

Unmanned Aircraft Systems

Consolidated version of **Regulation (EU) 2019/947** as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018
CAP1789A

This is a consolidated version of the UAS Implementing Regulation based on the text of the original regulation (EU) 2019/947 and the subsequent amendments, detailed on page 1.

This is provided for guidance purposes only – users should note that this is an unofficial version of this legislation and the authoritative version is available at www.legislation.gov.uk

Last Updated- 22 June 2022

Regulation Revision History

The following list details the original publication of Regulation 2019/947, and all the subsequent regulations that amend it, and who made those regulations (i.e. EASA or the UK).

Changes made to this document since the previous published version are marked with red underline.

Text deleted since the previous version is highlighted with a strikethrough and an explanatory note. This deleted text is then removed for subsequent versions.

24th May 2019	• Commission Implementing Regulation (EU) 2019/947 [Link] • <i>Original Publication</i>	EASA
12th May 2020	• Commission Implementing Regulation (EU) 2020/639 [Link] • <i>Provision added for standard scenarios and some other requirements. (Due to the applicability date of these changes, they were not adopted in the UK following EU Exit).</i>	EASA
4th June 2020	• Commission Implementing Regulation (EU) 2020/746 [Link] • <i>Delayed applicability of (EU) 2019/947 to 31st December 2020</i>	EASA
16th December 2020	• The Unmanned Aircraft (Amendment) (EU Exit) Regulations 2020 [Link] • <i>General 'deficiency' amendments to ensure compatibility of the regulations within the UK</i>	UK
31 December 2020	• European Union (Withdrawal) Act 2018 [Link] • <i>Regulation (EU) 2019/947 adopted within the UK at time of EU Exit</i>	UK
28th January 2021	• The Aviation Safety (Amendment) Regulations 2021 [Link] • <i>Removal of Article 9 and 9A (minimum age for remote pilots)</i>	UK
20th November 2021	• The Aviation Safety (Amendment) (No. 3) Regulations 2021 [Link] • <i>Addition of Control Line model aircraft exclusion from Article 14 Registration requirement</i>	UK
1st July 2022	• The Aviation Safety (Amendment) Regulations 2022 [Link] • <i>Removal of applicability dates for provisions that were not carried into UK law</i>	UK

COMMISSION IMPLEMENTING REGULATION (EU) 2019/947
of 24 May 2019 (as amended by Commission Implementing
Regulation [EU] 2020/639 of 12 May 2020 and Commission
Implementing Regulation [EU] 2020/746 of 4 June 2020)
on the rules and procedures for the operation of unmanned
aircraft
(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 216/2008 and (EC) No 552/2004 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91¹, and in particular Article 57 thereof,

Whereas:

- (1) Unmanned aircraft, irrespective of their mass, can operate within the same Single European Sky airspace, alongside manned aircraft, whether airplanes or helicopters.
- (2) As for manned aviation, a uniform implementation of and compliance with rules and procedures should apply to operators, including remote pilots, of unmanned aircraft and unmanned aircraft system ('UAS'), as well as for the operations of such unmanned aircraft and unmanned aircraft system.
- (3) Considering the specific characteristics of UAS operations, they should be as safe as those in manned aviation.
- (4) Technologies for unmanned aircraft allow a wide range of possible operations. Requirements related to the airworthiness, the organisations, the persons involved in the operation of UAS and unmanned aircraft operations should be set out in order to ensure safety for people on the ground and other airspace users during the operations of unmanned aircraft.
- (5) The rules and procedures applicable to UAS operations should be proportionate to the nature and risk of the operation or activity and adapted to the operational characteristics of the unmanned aircraft concerned and the characteristics of the area of operations, such as the population density, surface characteristics, and the presence of buildings.
- (6) The risk level criteria as well as other criteria should be used to establish three categories of operations: the 'open', 'specific' and 'certified' categories.
- (7) Proportionate risks mitigation requirements should be applicable to UAS operations according to the level of risk involved, the operational characteristics

¹ OJ L 212, 22.8.2018, p. 1.

of the unmanned aircraft concerned and the characteristics of the area of operation.

- (8) Operations in the 'open' category, which should cover operations that present the lowest risks, should not require UAS that are subject to standard aeronautical compliance procedures, but should be conducted using the UAS classes that are defined in Commission Delegated Regulation (EU) 2019/945².
- (9) Operations in the 'specific' category should cover other types of operations presenting a higher risk and for which a thorough risk assessment should be conducted to indicate which requirements are necessary to keep the operation safe.
- (10) A system of declaration by an operator should facilitate the enforcement of this Regulation in case of low risk operations conducted in the 'specific' category for which a standard scenario has been defined with detailed mitigation measures.
- (11) Operations in the 'certified' category should, as a principle, be subject to rules on certification of the operator, and the licensing of remote pilots, in addition to the certification of the aircraft pursuant to Delegated Regulation (EU) 2019/945.
- (12) Whilst mandatory for the 'certified' category, for the 'specific' category a certificate delivered by the competent authorities for the operation of an unmanned aircraft, as well as for the personnel, including remote pilots and organisations involved in those activities, or for the aircraft pursuant to Delegated Regulation (EU) 2019/945 could also be required.
- (13) Rules and procedures should be established for the marking and identification of unmanned aircraft and for the registration of operators of unmanned aircraft or certified unmanned aircraft.
- (14) Operators of unmanned aircraft should be registered where they operate an unmanned aircraft which, in case of impact, can transfer, to a human, a kinetic energy above 80 Joules or the operation of which presents risks to privacy, protection of personal data, security or the environment.
- (15) Studies have demonstrated that unmanned aircraft with a take-off mass of 250 g or more would present risks to security and therefore UAS operators of such unmanned aircraft should be required to register themselves when operating such aircraft in the 'open' category.
- (16) Considering the risks to privacy and protection of personal data, operators of unmanned aircraft should be registered if they operate an unmanned aircraft which is equipped with a sensor able to capture personal data. However, this should not be the case when the unmanned aircraft is considered to be a toy within the meaning of Directive 2009/48/EC of the European Parliament and of the Council on the safety of toys³.
- (17) The information about registration of certified unmanned aircraft and of operators of unmanned aircraft that are subject to a registration requirement should be stored in digital, harmonised, interoperable national registration systems, allowing competent authorities to access and exchange that information. The mechanisms to ensure the interoperability of the national registers in this Regulation should be without prejudice to the rules applicable to the future repository referred to in Article 74 of Regulation (EU) 2018/1139.
- (18) In accordance with paragraph 8 of Article 56 of Regulation (EU) 2018/1139, this Regulation is without prejudice to the possibility for Member States to lay down

² Commission Delegated Regulation (EU) 2019/945 of 12 March 2019 on unmanned aircraft systems and on third-country operators of unmanned aircraft systems (see page 1 of this Official Journal).

³ Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys (OJ L 178, 30.6.2009, p. 1).

national rules to make subject to certain conditions the operations of unmanned aircraft for reasons falling outside the scope of Regulation (EU) 2018/1139, including public security or protection of privacy and personal data in accordance with the Union law.

- (19) National registration systems should comply with the applicable Union and national law on privacy and processing of personal data and the information stored in those registrations systems should be easily accessible⁴ (4).
- (20) UAS operators and remote pilots should ensure that they are adequately informed about applicable Union and national rules relating to the intended operations, in particular with regard to safety, privacy, data protection, liability, insurance, security and environmental protection.
- (21) Some areas, such as hospitals, gatherings of people, installations and facilities like penal institutions or industrial plants, top-level and higher-level government authorities, nature conservation areas or certain items of transport infrastructure, can be particularly sensitive to some or all types of UAS operations. This should be without prejudice to the possibility for Member States to lay down national rules to make subject to certain conditions the operations of unmanned aircraft for reasons falling outside the scope of this Regulation, including environmental protection, public security or protection of privacy and personal data in accordance with the Union law.
- (22) Unmanned aircraft noise and emissions should be minimised as far as possible taking into account the operating conditions and various specific characteristics of individual Member States, such as the population density, where noise and emissions are of concern. In order to facilitate the societal acceptance of UAS operations, Delegated Regulation (EU) 2019/945 includes maximum level of noise for unmanned aircraft operated close to people in the 'open' category. In the 'specific' category there is a requirement for the operator to develop guidelines for its remote pilots so that all operations are flown in a manner that minimises nuisances to people and animals.
- (23) Current national certificates should be adapted to certificates complying with the requirements of this Regulation.
- (24) In order to ensure the proper implementation of this Regulation, appropriate transitional measures should be established. In particular, Member States and stakeholders should have sufficient time to adapt their procedures to the new regulatory framework before this Regulation applies.
- (25) The new regulatory framework for UAS operations should be without prejudice to the applicable environmental and nature protection obligations otherwise stemming from national or Union law.
- (26) While the 'U-space' system including the infrastructure, services and procedures to guarantee safe UAS operations and supporting their integration into the aviation system is in development, this Regulation should already include requirements for the implementation of three foundations of the U-space system, namely registration, geo-awareness and remote identification, which will need to be further completed.
- (27) Since model aircraft are considered as UAS and given the good safety level demonstrated by model aircraft operations in clubs and associations, there should be a seamless transition from the different national systems to the new Union regulatory framework, so that model aircraft clubs and associations can

⁴ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1).

continue to operate as they do today, as well as taking into account existing best practices in the Member States.

- (28) In addition, considering the good level of safety achieved by aircraft of class C4 as provided in Annex to this Regulation, low risk operations of such aircraft should be allowed to be conducted in the 'open' category. Such aircraft, often used by model aircraft operators, are comparatively simpler than other classes of unmanned aircraft and should therefore not be subject to disproportionate technical requirements.
- (29) The measures provided for in this Regulation are in accordance with the opinion of the committee established in accordance with Article 127 of Regulation (EU) 2018/1139,

Additional Recitals from IR Amendment (Reg [EU] 2020/639):

Whereas:

- (1) Pursuant to Commission Implementing Regulation (EU) 2019/947⁵, an unmanned aircraft system ('UAS') must comply with operational limitations set out in operational authorisations or in a standard scenario, established by that Regulation.
- (2) On the basis of the experience of Member States, the European Union Aviation Safety Agency (EASA) developed two standard scenarios for the operations.
- (3) Standard scenario 1 ('STS-01') covers operations executed in visual line of sight ('VLOS'), at a maximum height of 120 m over a controlled ground area in a populated environment using a CE class C5 UAS.
- (4) Standard scenario 2 ('STS-02') covers operations that could be conducted beyond visual line of sight ('BVLOS'), with the unmanned aircraft at a distance of not more than 2 km from the remote pilot with the presence of airspace observers, at a maximum height of 120 m over a controlled ground area in a sparsely populated environment, and using a CE class C6 UAS.
- (5) Implementing Regulation (EU) 2019/947 should therefore be amended to include those standard scenarios.
- (6) Where the probability of encountering manned aircraft is not low, Member States may establish geographical zones in such areas to prevent UAS operators from conducting operations under standard scenarios.
- (7) A requirement for a minimum overall mark attesting that remote pilots have successfully completed the theoretical knowledge examination should be introduced.
- (8) In order to improve the conspicuity of the unmanned aircraft flown at night, and in particular, to allow a person on the ground to easily distinguish the unmanned aircraft from a manned aircraft, a green flashing light should be activated on the unmanned aircraft.
- (9) Well defined rules should apply to practical skill training and assessment of remote

⁵ Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft (OJ L 152, 11.6.2019).

pilots operating under a standard scenario. That training and assessment should be provided by an entity recognised by the competent authority or by an UAS operator in compliance with requirements laid down in this Regulation.

- (10) In case of cross-border operations or operations outside the Member State of registration by a holder of a light UAS operator certificate (LUC), the Member State of operation should receive information regarding the location or locations of the intended operation.
- (11) EASA prepared draft implementing rules and submitted them with Opinion No 05/2019⁽⁶⁾ pursuant to points (b) and (c) of Article 75(2) and with Article 76(1) of Regulation (EU) 2018/1139.
- (12) The measures provided for in this Regulation are in accordance with the opinion of the committee established in accordance with Article 127 of Regulation (EU) 2018/1139.

HAS ADOPTED THIS REGULATION:

Article 1

Subject matter

This Regulation lays down detailed provisions for the operation of unmanned aircraft systems as well as for personnel, including remote pilots and organisations involved in those operations.

Article 2

Definitions

For the purposes of this Regulation, the definitions in Regulation (EU) 2018/1139 apply. The following definitions also apply:

- (1) ‘unmanned aircraft system’ (‘UAS’) means an unmanned aircraft and the equipment to control it remotely;
- (2) ‘unmanned aircraft system operator’ (UAS operator) means any legal or natural person operating or intending to operate one or more UAS;
- (3) ‘assemblies of people’ means gatherings where persons are unable to move away due to the density of the people present;
- (4) ‘UAS geographical zone’ means a portion of airspace established by the Secretary of State that facilitates, restricts or excludes UAS operations in order to address

⁶ <https://www.easa.europa.eu/document-library/opinions>

- risks pertaining to safety, privacy, protection of personal data, security or the environment, arising from UAS operations;
- (5) 'robustness' means the property of mitigation measures resulting from combining the safety gain provided by the mitigation measures and the level of assurance and integrity that the safety gain has been achieved;
- (6) *Deleted*
- (7) 'visual line of sight operation' (VLOS) means a type of UAS operation in which, the remote pilot is able to maintain continuous unaided visual contact with the unmanned aircraft, allowing the remote pilot to control the flight path of the unmanned aircraft in relation to other aircraft, people and obstacles for the purpose of avoiding collisions;
- (8) 'beyond visual line of sight operation' ('BVLOS') means a type of UAS operation which is not conducted in VLOS;
- (9) 'light UAS operator certificate' ('LUC') means a certificate issued to a UAS operator by the CAA as set out in part C of the Annex;
- (10) 'model aircraft club or association' means an organisation legally established in the United Kingdom for the purpose of conducting leisure flights, air displays, sporting activities or competition activities using UAS;
- (11) 'dangerous goods' means articles or substances, which are capable of posing a hazard to health, safety, property or the environment in the case of an incident or accident, that the unmanned aircraft is carrying as its payload, including in particular:
- (a) explosives (mass explosion hazard, blast projection hazard, minor blast hazard, major fire hazard, blasting agents, extremely insensitive explosives);
 - (b) gases (flammable gas, non-flammable gas, poisonous gas, oxygen, inhalation hazard);
 - (c) flammable liquids (flammable liquids; combustible, fuel oil, gasoline);
 - (d) flammable solids (flammable solids, spontaneously combustible solids, dangerous when wet);
 - (e) oxidising agents and organic peroxides;
 - (f) toxic and infectious substances (poison, biohazard);
 - (g) radioactive substances;
 - (h) corrosive substances;
- (12) 'payload' means instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is installed

- in or attached to the aircraft and is not used or intended to be used in operating or controlling an aircraft in flight, and is not part of an airframe, engine, or propeller;
- (13) 'direct remote identification' means a system that ensures the local broadcast of information about a unmanned aircraft in operation, including the marking of the unmanned aircraft, so that this information can be obtained without physical access to the unmanned aircraft;
- (14) 'follow-me mode' means a mode of operation of a UAS where the unmanned aircraft constantly follows the remote pilot within a predetermined radius;
- (15) 'geo-awareness' means a function that, based on the data provided by the CAA detects a potential breach of airspace limitations and alerts the remote pilots so that they can take immediate and effective action to prevent that breach;
- (16) 'privately built UAS' means a UAS assembled or manufactured for the builder's own use, not including UAS assembled from sets of parts placed on the market as a single ready-to-assemble kit;
- (17) 'autonomous operation' means an operation during which an unmanned aircraft operates without the remote pilot being able to intervene;
- (18) 'uninvolved persons' means persons who are not participating in the UAS operation or who are not aware of the instructions and safety precautions given by the UAS operator;
- (19) 'making available on the market' means any supply of a product for distribution, consumption or use on the market in the course of a commercial activity, whether in exchange of payment or free of charge;
- (20) *Deleted*
- (21) 'controlled ground area' means the ground area where the UAS is operated and within which the UAS operator can ensure that only involved persons are present;
- (22) 'maximum take-off mass' ('MTOM') means the maximum Unmanned Aircraft mass, including payload and fuel, as defined by the manufacturer or the builder, at which the Unmanned Aircraft can be operated;
- (23) 'unmanned sailplane' means an unmanned aircraft that is supported in flight by the dynamic reaction of the air against its fixed lifting surfaces, the free flight of which does not depend on an engine. It may be equipped with an engine to be used in case of emergency.
- (24) 'unmanned aircraft observer' means a person, positioned alongside the remote pilot, who, by unaided visual observation of the unmanned aircraft, assists the remote pilot in keeping the unmanned aircraft in VLOS and safely conducting the flight;
- (25) 'airspace observer' means a person who assists the remote pilot by performing unaided visual scanning of the airspace in which the unmanned aircraft is

operating for any potential hazard in the air;

- (26) 'command unit' ('CU') means the 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, with the exception of any infrastructure supporting the command and control (C2) link service;
- (27) 'C2 link service' means a communication service supplied by a third party, providing command and control between the unmanned aircraft and the CU;
- (28) *Deleted*
- (29) *Deleted*
- (30) *Deleted*
- (31) *Deleted*
- (32) *Deleted*
- (33) *Deleted*
- (34) 'night' means the hours between the end of evening civil twilight and the beginning of morning civil twilight as defined in Implementing Regulation (EU) No 923/2012.*
- (35) 'CAA' means the Civil Aviation Authority

* Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010, (OJ L 281 13.10.2012, p.1)."

Article 3

Categories of UAS operations

UAS operations shall be performed in the 'open', 'specific' or 'certified' category defined respectively in Articles 4, 5 and 6, subject to the following conditions:

- (a) UAS operations in the 'open' category shall not be subject to any prior operational authorisation before the operation takes place;
- (b) UAS operations in the 'specific' category shall require an operational authorisation issued by the CAA pursuant to Article 12 or an authorisation received in accordance with Article 16;
- (c) UAS operations in the 'certified' category shall require the certification of the UAS pursuant to Delegated Regulation (EU) 2019/945 and the certification of the operator and, where applicable, the licensing of the remote pilot.

Article 4

‘Open’ category of UAS operations

1. Operations shall be classified as UAS operations in the ‘open’ category only where the following requirements are met:
 - (a) the UAS belongs to one of the classes set out in Delegated Regulation (EU) 2019/945 or is privately built or meets the conditions defined in Article 20;
 - (b) the unmanned aircraft has a maximum take-off mass of less than 25 kg;
 - (c) the remote pilot ensures that the unmanned aircraft is kept at a safe distance from people and that it is not flown over assemblies of people;
 - (d) the remote pilot keeps the unmanned aircraft in VLOS at all times except when flying in follow-me mode or when using an unmanned aircraft observer as specified in Part A of the Annex;
 - (e) during flight, the unmanned aircraft is maintained within 120 metres from the closest point of the surface of the earth, except when overflying an obstacle, as specified in Part A of the Annex
 - (f) during flight, the unmanned aircraft does not carry dangerous goods and does not drop any material;
2. UAS operations in the ‘open’ category shall be divided in three sub-categories in accordance with the requirements set out in Part A of the Annex.

Article 5

‘Specific’ category of UAS operations

1. Where one of the requirements laid down in Article 4 or in Part A of the Annex is not met, a UAS operator shall be required to obtain an operational authorisation pursuant to Article 12 from the CAA.
2. When applying to the CAA for an operational authorisation pursuant Article 12, the operator shall perform a risk assessment in accordance with Article 11 and submit it together with the application, including adequate mitigating measures.
3. In accordance with point UAS.SPEC.040 laid down in Part B of the Annex, the CAA shall issue an operational authorisation, if it considers that the operational risks are adequately mitigated in accordance with Article 12.
4. The CAA shall specify whether the operational authorisation concerns:
 - (a) the approval of a single operation or a number of operations specified in time or location(s) or both. The operational authorisation shall include the associated precise list of mitigating measures;
 - (b) the approval of an LUC, in accordance with part C of the Annex.
- ~~5. Where the UAS operator submits a declaration to the competent authority of the Member State of registration in accordance with point UAS.SPEC.020 laid down in Part B of the Annex for an operation complying with a standard scenario set out in Appendix 1 to that Annex, the UAS operator shall not be required to obtain an operational authorisation in accordance with paragraphs 1 to 4 of this Article and the procedure laid down in paragraph 5 of Article 12 shall apply. The UAS operator shall use the declaration referred to in Appendix 2 to that Annex."~~

Note:

Article 5(5) did not originally become applicable until 02 December 2021 as set out in Article 23(2). As a result of the European Union (Withdrawal) Act 2018, this requirement was not retained in UK law when the UK exited the EU. As a result, Article 5(5) does not apply within the UK.

6. An operational authorisation shall not be required for:

- (a) UAS operators holding an LUC with appropriate privileges in accordance with point UAS.LUC.060 of the Annex;
- (b) operations conducted in the framework of model aircraft clubs and associations that have received an authorisation in accordance with Article 16.

Article 6

‘Certified’ category of UAS operations

1. Operations shall be classified as UAS operations in the ‘certified’ category only where the following requirements are met:

- (a) the UAS is certified pursuant to points (a), (b) and (c) of paragraph 1 of Article 40 of Delegated Regulation (EU) 2019/945; and
- (b) the operation is conducted in any of the following conditions:
 - i. over assemblies of people;
 - ii. involves the transport of people;
 - iii. involves the carriage of dangerous goods, that may result in high risk for third parties in case of accident.

2. In addition, UAS operations shall be classified as UAS operations in the ‘certified’ category where the CAA, based on the risk assessment provided for in Article 11, considers that the risk of the operation cannot be adequately mitigated without the certification of the UAS and of the UAS operator and, where applicable, without the licensing of the remote pilot.

Article 7

Rules and procedures for the operation of UAS

1. UAS operations in the ‘open’ category shall comply with the operational limitations set out in Part A of the Annex.

2. UAS operations in the ‘specific’ category shall comply with the operational limitations set out in the operational authorisation as referred to in Article 12 or the authorisation as referred to in Article 16.

This paragraph shall not apply where the UAS operator holds an LUC with appropriate privileges.

UAS operations in the ‘specific’ category shall be subject to the applicable operational