS reception due to satellite constellation, ionospheric disturbances, jamming, etc.; magnetic deviation and disturbance affecting the compass (magnetometer); data link quality, in terms of latency, bandwidth, availability and integrity.

Note 2 to entry: Failures of one or, if applicable, more systems relevant for stability, controllability and remote pilot workload, such as (if required) accelerometers, gyroscopes, airspeed sensors, engine speed sensors, electrical power supply systems (batteries), power distribution systems (harnesses, connectors, voltage converters, fuses, etc.), and systems relevant for health monitoring such as internal temperatures and battery status, that are likely to occur during the life of the product are taken into account.

[SOURCE: EN 4709-001:2026]

3.1.6

warning

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

3.1.7

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.

3.1.8

controlled ground area

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

EN 4709-007:2026 (E)**3.1.9****positioning system**

system of instrumental and computational components for determining position

EXAMPLE Inertial, integrated, linear, optical and satellite positioning systems.

3.1.10**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

3.1.11**field of view**

geographical area that is currently displayed on the view

3.1.12**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, 3.1.20]

3.1.13**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]

3.1.14**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]

3.1.15**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 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.

3.1.16**scale factor**

factor by which the coordinates of all defined points of the symbol will be enlarged or reduced in size in relation to the reference point of the symbol

[SOURCE: EN 81714-2:2007, 3.4.2]

3.1.17**Beyond Visual Line Of Sight****BVLOS**

type of UAS operation which is not conducted in VLOS

[SOURCE: Commission Delegated Regulation (EU) 2019/947 of 4 April 2022, Article 2, No. (8)]

3.1.18**operational mode**

mode used to categorize the level of interaction between remote pilot and UAS (cf. EN 81714-2:2007):

- automatic mode
- semi-automatic mode
- manual mode

Note 1 to entry: The expression “*operational mode*” is used to address safety relevant control issues.

[SOURCE: NSO AEP-83 (STANAG 4703), Edition B Version 1, UL47.1]

3.1.19**automatic mode**

operational mode where UA attitude, speed and flight path are fully controlled by the flight control system, however the remote pilot is always able to take control, when needed

Note 1 to entry: No remote pilot input is needed to address flight controls and vehicle steering, other than to change the operational mode, load or modify the required flight plan or waypoint parameters.

EXAMPLE Waypoint path navigation, waypoint holding (hovering/loitering), automatic take-off, automatic landing, follow-me mode, return to home, etc.

[SOURCE: EN 4709-001:2026]

EN 4709-007:2026 (E)**3.1.20****semi-automatic mode**

operational mode where the remote pilot commands outer loop parameters such as altitude, heading and air speed

Note 1 to entry: This is an assisted manual mode where the flight control system operates the UA controls to achieve the commanded outer loop parameter value. Envelope flight protection and/or control decoupling functions should be in place in this control operational mode. The flight manual clearly specifies, for any possible/available control mode that is classified as semi-automatic, for each degree of freedom, the level of involvement of the remote pilot to address control stability.

Note 2 to entry: A wide range of flight control modes are semi-automatic, from low level attitude/rate control, autopilot heading/speed/altitude control, velocity control; position control may be considered semi-automatic if remote pilot input is transformed into position commands continuously (or an automatic mode if remote pilot inputs only modify waypoint coordinates in on-board autopilot)

[SOURCE: EN 4709-001:2026]

3.1.21**manual mode**

operational mode where the remote pilot directly commands UA controls

EXAMPLE Aerodynamic surfaces through servo-actuators and engine through electronic speed control.

Note 1 to entry: This is an unassisted direct piloting manual mode. This *operational mode* does not benefit from autopilot aiding action (e.g. flight envelope protection) in excess of stability augmentation.

3.2 Abbreviations

This clause lists the abbreviated terms used in the present document.

BVLOS	Beyond Visual Line Of Sight
CEP	Circular Error Probability
GNSS	Global Navigation Satellite System
RTK	Real Time Kinematic
UA	Unmanned Aircraft
UAS	UA System
RTH	Return To Home

4 Product requirements and compliance for class C5 UAS**4.1 UA configuration****4.1.1 Design requirements**

Unless the UA is tethered, the UA shall not be 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

The height of the UA shall be updated at least every second.

4.2.1.2 Height of the UA

The height information on the equipment to control the UA remotely shall not be hidden and shall comprise the name or symbol for the physical quantity followed by the measured value and the unit.

The information given shall be explained in the manufacturer's instructions followed by a description, whether the height is above the surface or the take-off point.

4.2.2 Verification method

4.2.2.1 Update rate

4.2.2.1.1 General

Determine the update rate by the test method specified below or by the Post Processing Kinematic (PPK) test method.

NOTE It could be tested by any other test method validated by notified bodies.

4.2.2.1.2 Video camera method

Direct a video camera with a frame rate of not less than 25 frames per second (FPS) onto the displayed information and record the displays, while the UA is in flight operation. In flight operation the change in the position, speed and height shall be large enough so that changes are recognizable by the UAS within the resolution of the displayed information. Analyse the recorded video and determine the time elapsed from one change of the displayed information to the next updated displayed information. Confirm by counting the frames on the recorded information that the provided data are updated at least once per second with a tolerance of 0,04 s.

4.2.2.2 Height of the UA

If the UA is equipped with a feature to program a trajectory, perform the test according to 5.2.2.6.

If the UA is not equipped with a feature to program a trajectory, perform a manual flight test as depicted in Figure 1:

Minimum height during flight shall be specified in the manufacturer's instructions for safety purposes, for example, fixed wings, requiring a minimum level of flight above the ground. Maximum height shall be specified in the manufacturer's instructions and shall not exceed 120 m above the ground level for the purpose of this test.

- initiates take off;
- waypoint A: climb to the minimum height, wait for 5 s and record the height on the equipment to control the UA remotely;
- waypoint B: climb to 33 % of height range between the minimum height and maximum height above waypoint A, wait for 5 s and record the height;

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- waypoint C: climb to 66 % of height range between the minimum height and maximum height above waypoint A, wait for 5 s and record the height;
- waypoint D: climb to maximum height, wait for 5 s and record the height;
- repeat the tests and recording during descent;
- land the UA.

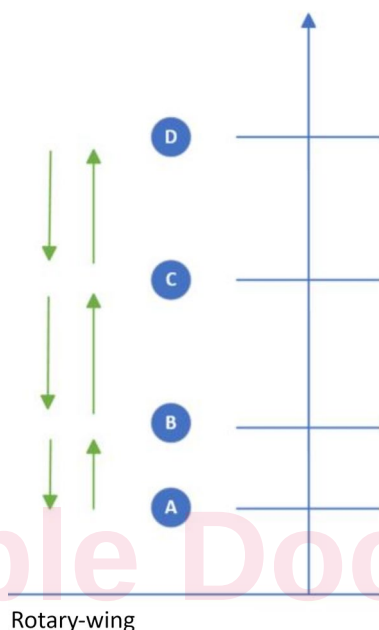


Figure 1 — Flight pattern for height measurement

Determine height on recorded content of the equipment to control the UA remotely for positions A, B, C and D. Calculate the average of the indicated height for the values displayed at each position. Repeat these calculations for each of the four flights.

Use any of the methods specified in EN 4709-001:2026, 5.3.2, to measure actual height of the UA. Record it, including the timestamps.

Alternatively, determine the height of the UA by the PPK test method.

NOTE It could be tested by any other test method validated by notified bodies.

4.2.3 Pass criteria

Compliance with pass criteria, according 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”;