

## APPENDICES

### Appendix 1 for standard scenarios supporting a declaration

*Regulation (EU) 2020/639*

## CHAPTER I — 1 STS-01 - VLOS OVER A CONTROLLED GROUND AREA IN A POPULATED ENVIRONMENT

### UAS.STS-01.010 General provisions

*Regulation (EU) 2020/639*

- (1) During flight, the unmanned aircraft shall be maintained within 120 m 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.
- (2) When flying an unmanned aircraft within a horizontal distance of 50 m from an artificial obstacle taller than 105 metres, the maximum height of the UAS operation may be increased up to 15 m above the height of the obstacle at the request of the entity responsible for the obstacle.
- (3) The maximum height of the operational volume shall not exceed 30 m above the maximum height allowed in points (1) and (2).
- (4) During flight, the unmanned aircraft shall not carry dangerous goods.

### UAS.STS-01.020 UAS operations in STS-01

*Regulation (EU) 2020/639*

- (1) UAS operations in STS-01 shall meet all of the following conditions:
  - (a) be conducted with the unmanned aircraft kept in VLOS at all times;
  - (b) be conducted in accordance with the operations manual referred to in point (1) of point [UAS.STS-01.030](#);
  - (c) be conducted over a controlled ground area comprising:
    - (i) for the operation of an untethered unmanned aircraft:
      - (A) the flight geography area;
      - (B) the contingency area, with its external limit(s) at least 10 m beyond the limit(s) of the flight geography area; and
      - (C) the ground risk buffer, which shall cover a distance beyond the external limit(s) of the contingency area that meets at least the following parameters:

Maximum height above ground	Minimum distance to be covered by the ground risk buffer for untethered unmanned aircraft	
	with an MTOM up to 10 kg	with an MTOM above 10 kg
30 m	10 m	20 m
60 m	15 m	30 m
90 m	20 m	45 m
120 m	25 m	60 m

- (ii) for operation of a tethered unmanned aircraft, a radius equal to the tether length plus 5 m and centred on the point where the tether is fixed over the surface of the earth.
  - (d) be conducted at a ground speed of less than 5 m/s in the case of untethered unmanned aircraft;
  - (e) be conducted by a remote pilot who:
    - (i) holds a certificate of remote pilot theoretical knowledge in accordance with [Attachment A](#) to this Chapter for operations in the standard scenarios issued by the competent authority or by an entity designated by the competent authority of a Member State;
    - (ii) holds an accreditation of completion of the STS-01 practical skill training, in accordance with [Attachment A](#) to this Chapter and issued by:
      - (A) an entity that has declared compliance with the requirements in [Appendix 3](#) and is recognised by the competent authority of a Member State; or
      - (B) an UAS operator that has declared to the competent authority of the Member State of registration, compliance with STS-01 and that has declared compliance with the requirements in [Appendix 3](#); and
  - (f) be conducted with an unmanned aircraft which is marked as class C5 and complies with the requirements of that class, as defined in [Part 16](#) of the Annex to Delegated Regulation (EU) 2019/945, and is operated with active and updated direct remote identification system.
- (2) The remote pilot shall obtain the certificate of theoretical knowledge for operations in the standard scenarios after:
- (a) having completed an online training course and passed the online theoretical knowledge examination as referred to in point (4)(b) of point [UAS.OPEN.020](#); and
  - (b) having passed an additional theoretical knowledge examination provided by the competent authority or by an entity designated by the competent authority of a Member State in accordance with [Attachment A](#) to this Chapter.
- (3) This certificate shall be valid for five years. The revalidation, within its validity period is subject to any of the following:
- (a) the demonstration of competencies in accordance with point (2);
  - (b) the completion of a refresher training addressing the theoretical knowledge subjects as defined in point (2) provided by the competent authority or by an entity designated by the competent authority.
- (4) In order to revalidate the certificate upon its expiration, the remote pilot shall comply with point (2).

## GM1 UAS.STS-01.020(1)(c) UAS operations in STS-01

ED Decision 2022/002/R

### GROUND RISK BUFFER

The values for determining the size of the ground risk buffer that are indicated in the table of point [UAS.STS-01.020\(1\)\(c\)\(i\)\(C\)](#) should be considered as minimum values. However, additional margins

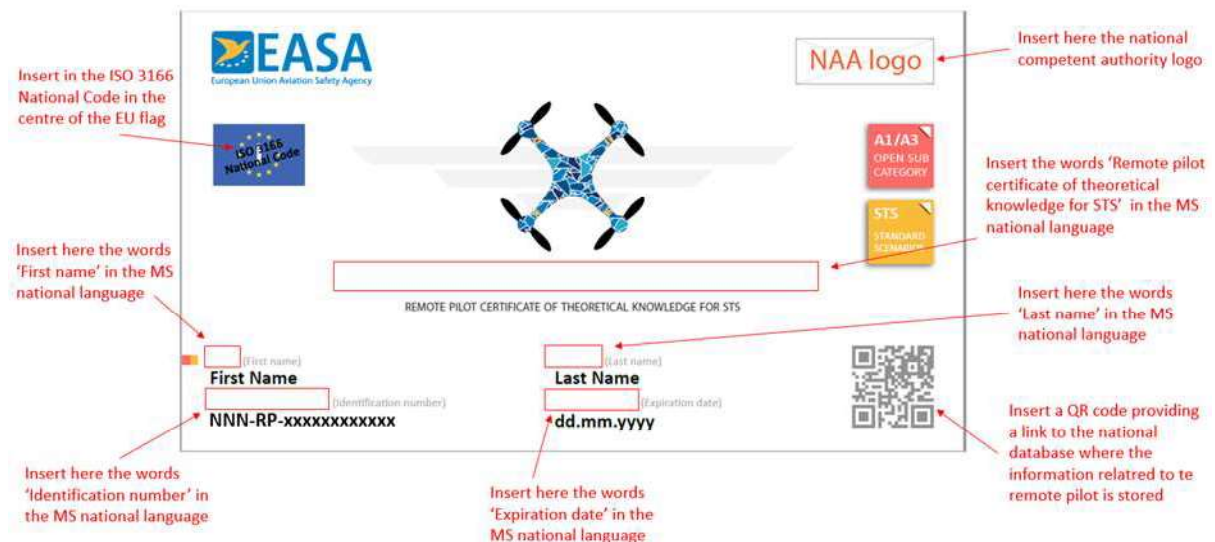
should be considered depending on factors that may increase the distance travelled by the UA, e.g. UA flight characteristics, such as autorotation capability, wind, remote pilot's reaction time, etc.

**AMC1 UAS.STS-01.020(1)(e)(i) UAS operations in STS-01 and UAS.STS-02.020(7)(a) UAS operations in STS-02**

ED Decision 2022/002/R

**CERTIFICATE OF REMOTE PILOT THEORETICAL KNOWLEDGE**

Upon receipt of proof that the remote pilot has successfully completed the theoretical knowledge examination, the competent authority or the entity that is designated by the competent authority should provide the remote pilot with a certificate of remote pilot theoretical knowledge in the format that is depicted in the figure below. The certificate may be provided in electronic form.



The remote pilot identification number that is provided by the competent authority, or the entity that is designated by the competent authority, which issues the certificate of remote pilot theoretical knowledge should have the following format:

NNN-RP-xxxxxxxxxxx

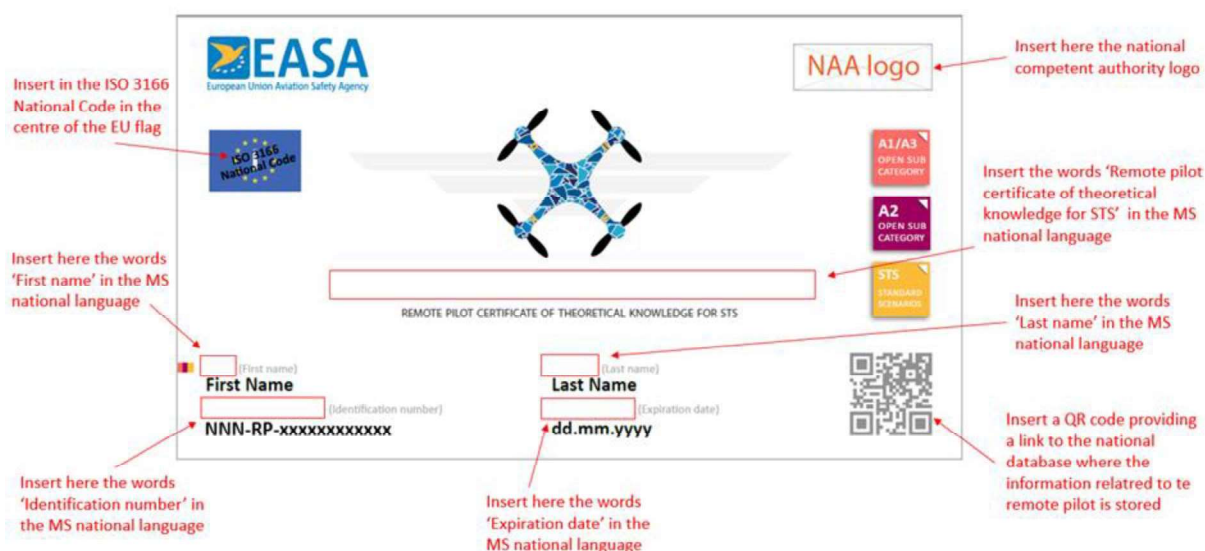
Where:

- 'NNN' is the ISO 3166 Alpha-3 code of the competent authority that issues the proof of completion;
- 'RP' is a fixed field meaning 'remote pilot'; and
- 'xxxxxxxxxxx' are 12 alphanumeric characters (lower-case only) defined by the competent authority that issues the proof of completion.

Example: (FIN-RP-123456789abc)

The QR code provides a link to the national database where the information related to the remote pilot is stored. Through the 'remote pilot identification number', all information related to the training of the remote pilot can be retrieved by authorised bodies (e.g. competent authorities, law enforcement authorities, etc.) and authorised personnel.

If the remote pilot provides the declaration of the practical-skills self-training as defined in point [UAS.OPEN.030\(2\)\(c\)](#), before passing the theoretical knowledge examination, the competent authority may include in the certificate also 'subcategory A2'.



**AMC1 UAS.STS-01.020(1)(e)(ii) UAS operations in STS-01 and UAS.STS-02.020(7)(b) UAS operations in STS-02**

ED Decision 2022/002/R

**REMOTE PILOT PRACTICAL TRAINING FOR STSs**

The instructor should gradually compile a 'progress booklet' to allow the monitoring of the training and the continuous evaluation of the practical skills of the student remote pilot.

The progress booklet should be signed by the student remote pilot at the end of each practical training cycle. A record of the booklet should be kept for 5 years.

When the student remote pilot reaches the desired level of competence, the organisation that provides the practical training issues an attestation of practical training.

## GM1 UAS.STS-01.020(1)(e)(ii) UAS operations in STS-01 and UAS.STS-02.020(7)(b) UAS operations in STS-02

*ED Decision 2022/002/R*

### REMOTE PILOT PRACTICAL TRAINING FOR STSs

Practical training for STSs is provided as a 'continuous evaluation' of the student remote pilot by:

- (1) either a UAS operator that has declared compliance with:
  - (a) the relevant STS(s) (the one(s) for which training and assessment are provided); and
  - (b) the requirements of [Appendix 3](#) to the Annex to the UAS Regulation; or
- (2) an entity that has declared compliance with the requirements of [Appendix 3](#) to the Annex to the UAS Regulation.

### UAS.STS-01.030 Responsibilities of the UAS operator

*Regulation (EU) 2020/639*

In addition to the responsibilities defined in [UAS.SPEC.050](#), the UAS operator shall:

- (1) develop an operations manual including the elements defined in [Appendix 5](#);
- (2) define the operational volume and ground risk buffer for the intended operations, including the controlled ground area covering the projections on the surface of the earth within both the volume and the buffer;
- (3) ensure the adequacy of the contingency and emergency procedures through any of the following:
  - (a) dedicated flight tests;
  - (b) simulations, provided that the representativeness of the simulation means is appropriate for the intended purpose;
- (4) develop an effective emergency response plan (ERP) suitable for the operation that includes at least:
  - (a) the plan to limit any escalating effects of the emergency situation;
  - (b) the conditions to alert the relevant authorities and organisations;
  - (c) the criteria to identify an emergency situation;
  - (d) clear delineation of the duties of the remote pilot(s) and any other personnel in charge of duties essential to the UAS operation;
- (5) ensure that the level of performance for any externally provided service necessary for the safety of the flight is adequate for the intended operation;
- (6) define the allocation of the roles and responsibilities between the operator and the external service provider(s), if applicable;
- (7) upload updated information into the geo-awareness, if the function is installed on the UAS, when required by the UAS geographical zone for the intended location of operation;
- (8) ensure that, before starting the operation, the controlled ground area is in place, effective and compliant with the minimum distance defined in point [UAS.STS-01.020\(1\)\(C\)\(i\)\(C\)](#) and, when required, coordination with the appropriate authorities has been conducted;

- (9) ensure that, before starting the operation, all persons present in the controlled ground area:
- (a) have been informed of the risks of the operation;
  - (b) have been briefed or trained, as appropriate, on the safety precautions and measures established by the UAS operator for their protection; and
  - (c) have explicitly agreed to participate in the operation;
- (10) ensure that:
- (a) the UAS is accompanied by the corresponding EU declaration(s) of conformity, including the reference to class C5 or reference to class C3 and to the accessories kit; and
  - (b) the class C5 identification label is affixed to the unmanned aircraft or to the accessories kit.

## AMC1 UAS.STS-01.030(1)&(3) and UAS.STS-02.030(1)&(3) Responsibilities of the UAS operator

ED Decision 2022/002/R

### OPERATIONAL PROCEDURES

The UAS operator should comply with the conditions for a 'medium' level of robustness of [AMC2 UAS.SPEC.030\(3\)\(e\)](#) as regards:

- the operational procedures contained in the OM, indicated in [UAS.STS-01.030\(1\)](#) and [UAS.STS-02.030\(1\)](#); and
- the contingency and emergency procedures, indicated in [UAS.STS-01.030\(3\)](#) and [UAS.STS-02.030\(3\)](#).

The flight test to verify the adequacy of the contingency and emergency procedures may be conducted in subcategory A3 of the 'open' category. In that case, the UAS operator should ensure that the UAS operation complies with the 'open' category requirements.

## AMC1 UAS.STS-01.030(4) and UAS.STS-02.030(4) Responsibilities of the UAS operator

ED Decision 2022/002/R

### EMERGENCY RESPONSE PLAN (ERP)

The UAS operator should develop an ERP in compliance with the conditions for a 'medium' level of robustness as per [AMC3 UAS.SPEC.030\(3\)\(e\)](#).

## GM1 UAS.STS-01.030(5)&(6) and UAS.STS-02.030(5)&(6) Responsibilities of the UAS operator

*ED Decision 2022/002/R*

### EXTERNALLY PROVIDED SERVICES

'External service' should be understood as any service that is provided by an external service provider to the UAS operator and which is:

- necessary to ensure the safety of a UAS operation; and
- provided by a service provider other than the UAS operator.

## UAS.STS-01.040 Responsibilities of the remote pilot

*Regulation (EU) 2020/639*

In addition to the responsibilities defined in [UAS.SPEC.060](#), the remote pilot:

- (1) before starting an UAS operation, shall verify that the means to terminate the flight of the unmanned aircraft are operational and check if the direct remote identification is active and up-to-date;
- (2) during the flight:
  - (a) shall keep the unmanned aircraft in VLOS and maintain a thorough airspace scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of a 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;
  - (b) for the purposes of point (a), may be assisted by an unmanned aircraft observer. In such case, clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer;
  - (c) shall have the ability to maintain control of the unmanned aircraft, except in the case of a lost command and control (C2) link;
  - (d) shall operate only one unmanned aircraft at a time;
  - (e) shall not operate the unmanned aircraft from a moving vehicle;
  - (f) shall not hand over the control of the unmanned aircraft to another command unit;
  - (g) shall perform the contingency procedures defined by the UAS operator for abnormal situations, including when the remote pilot has an indication that the unmanned aircraft may exceed the limits of the flight geography; and
  - (h) shall perform the emergency procedures defined by the UAS operator for emergency situations, including triggering the means to terminate the flight when the remote pilot has an indication that the unmanned aircraft may exceed the limits of the operational volume.

## ATTACHMENT A: REMOTE PILOT THEORETICAL KNOWLEDGE AND PRACTICAL SKILL EXAMINATION FOR STS-01

*Regulation (EU) 2020/639*

### (1) Theoretical knowledge examination

- (a) The examination referred in point (2)(b) of point [UAS.STS-01.020](#) shall comprise at least 40 multiple-choice questions aimed at assessing the remote pilot's knowledge of the technical and operational mitigations, distributed appropriately across the following subjects:
  - (i) aviation regulations;
  - (ii) human performance limitations;
  - (iii) operational procedures;
  - (iv) technical and operational mitigations for ground risk;
  - (v) UAS general knowledge;
  - (vi) meteorology;
  - (vii) the flight performance of the UAS; and
  - (viii) technical and operational mitigations for air risks.
- (b) If the student remote pilot already holds a certificate of remote pilot competency as referred to in point (2) of point [UAS.OPEN.030](#), the examination shall comprise at least 30 multiple-choice questions distributed appropriately across the subjects in points (1)(a)(i) to (1)(a)(v).
- (c) To pass the theoretical knowledge examination, the remote pilot student shall achieve at least 75 % of the overall marks.

### (2) Practical skill training and assessment

The training and assessment of the practical skill for operations under any standard scenario shall cover at least the subjects and areas identified in Table 1:

*Table 1*

**Subjects and areas to be covered for practical skill training and assessment**

Subject	Areas to be covered
(a) Pre-flight actions	(i) Operation planning, airspace considerations and site risk assessment. The following points are to be included: <ul style="list-style-type: none"> <li>(A) identify the objectives of the intended operation;</li> <li>(B) make sure that the defined operational volume and relevant buffers (e.g. ground risk buffer) are suitable for the intended operation;</li> <li>(C) spot the obstacles in the operational volume that could hinder the intended operation;</li> </ul>



	<ul style="list-style-type: none"> <li>(D) identify whether the wind speed and/or direction may be affected by topography or by obstacles in the operational volume;</li> <li>(E) select relevant data on airspace information (including on UAS geographical zones) that can have an impact on the intended operation;</li> <li>(F) make sure the UAS is suitable for the intended operation;</li> <li>(G) make sure that the selected payload is compatible with the UAS used for the operation;</li> <li>(H) implement the necessary measures to comply with the limitations and conditions applicable to the operational volume and ground risk buffer for the intended operation in accordance with the operations manual procedures for the relevant scenario;</li> <li>(I) implement the necessary procedures to operate in controlled airspace, including a protocol to communicate with ATC and obtain clearance and instructions, if necessary;</li> <li>(J) confirm that all the necessary documents for the intended operation are on site; and</li> <li>(K) brief all participants about the planned operation.</li> </ul> <p>(ii) UAS pre-flight inspection and set-up (including flight modes and power-source hazards). The following points are to be included:</p> <ul style="list-style-type: none"> <li>(A) assess the general condition of the UAS;</li> <li>(B) ensure that all the removable components of the UAS are properly secured;</li> <li>(C) make sure that the UAS software configurations are compatible;</li> <li>(D) calibrate the instruments in the UAS;</li> <li>(E) identify any flaw that may jeopardise the intended operation;</li> <li>(F) make sure that the energy level of the battery is sufficient for the intended operation;</li> <li>(G) make sure that the flight termination system of the UAS and its triggering system are operational;</li> <li>(H) check the correct functioning of the command and control link;</li> <li>(I) activate the geo-awareness function and upload the information to it (if geo-awareness function is available); and</li> <li>(J) set the height and speed limitation systems (if available).</li> </ul>
--	---

	<p>(iii) Knowledge of the basic actions to be taken in the event of an emergency situation, including issues with the UAS, or if a mid-air collision hazard arises during the flight.</p>
<p>(b) In-flight procedures</p>	<p>(i) Maintain an effective look-out and keep the unmanned aircraft within visual line of sight (VLOS) at all times to include: situational awareness of the location in relation to the operational volume and other airspace users, obstacles, terrain and persons who are not involved at all times.</p> <p>(ii) Perform accurate and controlled flight manoeuvres at different heights and distances representative of the corresponding STS (including flight in manual/non-GNSS assisted mode or the equivalent, where fitted). At least the following manoeuvres shall be performed:</p> <ul style="list-style-type: none"> <li>(A) hover in position (only for rotorcraft);</li> <li>(B) transition from hover into forward flight (only for rotorcraft);</li> <li>(C) climb and descent from level flight;</li> <li>(D) turns in level flight;</li> <li>(E) speed control in level flight;</li> <li>(F) actions after a failure of a motor/propulsion system; and</li> <li>(G) evasive action (manoeuvres) to avoid collisions.</li> </ul> <p>(iii) Real-time monitoring of the UAS status and endurance limitations.</p> <p>Flight under abnormal conditions:</p> <ul style="list-style-type: none"> <li>(A) manage a partial or complete power shortage of the unmanned aircraft propulsion system while ensuring the safety of third parties on the ground;</li> <li>(B) manage the path of the unmanned aircraft in abnormal situations;</li> <li>(C) manage a situation in which the unmanned aircraft positioning equipment is impaired;</li> <li>(D) manage a situation of an incursion by a person not involved into the operational volume or the controlled ground area, and take appropriate measures to maintain safety;</li> <li>(E) react to, and take the appropriate corrective actions for a situations where the unmanned aircraft is likely to exceed the limit of the flight geography (contingency procedures) and from the operational volume (emergency procedures) as defined during the flight preparation;</li> <li>(F) manage the situation when an aircraft approaches the operational volume; and</li> </ul>

	(G) demonstrate the recovery method following a deliberate (simulated) loss of the command and control link.
(c) Post-flight actions	<ul style="list-style-type: none"> <li>(i) Shut down and secure the UAS.</li> <li>(ii) Post-flight inspection and recording of any relevant data relating to the general condition of the UAS (its systems, components and power sources) and crew fatigue.</li> <li>(iii) Conduct a debriefing about the operation.</li> <li>(iv) Identify situations when an occurrence report was necessary and complete the required occurrence report.</li> </ul>

## CHAPTER II — STS-02 – BVLOS WITH AIRSPACE OBSERVERS OVER A CONTROLLED GROUND AREA IN A SPARSELY POPULATED ENVIRONMENT

### UAS.STS-02.010 General provisions

*Regulation (EU) 2020/639*

- (1) During flight, the unmanned aircraft shall be maintained within 120 m from the closest point of the surface of the earth. The measurement of distances shall be adapted according to the geographical characteristics of the terrain, such as plains, hills, mountains.
- (2) When flying an unmanned aircraft within a horizontal distance of 50 m from an artificial obstacle taller than 105 m, the maximum height of the UAS operation may be increased up to 15 m above the height of the obstacle at the request of the entity responsible for the obstacle.
- (3) The maximum height of the operational volume shall not exceed 30 m above the maximum height allowed in points (1) and (2).
- (4) During flight, the unmanned aircraft shall not carry dangerous goods.

### UAS.STS-02.020 UAS operations in STS-02

*Regulation (EU) 2020/639*

UAS operations in STS-02 shall be conducted:

- (1) in accordance with the operations manual referred to in point (1) of point [UAS.STS-02.030](#);
- (2) over a controlled ground area entirely located in a sparsely populated environment including:
  - (a) the flight geography area,
  - (b) the contingency, which its external limit(s) shall be located at least 10 m beyond the limit(s) of the flight geography area,
  - (c) a ground risk buffer covering a distance that is at least equal to the distance most likely to be travelled by the UA after activation of the means to terminate the flight specified by the UAS manufacturer in manufacturer's instructions, considering the operational conditions within the limitations specified by the UAS manufacturer;
- (3) in an area where the minimum flight visibility is more than 5 km;