

COMMISSION IMPLEMENTING REGULATION (EU) 2019/947
of 24 May 2019
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 3922/91 ⁽¹⁾, 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 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) 2019/945 ⁽²⁾.
- (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.

⁽¹⁾ OJL 212, 22.8.2018, p. 1.

⁽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).

- (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 toys ⁽³⁾.
- (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 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 accessible ⁽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.

⁽³⁾ Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys (OJ L 170, 30.6.2009, p. 1).

⁽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).

- (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 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,

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 competent authority that facilitates, restricts or excludes UAS operations in order to address 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) 'standard scenario' means a type of UAS operation in the 'specific' category, as defined in Appendix 1 of the Annex, for which a precise list of mitigating measures has been identified in such a way that the competent authority can be satisfied with declarations in which operators declare that they will apply the mitigating measures when executing this type of operation;
- (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 a competent authority as set out in part C of the Annex;
- (10) 'model aircraft club or association' means an organisation legally established in a Member State 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 Member States, 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 Union market in the course of a commercial activity, whether in exchange of payment or free of charge;

- (20) 'placing on the market' means the first making available of a product on the Union market;
- (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.

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, nor to an operational declaration by the UAS operator before the operation takes place;
- (b) UAS operations in the 'specific' category shall require an operational authorisation issued by the competent authority pursuant to Article 12 or an authorisation received in accordance with Article 16, or, under circumstances defined in Article 5(5), a declaration to be made by a UAS operator;
- (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 competent authority in the Member State where it is registered.
2. When applying to a competent authority 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 competent authority shall issue an operational authorisation, if it considers that the operational risks are adequately mitigated in accordance with Article 12.

4. The competent authority 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 as defined 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.
6. An operational authorisation or a declaration 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 competent authority, 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, or in a standard scenario defined in Appendix 1 to the Annex as declared by the UAS operator.

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 requirements laid down in Commission Implementing Regulation (EU) No 923/2012 ⁽⁷⁾.

⁽⁷⁾ 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).

3. UAS operations in the 'certified' category shall be subject to the applicable operational requirements laid down in Implementing Regulation (EU) No 923/2012 and Commission Regulations (EU) No 965/2012 ⁽⁶⁾ and (EU) No 1332/2011 ⁽⁷⁾.

Article 8

Rules and procedures for the competency of remote pilots

1. Remote pilots operating UAS in the 'open' category shall comply with the competency requirements set in Part A of the Annex.
2. Remote pilots operating UAS in the 'specific' category shall comply with the competency requirements set out in the operational authorisation by the competent authority or in the standard scenario defined in Appendix 1 to the Annex or as defined by the LUC and shall have at least the following competencies:
 - (a) ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections);
 - (b) ability to manage aeronautical communication;
 - (c) manage the unmanned aircraft flight path and automation;
 - (d) leadership, teamwork and self-management;
 - (e) problem solving and decision-making;
 - (f) situational awareness;
 - (g) workload management;
 - (h) coordination or handover, as applicable.
3. Remote pilots operating in the framework of model aircraft clubs or associations shall comply with the minimum competency requirements defined in the authorisation granted in accordance with Article 16.

Article 9

Minimum age for remote pilots

1. The minimum age for remote pilots operating a UAS in the 'open' and 'specific' category shall be 16 years.
2. No minimum age for remote pilots shall be required:
 - (a) when they operate in subcategory A1 as specified in Part A of the Annex to this Regulation, with a UAS Class C0 defined in Part 1 of the Annex to Delegated Regulation (EU) 2019/945 that is a toy within the meaning of Directive 2009/48/EC;
 - (b) for privately-built UAS with a maximum take-off mass of less than 250g;
 - (c) when they operate under the direct supervision of a remote pilot complying with paragraph 1 and Article 8.
3. Member States may lower the minimum age following a risk-based approach taking into account specific risks associated with the operations in their territory:
 - (a) for remote pilots operating in the 'open' category by up to 4 years;
 - (b) for remote pilots operating in the 'specific' category by up to 2 years.
4. Where a Member State lowers the minimum age for remote pilots, those remote pilots shall only be allowed to operate a UAS on the territory of that Member State.
5. Member States may define a different minimum age for remote pilots operating in the framework of model aircraft clubs or associations in the authorisation issued in accordance with Article 16.

⁽⁶⁾ Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 296, 25.10.2012, p. 1).

⁽⁷⁾ Commission Regulation (EU) No 1332/2011 of 16 December 2011 laying down common airspace usage requirements and operating procedures for airborne collision avoidance (OJ L 336, 20.12.2011, p. 20).

*Article 10***Rules and procedures for the airworthiness of UAS**

Unless privately-built, or used for operations referred to in Article 16, or meeting the conditions defined in Article 20, UAS used in operations set out in this Regulation shall comply with the technical requirements and rules and procedures for the airworthiness defined in the delegated acts adopted pursuant to Article 58 of Regulation (EU) 2018/1139.

*Article 11***Rules for conducting an operational risk assessment**

1. An operational risk assessment shall:
 - (a) describe the characteristics of the UAS operation;
 - (b) propose adequate operational safety objectives;
 - (c) identify the risks of the operation on the ground and in the air considering all of the below:
 - i. the extent to which third parties or property on the ground could be endangered by the activity;
 - ii. the complexity, performance and operational characteristics of the unmanned aircraft involved;
 - iii. the purpose of the flight, the type of UAS, the probability of collision with other aircraft and class of airspace used;
 - iv. the type, scale, and complexity of the UAS operation or activity, including, where relevant, the size and type of the traffic handled by the responsible organisation or person;
 - v. the extent to which the persons affected by the risks involved in the UAS operation are able to assess and exercise control over those risks.
 - (d) identify a range of possible risk mitigating measures;
 - (e) determine the necessary level of robustness of the selected mitigating measures in such a way that the operation can be conducted safely.
2. The description of the UAS operation shall include at least the following:
 - (a) the nature of the activities performed;
 - (b) the operational environment and geographical area for the intended operation, in particular overflown population, orography, types of airspace, airspace volume where the operation will take place and which airspace volume is kept as necessary risk buffers, including the operational requirements for geographical zones;
 - (c) the complexity of the operation, in particular which planning and execution, personnel competencies, experience and composition, required technical means are planned to conduct the operation;
 - (d) the technical features of the UAS, including its performance in view of the conditions of the planned operation and, where applicable, its registration number;
 - (e) the competence of the personnel for conducting the operation including their composition, role, responsibilities, training and recent experience.
3. The assessment shall propose a target level of safety, which shall be equivalent to the safety level in manned aviation, in view of the specific characteristics of UAS operation.
4. The identification of the risks shall include the determination of all of the below:
 - (a) the unmitigated ground risk of the operation taking into account the type of operation and the conditions under which the operation takes place, including at least the following criteria:
 - i. VLOS or BVLOS;
 - ii. population density of the overflown areas;
 - iii. flying over an assembly of people;
 - iv. the dimension characteristics of the unmanned aircraft;

- (b) the unmitigated air risk of the operation taking into account all of the below:
- i. the exact airspace volume where the operation will take place, extended by a volume of airspace necessary for contingency procedures;
 - ii. the class of the airspace;
 - iii. the impact on other air traffic and air traffic management (ATM) and in particular:
 - the altitude of the operation;
 - controlled versus uncontrolled airspace;
 - aerodrome versus non-aerodrome environment;
 - airspace over urban versus rural environment;
 - separation from other traffic.
5. The identification of the possible mitigation measures necessary to meet the proposed target level of safety shall consider the following possibilities:
- (a) containment measures for people on the ground;
 - (b) strategic operational limitations to the UAS operation, in particular:
 - i. restricting the geographical volumes where the operation takes place;
 - ii. restricting the duration or schedule of the time slot in which the operation takes place;
 - (c) strategic mitigation by common flight rules or common airspace structure and services;
 - (d) capability to cope with possible adverse operating conditions;
 - (e) organisation factors such as operational and maintenance procedures elaborated by the UAS operator and maintenance procedures compliant with the manufacturer's user manual;
 - (f) the level of competency and expertise of the personnel involved in the safety of the flight;
 - (g) the risk of human error in the application of the operational procedures;
 - (h) the design features and performance of the UAS in particular:
 - i. the availability of means to mitigate risks of collision;
 - ii. the availability of systems limiting the energy at impact or the frangibility of the unmanned aircraft;
 - iii. the design of the UAS to recognised standards and the fail-safe design.
6. The robustness of the proposed mitigating measures shall be assessed in order to determine whether they are commensurate with the safety objectives and risks of the intended operation, particularly to make sure that every stage of the operation is safe.

Article 12

Authorising operations in the 'specific' category

1. The competent authority shall evaluate the risk assessment and the robustness of the mitigating measures that the UAS operator proposes to keep the UAS operation safe in all phases of flight.
2. The competent authority shall grant an operational authorisation when the evaluation concludes that:
 - (a) the operational safety objectives take account of the risks of the operation;
 - (b) the combination of mitigation measures concerning the operational conditions to perform the operations, the competence of the personnel involved and the technical features of the unmanned aircraft, are adequate and sufficiently robust to keep the operation safe in view of the identified ground and air risks;
 - (c) the UAS operator has provided a statement confirming that the intended operation complies with any applicable Union and national rules relating to it, in particular, with regard to privacy, data protection, liability, insurance, security and environmental protection.
3. When the operation is not deemed sufficiently safe, the competent authority shall inform the applicant accordingly, giving reasons for its refusal to issue the operational authorisation.

4. The operational authorisation granted by the competent authority shall detail:
 - (a) the scope of the authorisation;
 - (b) the 'specific' conditions that shall apply:
 - i. to the UAS operation and the operational limitations;
 - ii. to the required competency of the UAS operator and, where applicable, of the remote pilots;
 - iii. to the technical features of the UAS, including the certification of the UAS, if applicable;
 - (c) the following information:
 - i. the registration number of the UAS operator and the technical features of the UAS;
 - ii. a reference to the operational risk assessment developed by the UAS operator;
 - iii. the operational limitations and conditions of the operation;
 - iv. the mitigation measures that the UAS operator has to apply;
 - v. the location(s) where the operation is authorised to take place and any other locations in a Member States in accordance with Article 13;
 - vi. all documents and records relevant for the type of operation and the type of events that should be reported in addition to those defined in Regulation (EU) No 376/2014 of the European Parliament and of the Council ⁽⁸⁾.
5. Upon receipt of the declaration referred to in paragraph 5 of Article 5, the competent authority shall:
 - (a) verify that it contains all elements set out in paragraph 2 of point UAS.SPEC.020 of the Annex;
 - (b) if this is the case, provide the UAS operator with a confirmation of receipt and completeness without undue delay so that the operator may start the operation.

Article 13

Cross-border operations or operations outside the state of registration

1. When an UAS operator intends to conduct an operation in the 'specific' category for which an operational authorisation has already been granted in accordance with Article 12, and which is intended to take place partially or entirely in the airspace of a Member State other than the Member State of registration, the UAS operator shall provide the competent authority of the Member State of intended operation with an application including the following information:
 - (a) a copy of the operational authorisation granted to the UAS operator in accordance with Article 12; and
 - (b) the location(s) of the intended operation including the updated mitigation measures, if needed, to address those risks identified under Article 11(2)(b) which are specific to the local airspace, terrain and population characteristics and the climatic conditions.
2. Upon receipt of the application set out in paragraph 1, the competent authority of the Member State of intended operation shall assess it without undue delay and provide the competent authority of the Member State of registration and the UAS operator with a confirmation that the updated mitigation measures referred to in point (b) of paragraph 1 are satisfactory for the operation at the intended location. Upon receipt of that confirmation, the UAS operator may start the intended operation and the Member State of registration shall record the updated mitigation measures that the UAS operator has to apply in the operational authorisation issued in accordance with Article 12.
3. When an UAS operator intends to conduct an operation in the 'specific' category for which a declaration has been made in accordance with paragraph 5 of Article 5, and which is intended to take place partially or entirely in the airspace of a Member State other than the Member State of registration, the UAS operator shall provide the competent authority of the Member State of the intended operation with a copy of the declaration submitted to the Member State of registration, as well as a copy of the confirmation of receipt and completeness.

⁽⁸⁾ Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

Article 14

Registration of UAS operators and certified UAS

1. Member States shall establish and maintain accurate registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or environment.

2. The registration systems for UAS operators shall provide the fields for introducing and exchanging the following information:

- (a) the full name and the date of birth for natural persons and the name and their identification number for legal persons;
- (b) the address of UAS operators;
- (c) their email address and telephone number;
- (d) an insurance policy number for UAS if required by Union or national law;
- (e) the confirmation by legal persons of the following statement: 'All personnel directly involved in the operations are competent to perform their tasks, and the UAS will be operated only by remote pilots with the appropriate level of competency';
- (f) operational authorisations and LUCs held and declarations followed by a confirmation in accordance with Article 12(5)(b).

3. The registration systems for unmanned aircraft whose design is subject to certification shall provide the fields for introducing and exchanging the following information:

- (a) manufacturer's name;
- (b) manufacturer's designation of the unmanned aircraft;
- (c) unmanned aircraft's serial number;
- (d) full name, address, email address and telephone number of the natural or legal person under whose name the unmanned aircraft is registered.

4. Member States shall ensure that registration systems are digital and interoperable and allow for mutual access and exchange of information through the repository referred to in Article 74 of Regulation (EU) 2018/1139.

5. UAS operators shall register themselves:

- (a) when operating within the 'open' category any of the following unmanned aircraft:
 - i. with a MTOM of 250 g or more, or, which in the case of an impact can transfer to a human kinetic energy above 80 Joules;
 - ii. that is equipped with a sensor able to capture personal data, unless it complies with Directive 2009/48/EC.
- (b) when operating within the 'specific' category an unmanned aircraft of any mass.

6. UAS operators shall register themselves in the Member State where they have their residence for natural persons or where they have their principal place of business for legal persons and ensure that their registration information is accurate. A UAS operator cannot be registered in more than one Member State at a time.

Member States shall issue a unique digital registration number for UAS operators and for the UAS that require registration, allowing their individual identification.

The registration number for UAS operators shall be established on the basis of standards that support the interoperability of the registration systems;

7. The owner of an unmanned aircraft whose design is subject to certification shall register the unmanned aircraft.

The nationality and registration mark of an unmanned aircraft shall be established in line with ICAO Annex 7. An unmanned aircraft cannot be registered in more than one State at a time.

8. The UAS operators shall display their registration number on every unmanned aircraft meeting the conditions described in paragraph 5.

*Article 15***Operational conditions for UAS geographical zones**

1. When defining UAS geographical zones for safety, security, privacy or environmental reasons, Member States may:
 - (a) prohibit certain or all UAS operations, request particular conditions for certain or all UAS operations or request a prior operational authorisation for certain or all UAS operations;
 - (b) subject UAS operations to specified environmental standards;
 - (c) allow access to certain UAS classes only;
 - (d) allow access only to UAS equipped with certain technical features, in particular remote identification systems or geo awareness systems.
2. On the basis of a risk assessment carried out by the competent authority, Member States may designate certain geographical zones in which UAS operations are exempt from one or more of the 'open' category requirements.
3. When pursuant to paragraphs 1 or 2 Member States define UAS geographical zones, for geo awareness purposes they shall ensure that the information on the UAS geographical zones, including their period of validity, is made publicly available in a common unique digital format.

*Article 16***UAS operations in the framework of model aircraft clubs and associations**

1. Upon request by a model aircraft club or association, the competent authority may issue an authorisation for UAS operations in the framework of model aircraft clubs and associations.
2. The authorisation referred to in paragraph 1 shall be issued in accordance with any of the following:
 - (a) relevant national rules;
 - (b) established procedures, organisational structure and management system of the model aircraft club or association, ensuring that:
 - i. remote pilots operating in the framework of model aircraft clubs or associations are informed of the conditions and limitations defined in the authorisation issued by the competent authority;
 - ii. remote pilots operating in the framework of model aircraft clubs or associations are assisted in achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations defined in the authorisation;
 - iii. the model aircraft club or association takes appropriate action when informed that a remote pilot operating in the framework of model aircraft clubs or associations does not comply with the conditions and limitations defined in the authorisation, and, if necessary, inform the competent authority;
 - iv. the model aircraft club or association provides, upon request from the competent authority, documentation required for oversight and monitoring purposes.
3. The authorisation referred to in paragraph 1 shall specify the conditions under which operations in the framework of the model aircraft clubs or associations may be conducted and shall be limited to the territory of the Member State in which it is issued.
4. Member States may enable model aircraft clubs and associations to register their members into the registration systems established in accordance with Article 14 on their behalf. If this is not the case, the members of model aircraft clubs and associations shall register themselves in accordance with Article 14.

*Article 17***Designation of the competent authority**

1. Each Member State shall designate one or more entities as the competent authority for the tasks referred to in Article 18.

2. Where a Member State designates more than one entity as a competent authority it shall:
 - (a) clearly define the areas of competence of each competent authority in terms of responsibilities;
 - (b) establish appropriate coordination mechanism between those entities to ensure the effective oversight of all organisations and persons subject to this Regulation.

Article 18

Tasks of the competent authority

The competent authority shall be responsible for:

- (a) enforcing this Regulation;
- (b) issuing, suspending or revoking certificates of UAS operators and licenses of remote pilots operating within the 'certified' category of UAS operations;
- (c) issuing remote pilots with a proof of completion of an online theoretical knowledge examination according to points UAS.OPEN.020 and UAS.OPEN.040 of the Annex and issuing, amending, suspending, limiting or revoking certificates of competency of remote pilots according to point UAS.OPEN.030 of the Annex;
- (d) issuing, amending, suspending, limiting or revoking operational authorisations and LUCs and verifying completeness of declarations, which are required to carry out UAS operations in the 'specific' category of UAS operations;
- (e) keeping documents, records and reports concerning UAS operational authorisations, declarations, certificates of competency of the remote pilots and LUCs;
- (f) making available in a common unique digital format information on UAS geographical zones identified by the Member States and established within the national airspace of its State;
- (g) issuing a confirmation of receipt and completeness in accordance with Article 12(5)(b) or a confirmation in accordance with paragraph 2 of Article 13;
- (h) developing a risk-based oversight system for:
 - i. UAS operators that have submitted a declaration or hold an operational authorisation or an LUC;
 - ii. model clubs and associations that hold an authorisation referred to in Article 16;
- (i) for operations other than those in the 'open' category, establishing audit planning based on the risk profile, compliance level and the safety performance of UAS operators who have submitted a declaration, or hold a certificate issued by the competent authority;
- (j) for operations other than those in the 'open' category, carrying out inspections with regard to UAS operators who have submitted a declaration or hold a certificate issued by the competent authority inspecting UAS and ensuring that UAS operators and remote pilots comply with this Regulation;
- (k) implementing a system to detect and examine incidents of non-compliance by UAS operators operating in the 'open' or 'specific' categories and reported in accordance with paragraph 2 of Article 19;
- (l) providing UAS operators with information and guidance that promotes the safety of UAS operations;
- (m) establishing and maintaining registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or the environment.

Article 19

Safety information

1. The competent authorities of the Member States and market surveillance and control authorities referred to in Article 36 of Delegated Regulation (EU) 2019/945 shall cooperate on safety matters and establish procedures for the efficient exchange of safety information.
2. Each UAS operator shall report to the competent authority on any safety-related occurrence and exchange information regarding its UAS in compliance with Regulation (EU) No 376/2014.

3. The European Union Aviation Safety Agency (‘the Agency’) and the competent authorities shall collect, analyse and publish safety information concerning UAS operations in their territory in accordance with Article 119 of Regulation (EU) 2018/1139 and its implementing acts.

4. Upon receiving any of the information referred to in paragraphs 1, 2 or 3, the Agency and the competent authority shall take the necessary measures to address any safety issues on the best available evidence and analysis, taking into account interdependencies between the different domains of aviation safety, and between aviation safety, cyber security and other technical domains of aviation regulation.

5. Where the competent authority or the Agency takes measures in accordance with paragraph 4, it shall immediately notify all relevant interested parties and organisations that need to comply with those measures in accordance with Regulation (EU) 2018/1139 and its implementing acts.

Article 20

Particular provisions concerning the use of certain UAS in the ‘open’ category

UAS types within the meaning of Decision No 768/2008/EC of the European Parliament and of the Council⁽⁹⁾, which do not comply with Delegated Regulation (EU) 2019/945 and which are not privately-built are allowed to continue to be operated under the following conditions, when they have been placed on the market before 1 July 2022:

- (a) in subcategory A1 as defined in Part A of the Annex, provided that the unmanned aircraft has a maximum take-off mass of less than 250 g, including its payload;
- (b) in subcategory A3 as defined in Part A of the Annex, provided that the unmanned aircraft has a maximum take-off mass of less than 25 kg, including its fuel and payload.

Article 21

Adaptation of authorisations, declarations and certificates

1. Authorisations granted to UAS operators, certificates of remote pilot competency and declarations made by UAS operators or equivalent documentation, issued on the basis of national law, shall remain valid until 1 July 2021.

2. By 1 July 2021 Member States shall convert their existing certificates of remote pilot competency and their UAS operator authorisations or declarations, or equivalent documentation, including those issued until that date, in accordance with this Regulation.

3. Without prejudice to Article 14, UAS operations conducted in the framework of model aircraft clubs and associations shall be allowed to continue in accordance with relevant national rules and without an authorisation in accordance with Article 16 until 1 July 2022.

Article 22

Transitional provisions

Without prejudice to Article 20, the use of UAS in the ‘open’ category which do not comply with the requirements of Parts 1 to 5 of the Annex to Delegated Regulation (EU) 2019/945 shall be allowed for a transitional period of two years starting one year after the date of entry into force of this Regulation, subject to the following conditions:

- (a) unmanned aircraft with a maximum take-off mass of less than 500 g are operated within the operational requirements set out in points UAS.OPEN.020(1) of Part A of the Annex by a remote pilot having competency level defined by the Member State concerned;
- (b) unmanned aircraft with a maximum take-off mass of less than 2 kg is operated by keeping a minimum horizontal distance of 50 meters from people and the remote pilots have a competency level at least equivalent to the one set out in point UAS.OPEN.030(2) of Part A of the Annex;
- (c) unmanned aircraft with a maximum take-off mass of more than 2 kg and less than 25kg is operated within the operational requirements set out in point UAS.OPEN.040(1) and (2) and the remote pilots have a competency level at least equivalent to the one set out in point UAS.OPEN.020(4)(b) of Part A of the Annex.

⁽⁹⁾ Decision No 768/2008/EC of the European Parliament and of the Council of 9 July 2008 on a common framework for the marketing of products, and repealing Council Decision 93/465/EEC (OJ L 218 13.8.2008, p. 82)

*Article 23***Entry into force and application**

1. This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

It shall apply from 1 July 2020.

2. Paragraph 5 of Article 5 shall apply as from the date on which Appendix 1 of the Annex is amended so that it contains the applicable standard scenarios. Member States may in accordance with paragraph 5 of Article 5 accept declarations by UAS operators based on national standard scenarios, if those scenarios meet the requirements of point UAS.SPEC.020 of the Annex until this Regulation is amended to include the standard scenario in Appendix 1 of the Annex.

3. Paragraph 3 of Article 15 shall apply from 1 July 2021.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 24 May 2019.

For the Commission
The President
Jean-Claude JUNCKER

ANNEX

UAS OPERATIONS IN THE 'OPEN' AND 'SPECIFIC' CATEGORIES

PART A

UAS OPERATIONS IN THE 'OPEN' CATEGORY

UAS.OPEN.010 General provisions

- (1) The category of UAS 'open' operations is divided into three subcategories A1, A2 and A3, on the basis of operational limitations, requirements for the remote pilot and technical requirements for UAS.
- (2) Where the UAS operation involves the flight of the unmanned aircraft starting from a natural elevation in the terrain or over terrain with natural elevations, the unmanned aircraft shall be maintained within 120 metres from the closest point of the surface of the earth. The measurement of distances shall be adapted accordingly to the geographical characteristics of the terrain, such as plains, hills, mountains.
- (3) When flying an unmanned aircraft within a horizontal distance of 50 metres from an artificial obstacle taller than 105 metres, the maximum height of the UAS operation may be increased up to 15 metres above the height of the obstacle at the request of the entity responsible for the obstacle.
- (4) By way of derogation from point (2), unmanned sailplanes with a MTOM, including payload, of less than 10 kg, may be flown at a distance in excess of 120 metres from the closest point of the surface of the earth, provided that the unmanned sailplane is not flown at a height greater than 120 metres above the remote pilot at any time.

UAS.OPEN.020 UAS operations in subcategory A1

UAS operations in subcategory A1 shall comply with all of the following conditions:

- (1) for unmanned aircraft referred to in point (5)(d), be conducted in such a way that a remote pilot of the unmanned aircraft does not overfly assemblies of people and reasonably expects that no uninvolved person will be overflown. In the event of unexpected overflight of uninvolved persons, the remote pilot shall reduce as much as possible the time during which the unmanned aircraft overflies those persons;
- (2) in the case of an unmanned aircraft referred to in points (5)(a), (5)(b) and (5)(c), be conducted in such a way that the remote pilot of the unmanned aircraft may overfly uninvolved persons but shall never overfly assemblies of people;
- (3) by way of derogation from point (d) of paragraph 1 of Article 4, be conducted, when the follow-me mode is active, up to a distance of 50 metres from the remote pilot;
- (4) be performed by a remote pilot:
 - (a) familiarised with the user's manual provided by the manufacturer of the UAS;
 - (b) in the case of an unmanned aircraft class C1, as defined in Part 2 of the Annex to Delegated Regulation (EU) 2019/945, who has completed an online training course followed by completing successfully an online theoretical knowledge examination provided by the competent authority or by an entity recognised by the competent authority of the Member State of registration of the UAS operator. The examination shall comprise 40 multiple-choice questions distributed appropriately across the following subjects:
 - i. air safety;
 - ii. airspace restrictions;
 - iii. aviation regulation;
 - iv. human performance limitations;
 - v. operational procedures;
 - vi. UAS general knowledge;

- vii. privacy and data protection;
- viii. insurance;
- ix. security.

(5) be performed with an unmanned aircraft that:

- (a) has an MTOM, including payload, of less than 250 g and a maximum operating speed of less than 19 m/s, in the case of a privately built UAS; or
- (b) meets the requirements defined in point (a) of Article 20;
- (c) is marked as class C0 and complies with the requirements of that class, as defined in Part 1 of the Annex to Delegated Regulation (EU) 2019/945; or
- (d) is marked as class C1 and complies with the requirements of that class, as defined in Part 2 of the Annex to Delegated Regulation (EU) 2019/945 and is operated with active and updated direct remote identification and geo-awareness systems.

UAS.OPEN.030 UAS operations in subcategory A2

UAS operations in subcategory A2 shall comply with all of the following conditions:

- (1) be conducted in such a way that the unmanned aircraft does not overfly uninvolved persons and the UAS operations take place at a safe horizontal distance of at least 30 metres from them; the remote pilot may reduce the horizontal safety distance down to a minimum of 5 metres from uninvolved persons when operating an unmanned aircraft with an active low speed mode function and after evaluation of the situation regarding:
 - (a) weather conditions,
 - (b) performance of the unmanned aircraft,
 - (c) segregation of the overflowed area.
- (2) be performed by a remote pilot who is familiar with the user's manual provided by the manufacturer of the UAS and holds a certificate of remote pilot competency issued by the competent authority or by an entity recognised by the competent authority of the Member State of registration of the UAS operator. This certificate shall be obtained after complying with all of the following conditions and in the order indicated:
 - (a) completing an online training course and passed the online theoretical knowledge examination as referred to in point (4)(b) of point UAS.OPEN.020;
 - (b) completing a self-practical training in the operating conditions of the subcategory A3 set out in points (1) and (2) of point UAS.OPEN.040;
 - (c) declaring the completion of the self-practical training defined in point (b) and passing an additional theoretical knowledge examination provided by the competent authority or by an entity recognised by the competent authority of the Member State of registration of the UAS operator. The examination shall comprise at least 30 multiple-choice questions aimed at assessing the remote pilot's knowledge of the technical and operational mitigations for ground risk, distributed appropriately across the following subjects:
 - i. meteorology;
 - ii. UAS flight performance;
 - iii. technical and operational mitigations for ground risk.
- (3) be performed with an unmanned aircraft which is marked as class C2 and complies with the requirements of that class, as defined in Part 3 of the Annex to Delegated Regulation (EU) 2019/945, and is operated with active and updated direct remote identification and geo-awareness systems.

UAS.OPEN.040 UAS operations in subcategory A3

UAS operations in subcategory A3 shall comply with all of the following conditions:

- (1) be conducted in an area where the remote pilot reasonably expects that no uninvolved person will be endangered within the range where the unmanned aircraft is flown during the entire time of the UAS operation;
- (2) be conducted at a safe horizontal distance of at least 150 metres from residential, commercial, industrial or recreational areas;
- (3) be performed by a remote pilot who has completed an online training course and passed an online theoretical knowledge examination as defined in point (4)(b) of point UAS.OPEN.020;
- (4) be performed with an unmanned aircraft that:
 - (a) has an MTOM, including payload, of less than 25 kg, in the case of a privately built UAS, or
 - (b) meets the requirements defined in point (b) of Article 20;
 - (c) is marked as class C2 and complies with the requirements of that class, as defined in Part 3 of the Annex to Delegated Regulation (EU) 2019/945 and is operated with active and updated direct remote identification and geo-awareness systems or;
 - (d) is marked as class C3 and complies with the requirements of that class, as defined in Part 4 of the Annex to Delegated Regulation (EU) 2019/945 and is operated with active and updated direct remote identification and geo-awareness systems; or
 - (e) is marked as class C4 and complies with the requirements of that class, as defined in Part 5 of the Annex to Delegated Regulation (EU) 2019/945.

UAS.OPEN.050 Responsibilities of the UAS operator

The UAS operator shall comply with all of the following:

- (1) develop operational procedures adapted to the type of operation and the risk involved;
- (2) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;
- (3) designate a remote pilot for each UAS operation;
- (4) ensure that the remote pilots and all other personnel performing a task in support of the operations are familiar with the user's manual provided by the manufacturer of the UAS, and:
 - (a) have appropriate competency in the subcategory of the intended UAS operations in accordance with points UAS.OPEN.020, UAS.OPEN.030 or UAS.OPEN.040 to perform their tasks or, for personnel other than the remote pilot, have completed an on-the-job-training course developed by the operator;
 - (b) are fully familiar with the UAS operator's procedures;
 - (c) are provided with the information relevant to the intended UAS operation concerning any geographical zones published by the Member State of operation in accordance with Article 15;
- (5) update the information into the geo-awareness system when applicable according to the intended location of operation;
- (6) in the case of an operation with an unmanned aircraft of one of the classes defined in Parts 1 to 5 of Delegated Regulation (EU) 2019/945, ensure that the UAS is:
 - (a) accompanied by the corresponding EU declaration of conformity, including the reference to the appropriate class; and
 - (b) the related class identification label is affixed to the unmanned aircraft.
- (7) Ensure in the case of an UAS operation in subcategory A2 or A3, that all involved persons present in the area of the operation have been informed of the risks and have explicitly agreed to participate.

UAS.OPEN.060 Responsibilities of the remote pilot

- (1) Before starting an UAS operation, the remote pilot shall:
 - (a) have the appropriate competency in the subcategory of the intended UAS operations in accordance with points UAS.OPEN.020, UAS.OPEN.030 or UAS.OPEN.040 to perform its task and carry a proof of competency while operating the UAS, except when operating an unmanned aircraft referred to in points (5)(a), (5)(b) or (5)(c) of point UAS.OPEN.020;
 - (b) obtain updated information relevant to the intended UAS operation about any geographical zones published by the Member State of operation in accordance with Article 15;
 - (c) observe the operating environment, check the presence of obstacles and, unless operating in subcategory A1 with an unmanned aircraft referred to in points (5)(a), (5)(b) or (5)(c) of point UAS.OPEN.020, check the presence of any uninvolved person;
 - (d) ensure that the UAS is in a condition to safely complete the intended flight, and if applicable, check if the direct remote identification works properly;
 - (e) if the UAS is fitted with an additional payload, verify that its mass does not exceed the MTOM defined by the manufacturer or the MTOM limit of its class.
- (2) During the flight, the remote pilot shall:
 - (a) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;
 - (b) keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property;
 - (c) comply with the operational limitations in geographical zones defined in accordance with Article 15;
 - (d) have the ability to maintain control of the unmanned aircraft, except in the case of a lost link or when operating a free-flight unmanned aircraft;
 - (e) operate the UAS in accordance with the user's manual provided by the manufacturer, including any applicable limitations;
 - (f) comply with the operator's procedures when available.
- (3) During the flight, remote pilots and UAS operators shall not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.
- (4) For the purposes of point (2)(b), remote pilots may be assisted by an unmanned aircraft observer, situated alongside them, who, by unaided visual observation of the unmanned aircraft, assists the remote pilot in safely conducting the flight. Clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer.

UAS.OPEN.070 Duration and validity of the remote pilot online theoretical competency and certificates of remote pilot competency

- (1) The remote pilot online theoretical competency, required by points (4)(b) of point UAS.OPEN.020 and point (3) of point UAS.OPEN.040, and the certificate of remote pilot competency, required by point (2) of point UAS.OPEN.030, shall be valid for five years.
- (2) The renewal of the remote pilot online theoretical competency and of the certificate of remote pilot competency is subject to the demonstration of competencies in accordance with point (2) of point UAS.OPEN.030 or point (4)(b) of point UAS.OPEN.020.

PART B

UAS OPERATIONS IN THE 'SPECIFIC' CATEGORY

UAS.SPEC.010 General provisions

The UAS operator shall provide the competent authority with an operational risk assessment for the intended operation in accordance with Article 11, or submit a declaration when point UAS.SPEC.020 is applicable, unless the operator holds a light UAS operator certificate (LUC) with the appropriate privileges, in accordance with Part C of this Annex. The UAS operator shall regularly evaluate the adequacy of the mitigation measures taken and update them where necessary.

UAS.SPEC.020 Operational declaration

- (1) In accordance with Article 5, the UAS operator may submit an operational declaration of compliance with a standard scenario as defined in Appendix 1 to this Annex to the competent authority of the Member State of operation as an alternative to points UAS.SPEC.30 and UAS.SPEC.40 in relation to operations:
 - (a) of unmanned aircraft with:
 - i. maximum characteristic dimension up to 3 metres in VLOS over controlled ground area except over assemblies of people,
 - ii. maximum characteristic dimension up to 1 metre in VLOS except over assemblies of people;
 - iii. maximum characteristic dimension up to 1 metre in BVLOS over sparsely populated areas;
 - iv. maximum characteristic dimension up to 3 metres in BVLOS over controlled ground area.
 - (b) performed below 120 metres from the surface of earth, and:
 - i. in uncontrolled airspace (class F or G), or
 - ii. in controlled airspace after coordination and individual flight authorisation in accordance with published procedures for the area of operation.
- (2) A declaration of UAS operators shall contain:
 - (a) administrative information about the UAS operator;
 - (b) a statement that the operation satisfies the operational requirement set out in point (1) and a standard scenario as defined in Appendix 1 to the Annex;
 - (c) the commitment of the UAS operator to comply with the relevant mitigation measures required for the safety of the operation, including the associated instructions for the operation, for the design of the unmanned aircraft and the competency of involved personnel.
 - (d) confirmation by the UAS operator that an appropriate insurance cover will be in place for every flight made under the declaration, if required by Union or national law.
- (3) Upon receipt of the declaration, the competent authority shall verify that the declaration contains all the elements listed in point (2) and shall provide the UAS operator with a confirmation of receipt and completeness without undue delay.
- (4) After receiving the confirmation of receipt and completeness, the UAS operator is entitled to start the operation.
- (5) UAS operators shall notify, without any delay, the competent authority of any change to the information contained in the operational declaration that they submitted.
- (6) UAS operators holding an LUC with appropriate privileges, in accordance with Part C of this Annex, are not required to submit the declaration.

UAS.SPEC.030 Application for an operational authorisation

- (1) Before starting an UAS operation in the 'specific' category the UAS operator shall obtain an operational authorisation from the national competent authority of the Member State of registration, except:
 - (a) when point UAS.SPEC.020 is applicable; or
 - (b) the UAS operator holds an LUC with the appropriate privileges, in accordance with Part C of this Annex.
- (2) The UAS operator shall submit an application for an updated operational authorisation if there are any significant changes to the operation or to the mitigation measures listed in the operational authorisation.
- (3) The application for an operational authorisation shall be based on the risk assessment referred to in Article 11 and shall include in addition the following information:
 - (a) the registration number of the UAS operator;
 - (b) the name of the accountable manager or the name of the UAS operator in the case of a natural person;
 - (c) the operational risk assessment;
 - (d) the list of mitigation measures proposed by the UAS operator, with sufficient information for the competent authority to assess the adequacy of the mitigation means to address the risks;
 - (e) an operations manual when required by the risk and complexity of the operation;
 - (f) a confirmation that an appropriate insurance cover will be in place at the start of the UAS operations, if required by Union or national law.

UAS.SPEC.040 Issuing of an operational authorisation

- (1) When receiving an application in accordance with point UAS.SPEC.030, the competent authority shall issue, without undue delay, an operational authorisation in accordance with Article 12 when it concludes that the operation meets the following conditions:
 - (a) all information in accordance with point (3) of point UAS.SPEC.030 is provided;
 - (b) a procedure is in place for coordination with the relevant service provider for the airspace if the entire operation, or part of it, is to be conducted in controlled airspace.
- (2) The competent authority shall specify in the operational authorisation the exact scope of the authorisation in accordance with Article 12.

UAS.SPEC.050 Responsibilities of the UAS operator

- (1) The UAS operator shall comply with all of the following:
 - (a) establish procedures and limitations adapted to the type of the intended operation and the risk involved, including:
 - i. operational procedures to ensure the safety of the operations;
 - ii. procedures to ensure that security requirements applicable to the area of operations are complied with in the intended operation;
 - iii. measures to protect against unlawful interference and unauthorised access;
 - iv. procedures to ensure that all operations are in respect of Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. In particular it shall carry out a data protection impact assessment, when required by the National Authority for data protection in application of Article 35 of Regulation (EU) 2016/679;
 - v. guidelines for its remote pilots to plan UAS operations in a manner that minimises nuisances, including noise and other emissions-related nuisances, to people and animals.
 - (b) designate a remote pilot for each operation or, in the case of autonomous operations, ensure that during all phases of the operation, responsibilities and tasks especially those defined in points (2) and (3) of point UAS.SPEC.060 are properly allocated in accordance with the procedures established pursuant to point (a) above;

- (c) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;
- (d) ensure that before conducting operations, remote pilots comply with all of the following conditions:
 - i. have the competency to perform their tasks in line with the applicable training identified by the operational authorisation or, if point UAS.SPEC.020 applies, by the conditions and limitations defined in the appropriate standard scenario listed in Appendix 1 or as defined by the LUC;
 - ii. follow remote pilot training which shall be competency based and include the competencies set out in paragraph 2 of Article 8;
 - iii. follow remote pilot training, as defined in the operational authorisation, for operations requiring such authorisation, it shall be conducted in cooperation with an entity recognised by the competent authority;
 - iv. follow remote pilot training for operations under declaration that shall be conducted in accordance with the mitigation measures defined by the standard scenario;
 - v. have been informed about the UAS operator's operations manual, if required by the risk assessment and procedures established in accordance with point (a);
 - vi. obtain updated information relevant to the intended operation about any geographical zones defined in accordance with Article 15;
- (e) ensure that personnel in charge of duties essential to the UAS operation, other than the remote pilot itself, comply with all of the following conditions:
 - i. have completed the on-the-job-training developed by the operator;
 - ii. have been informed about the UAS operator's operations manual, if required by the risk assessment, and about the procedures established in accordance with point (a);
 - iii. have obtained updated information relevant to the intended operation about any geographical zones defined in accordance with Article 15;
- (f) carry out each operation within the limitations, conditions, and mitigation measures defined in the declaration or specified in the operational authorisation;
- (g) keep a record of the information on UAS operations as required by the declaration or by the operational authorisation;
- (h) use UAS which, as a minimum, are designed in such a manner that a possible failure will not lead the UAS to fly outside the operation volume or to cause a fatality. In addition, Man Machine interfaces shall be such to minimise the risk of pilot error and shall not cause unreasonable fatigue;
- (i) maintain the UAS in a suitable condition for safe operation by:
 - i. as a minimum, defining maintenance instructions and employing an adequately trained and qualified maintenance staff; and
 - ii. complying with point UAS.SPEC.100, if required;
 - iii. using an unmanned aircraft which is designed to minimise noise and other emissions, taking into account the type of the intended operations and geographical areas where the aircraft noise and other emissions are of concern.

UAS.SPEC.060 Responsibilities of the remote pilot

- (1) The remote pilot shall:
 - (a) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;
 - (b) have the appropriate remote pilot competency as defined in the operational authorisation, in the standard scenario defined in Appendix 1 or as defined by the LUC and carry a proof of competency while operating the UAS.

- (2) Before starting an UAS operation, the remote pilot shall comply with all of the following:
- (a) obtain updated information relevant to the intended operation about any geographical zones defined in accordance with Article 15;
 - (b) ensure that the operating environment is compatible with the authorised or declared limitations and conditions;
 - (c) ensure that the UAS is in a safe condition to complete the intended flight safely, and if applicable, check if the direct remote identification works properly;
 - (d) ensure that the information about the operation has been made available to the relevant air traffic service (ATS) unit, other airspace users and relevant stakeholders, as required by the operational authorisation or by the conditions published by the Member State for the geographical zone of operation in accordance with Article 15.
- (3) During the flight, the remote pilot shall:
- (a) comply with the authorised or declared limitations and conditions;
 - (b) avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft, people, animals, environment or property;
 - (c) comply with the operational limitations in geographical zones defined in accordance with Article 15;
 - (d) comply with the operator's procedures;
 - (e) not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.

UAS.SPEC.070 Transferability of an operational authorisation

An operational authorisation is not transferable.

UAS.SPEC.080 Duration and validity of an operational authorisation

- (1) The competent authority shall specify the duration of the operational authorisation in the authorisation itself.
- (2) Notwithstanding point (1), the operational authorisation remains valid as long as the UAS operator remains compliant with the relevant requirements of this Regulation and with the conditions defined in the operational authorisation.
- (3) Upon revocation or surrender of the operational authorisation the UAS operator shall provide an acknowledgment in digital format that must be returned to the competent authority without delay.

UAS.SPEC.090 Access

For the purpose of demonstrating compliance with this Regulation, an UAS operator shall grant to any person, that is duly authorised by the competent authority, an access to any facility, UAS, document, records, data, procedures or to any other material relevant to its activity, which is subject to operational authorisation or operational declaration, regardless of whether or not its activity is contracted or subcontracted to another organisation.

UAS.SPEC.100 Use of certified equipment and certified unmanned aircraft

- (1) If the UAS operation is using an unmanned aircraft for which a certificate of airworthiness or a restricted certificate of airworthiness have been issued, or using certified equipment, the UAS operator shall record the operation or service time in accordance either with the instructions and procedures applicable to the certified equipment, or with the organisational approval or authorisation.
- (2) The UAS operator shall follow the instructions referred to in the unmanned aircraft certificate or equipment certificate, and also comply with any airworthiness or operational directives issued by the Agency.

PART C

LIGHT UAS OPERATOR CERTIFICATE (LUC)

UAS.LUC.010 General requirements for an LUC

- (1) A legal person is eligible to apply for an LUC under this Part.
- (2) An application for an LUC or for an amendment to an existing LUC shall be submitted to the competent authority and shall contain all of the following information:
 - (a) a description of the UAS operator's management system, including its organisational structure and safety management system;
 - (b) the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs;
 - (c) a statement that all the documentation submitted to the competent authority has been verified by the applicant and found to comply with the applicable requirements.
- (3) If the requirements of this Part are met, an LUC holder may be granted the privileges, in accordance with point UAS.LUC.060.

UAS.LUC.020 Responsibilities of the LUC holder

The LUC holder shall:

- (1) comply with the requirements of points UAS.SPEC.050 and UAS.SPEC.060;
- (2) comply with the scope and privileges defined in the terms of approval;
- (3) establish and maintain a system for exercising operational control over any operation conducted under the terms of its LUC;
- (4) carry out an operational risk assessment of the intended operation in accordance with Article 11 unless conducting an operation for which an operational declaration is sufficient according to point UAS.SPEC.020,
- (5) keep records of the following items in a manner that ensures protection from damage, alteration and theft for a period at least 3 years for operations conducted using the privileges specified under point UAS.LUC.060:
 - (a) the operational risk assessment, when required according to point (4), and its supporting documentation;
 - (b) mitigation measures taken; and
 - (c) the qualifications and experience of personnel involved in the UAS operation, compliance monitoring and safety management;
- (6) keep personnel records referred to in point (5)(c) as long as the person works for the organisation and shall be retained until 3 years after the person has left the organisation.

UAS.LUC.030 Safety management system

- (1) An UAS operator who applies for an LUC shall establish, implement and maintain a safety management system corresponding to the size of the organisation, to the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.
- (2) The UAS operator shall comply with all of the following:
 - (a) nominate an accountable manager with authority for ensuring that within the organisation all activities are performed in accordance with the applicable standards and that the organisation is continuously in compliance with the requirements of the management system and the procedures identified in the LUC manual referred to in point UAS.LUC.040;
 - (b) define clear lines of responsibility and accountability throughout the organisation;
 - (c) establish and maintain a safety policy and related corresponding safety objectives;
 - (d) appoint key safety personnel to execute the safety policy;

- (e) establish and maintain a safety risk management process including the identification of safety hazards associated with the activities of the UAS operator, as well as their evaluation and the management of associated risks, including taking action to mitigate those risks and verify the effectiveness of the action;
 - (f) promote safety in the organisation through:
 - i. training and education;
 - ii. communication;
 - (g) document all safety management system key processes for making personnel aware of their responsibilities and of the procedure for amending this documentation; key processes include:
 - i. safety reporting and internal investigations;
 - ii. operational control;
 - iii. communication on safety;
 - iv. training and safety promotion;
 - v. compliance monitoring;
 - vi. safety risk management;
 - vii. management of change;
 - viii. interface between organisations;
 - ix. use of sub-contractors and partners;
 - (h) include an independent function to monitor the compliance and adequacy of the fulfilment of the relevant requirements of this Regulation, including a system to provide feedback of findings to the accountable manager to ensure effective implementation of corrective measures as necessary;
 - (i) include a function to ensure that safety risks inherent to a service or product delivered through subcontractors are assessed and mitigated under the operator's safety management system.
- (3) If the organisation holds other organisation certificates within the scope of Regulation (EU) No 2018/1139, the safety management system of the UAS operator may be integrated with the safety management system that is required by any of those additional certificate(s).

UAS.LUC.040 LUC manual

- (1) An LUC holder shall provide the competent authority with an LUC manual describing directly or by cross reference its organisation, the relevant procedures and the activities carried out.
- (2) The manual shall contain a statement signed by the accountable manager that confirms that the organisation will at all times work in accordance with this Regulation and with the approved LUC manual. When the accountable Manager is not the Chief Executive Officer of the organisation, the chief executive officer shall countersign the statement.
- (3) If any activity is carried out by partner organisations or subcontractors, the UAS operator shall include in the LUC manual procedures on how the LUC holder shall manage the relationship with those partner organisations or subcontractors.
- (4) The LUC manual shall be amended as necessary to retain an up-to-date description of the LUC holder's organisation, and copies of amendments shall be provided to the competent authority.
- (5) The UAS operator shall distribute the relevant parts of the LUC manual to all its personnel in accordance with their functions and duties.

UAS.LUC.050 Terms of approval of the LUC holder

- (1) The competent authority shall issue an LUC after it is satisfied that the UAS operator complies with points UAS.LUC.020, UAS.LUC.030 and UAS.LUC.040.

- (2) The LUC shall include:
- (a) the UAS operator identification;
 - (b) the UAS operator's privileges;
 - (c) authorised type(s) of operation;
 - (d) the authorised area, zone or class of airspace for operations, if applicable;
 - (e) any special limitations or conditions, if applicable;

UAS.LUC.060 Privileges of the LUC holder

When satisfied with the documentation provided, the competent authority shall:

- (1) specify the terms and conditions of the privilege granted to the UAS operator in the LUC; and
- (2) within the terms of approval, grant to an LUC holder the privilege to authorise its own operations without:
 - (a) submitting an operational declaration;
 - (b) applying for an operational authorisation.

UAS.LUC.070 Changes in the LUC management system

After an LUC is issued, the following changes require prior approval by the competent authority:

- (1) any change in the terms of approval of the UAS operator;
- (2) any significant change to the elements of the LUC holder's safety management system as required by point UAS.LUC.030.

UAS.LUC.075 Transferability of an LUC

Except for the change to the ownership of the organisation, approved by the competent authority in accordance with point UAS.LUC.070, an LUC is not transferable.

UAS.LUC.080 Duration and validity of an LUC

- (1) An LUC shall be issued for an unlimited duration. It shall remain valid subject to:
 - (a) the LUC holder's continuous compliance with the relevant requirements of this Regulation and of the Member State that issued the certificate; and
 - (b) it not being surrendered or revoked.
- (2) Upon revocation or surrender of an LUC, the LUC holder shall provide an acknowledgment in digital format that must be returned to the competent authority without delay.

UAS.LUC.090 Access

For the purpose of demonstrating compliance with this Regulation, the LUC holder shall grant any person, that is duly authorised by the competent authority, an access to any facility, UAS, document, records, data, procedures or to any other material relevant to its activity, which is subject to certification, operational authorisation or operational declaration, regardless of whether or not its activity is contracted or subcontracted to another organisation.

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Appendix 1

for standard scenarios supporting a declaration
