SLOVENSKI STANDARD
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Aeronavtika - Letalski sistemi brez posadke - 003. del: Zahteve glede geozavedanja

Aerospace series - Unmanned Aircraft Systems - Part 003: Geo-awareness requirements

Luft- und Raumfahrt - Unbemannte Luftfahrzeugsysteme - Teil 003: Anforderungen an das Geo-Sensibilisierungssystem

Série aérospatiale - Aéronefs télépilotés - Partie 003 : Exigences de géovigilance

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 4709-003:2026) 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of an identical text or by endorsement, at the latest by September 2026, and conflicting national standards shall be withdrawn at the latest by September 2026.

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 given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s)/Regulation(s).

For relationship with EU Directive(s)/Regulation(s), 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.

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

1 Scope

1.1 Applicability

This document provides means to demonstrate compliance with:

— the “geo-awareness” requirements specified in Part 2 points (13), Part 3 points (15) and Part 4 points (10) of the Commission Delegated Regulation (EU) 2019/945; and to

— the requirement on the smooth interaction of the optional geofencing function with the flight control system of the UA set by Part 2 points (14), Part 3 points (16) and Part 4 points (11) on the optional geofencing function.

This document specifies the minimum performance required from this “geo-awareness” function, without prescribing its design and implementation as far as possible.

Compliance with this document is recommended as one means of assuring that the geo-awareness function will perform its intended sub-functions satisfactorily under all conditions normally encountered in routine aeronautical operation.

Compliance to the “smooth interaction” requirement is, for a large part, addressed by 6.3 on safe controllability of EN 4709-001:2026. This document will therefore refer to it to a large extend.

NOTE In this document, we will use “function” to designate the objects of this specification, and “equipment” to identify the entity implementing this function in whatever form.

1.2 General description of the geo-awareness function

“Geo-awareness” means a function that, based on the information provided by Member States describing the operational conditions set on the UAS geographical zones (UGZ) they have defined according to Article 15 of Commission Implementing Regulation (EU) 2019/947, detects a potential breach of airspace limitations and alerts the remote pilot so that they can take immediate and effective action to prevent that breach.

The “geo-awareness” function addressed in this document manages only the conditions required to comply with the requirements set by Regulation (EU) 2019/945:

— horizontal and vertical boundaries of UGZ;

— time applicability of the UGZ;

— In addition, this document provides Guidelines for Management of Notification and Authorization required by UGZ and data update

Other conditions that member States may set when defining UGZ as per article 15.1 of Commission Implementing Regulation (EU) 2019-947 not required by Regulation (EU) 2019/945 are not addressed in this version of the document.

Optionally a UAS bearing a class identification label may be equipped with a function of automatic alteration of the trajectory that prevents the UA from penetrating a certain airspace by engaging an adequate manoeuvre without any pilot action. This additional function called “geofencing” does not release the UAS from the obligation to comply with the “geo-awareness” requirement. In addition, it is subject to a requirement of smooth interaction with the flight control system.

The “geo-awareness” function can be realized as a set of hardware and/or software components inside the UAS, in the command unit and/or on board the UA itself, which are fed by data related to the applicable UGZ for the intended zone of operation, provided by a ground service called in our document “UGZ data service”.

The document is structured as follows:

— Clauses 1 to 3 of this document provide information required to understand the need for the function characteristics and tests defined in the remaining sections. It describes typical function applications and operational objectives and is the basis for the performance criteria stated in Clause 4 to Clause 5. Definitions essential to proper understanding of this document are provided in Clause 3;

— Clause 4 contains general design requirements for the “geo-awareness” function;

— Clause 5 contains the detailed requirements for the “geo-awareness” function, defining performance under standard operating conditions and recommended test procedures for demonstrating compliance;

— Clause 6 contains the requirements for the automatic geofencing function, defining performance under standard operating conditions and recommended test procedures for demonstrating compliance.

Operational performance standards for functions or components that refer to equipment capabilities that exceed the regulatory requirements are identified as optional features.

1.3 Assumptions

It is assumed that the update of UGZ data are not required during the flight.

It is assumed that the quality of the UGZ data provided and received by the UAS are verified for validity against the common unique digital format required by Article 15.3 of Regulation (EU) 2019/947.

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 1: Product requirements and verification*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document the following terms and definitions 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
above ground level
AGL
height measured with respect to the underlying ground surface

3.2
above mean sea level
AMSL
elevation (on the ground) or altitude (in the air) of any object, relative to the average sea level datum

3.3
advisory alert
alert for conditions that require awareness and may require subsequent response by the UAS remote pilot

3.4
automatic flight
flight following pre-programmed instructions, loaded in the unmanned aircraft (UA) flight control system that the UA executes

3.5
caution alert
alert for conditions that require immediate awareness and subsequent response by the UAS remote pilot

3.6
CEP
Circular Error Probability

3.7
coordinated universal time
UTC
timescale which forms the basis of a coordinated radio dissemination of standard frequencies and time signals

Note 1 to entry: It corresponds exactly in rate with international atomic time but differs from it by an integral number of seconds.

3.8
command unit
CU
equipment or system of equipment to control unmanned aircraft remotely as defined in point 32 of Article 3 of Regulation (EU) 2018/1139 which supports the control or the monitoring of the unmanned aircraft during any phase of flight, except for any infrastructure supporting the command and control (C2) link service

3.9
geo-awareness
function that provides a warning alert to the remote pilot to avoid breaching an airspace restriction

3.10
geofencing
function that automatically prevents the UA to penetrate a certain airspace by connecting with the flight command and control system and engaging an adequate manoeuvre without any remote pilot action

Note 1 to entry: Airspace limits compliance function" can also be the term used to designate the geofencing function.

3.11
global navigation satellite system
GNSS
positioning system based on one or several satellite constellations