



# Explanatory Note to ED Decision 2023/012/R

in accordance with Article 4(2) of MB Decision 01-2022

## Regular update of the AMC and GM to Regulations (EU) 2019/945 and 2019/947 (drones in the ‘open’ and ‘specific’ category)

‘AMC and GM to Regulation (EU) 2019/947 — Issue 1, Amendment 3’

RMT.0730 [SUBTASK 2]

### EXECUTIVE SUMMARY

This Decision amends the acceptable means of compliance (AMC) and guidance material (GM) to Regulation (EU) 2019/947 by:

- clarifying the method for assessing the design of unmanned aircraft systems (UASs) operated in the ‘specific’ category;
- expanding the applicability of PDRA S-01 to agricultural operations;
- addressing the authorisation process for free flight balloons.

The objective is to maintain a high level of safety for the operation of unmanned aircraft systems (UASs) in the ‘open’ and ‘specific’ categories.

The regulatory material is expected to improve the level of harmonisation in the implementation of the Regulation and foster a level playing field.

### ED DECISION(S) AMENDED

[ED Decision 2019/021/R](#) — AMC and GM to Commission Implementing Regulation (EU) 2019/947

### AFFECTED STAKEHOLDERS

UAS operators (private and commercial); NCAs; UAS MOs; UAS MTOs; UAS CAMOs; maintenance licence holders; UAS manufacturers; other airspace users (manned aircraft); general public.

### WORKING METHOD(S)

Development	Impact assessment(s)	Consultation
By EASA	Full	Public – NPA Focused (Advisory Bodies)

### Related documents / information

- [ToR RMT.0730](#) issued on 26.7.2023
- [NPA 2021-09](#)
- [NPA 2020-07](#)
- [Decision 2022/002/R](#)

**PLANNING MILESTONES:** Refer to the latest edition of the EPAS Volume II.



## Table of contents

<b>1. About this Decision .....</b>	<b>3</b>
1.1. How this regulatory material was developed .....	3
<b>2. In summary — why and what .....</b>	<b>5</b>
2.1. Why we need to act.....	5
2.2. What we want to achieve — objectives.....	5
2.3. How we want to achieve it — overview of the amendments.....	5
2.3.1. Changes to AMC1 to Article 11 (SORA) .....	5
2.3.2. Changes to Annex B to AMC1 to Article 11 .....	7
2.3.3. Changes to Annex C to AMC1 to Article 11 .....	7
2.3.4. Changes to Annex E to AMC1 to Article 11 .....	7
2.3.5. Predefined risk assessments PDRAs G-01, G-02 and G-03 .....	8
2.3.6. Predefined risk assessments PDRA S-01.....	8
2.3.7. Operations with unmanned free balloons .....	8
2.4. What are the stakeholders' views.....	9
<b>3. What are the expected benefits and drawbacks of the regulatory material.....</b>	<b>10</b>
<b>4. Monitoring and evaluation .....</b>	<b>11</b>
<b>5. Proposed actions to support implementation .....</b>	<b>12</b>
<b>6. References .....</b>	<b>13</b>
6.1. Related EU regulations .....	13
6.2. Related EASA decisions .....	13
6.3. Other reference documents .....	13



## 1. About this Decision

### 1.1. How this regulatory material was developed

The European Union Aviation Safety Agency (EASA) developed this Decision in line with Regulation (EU) 2018/1139<sup>1</sup> (the ‘Basic Regulation’) and the Rulemaking Procedure<sup>2</sup>.

This Rulemaking Task (RMT).0730 is included in Volume II of the European Plan for Aviation Safety (EPAS) 2023-2025<sup>3</sup>. The scope and timescales of the task were defined in the related Terms of Reference (ToR)<sup>4</sup>.

EASA developed the text of this Decision based on the feedback received from the EASA Member States (MSs) and stakeholders since the publication of Decision 2019/021/R<sup>5</sup>, which issued the AMC and GM to Regulation (EU) 2019/947<sup>6</sup> (the UAS Regulation) and to its Annex. All the interested parties were consulted through Notice of Proposed Amendment (NPA) 2021-09<sup>7</sup>.

EASA reviewed the comments received and duly considered them for the preparation of the regulatory material presented here.

The NPA proposed amendments to several topics, including AMC1 Article 11 (SORA) to Regulation (EU) 2019/947. Some topics were considered particularly time critical. To facilitate a harmonised approach to UAS operations throughout the EU, it was decided to split the topics and issue two Decisions. On 7 February 2022, EASA published Decision 2022/002/R addressing all the amendments except those that affect AMC1 Article 11 (SORA) to the UAS Regulation. This Decision completes the task.

In the meantime, some new urgent issues were identified in addition to the topics included in NPA 2021-09, namely:

- expand the scope of PDRA S-01 to allow agricultural activities; and

---

<sup>1</sup> 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 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (OJ L 212, 22.8.2018, p. 1) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535612134845&uri=CELEX:32018R1139>).

<sup>2</sup> EASA is bound to follow a structured rulemaking process as required by Article 115(1) of Regulation (EU) 2018/1139. Such a process has been adopted by the EASA Management Board (MB) and is referred to as the ‘Rulemaking Procedure’. See MB Decision No 01-2022 of 02 May 2022 on the procedure to be applied by EASA for the issuing of opinions, certification specifications and other detailed specifications, acceptable means of compliance and guidance material (‘Rulemaking Procedure’), and repealing Management Board Decision No 18-2015 (<https://www.easa.europa.eu/en/downloads/136443/en>).

<sup>3</sup> <https://www.easa.europa.eu/en/document-library/general-publications/european-plan-aviation-safety-epas-2023-2025>

<sup>4</sup> ToR RMT.0730 Issue 1 (<https://www.easa.europa.eu/document-library/terms-of-reference-and-group-compositions/tor-rmt0730>).

<sup>5</sup> Executive Director Decision 2019/021/R of 9 October 2019 issuing Acceptable Means of Compliance and Guidance Material to Commission Implementing Regulation (EU) No 2019/947 ‘Rules and procedures for the operation of unmanned aircraft’ (<https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2019021r>).

<sup>6</sup> Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft (OJ L 152, 11.6.2019, p. 45) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R0947&qid=1642535430484>).

<sup>7</sup> <https://www.easa.europa.eu/document-library/notices-of-proposed-amendment/npa-2021-09>

- address the authorisation process for free flight balloons, considering that so far these operations were authorised by national competent authorities using the provisions defined in Appendix 2 to Regulation (EU) No 923/2012<sup>8</sup> (SERA) without any safety concern.

Considering the non-controversial nature of these two topics, it was decided to include them in this Decision after a focused consultation with the UAS technical advisory board (UAS TeB).

---

<sup>8</sup> 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) (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012R0923>).



## 2. In summary — why and what

### 2.1. Why we need to act

The Basic Regulation defines the areas of competence between EU and EASA Member States (MSs): EU is responsible for the verification of the design while EASA MSs are competent for the verification of compliance with the requirements related to the operational aspects and training. The risk assessment developed by JARUS (specific operations risk assessment (SORA)) considers holistically all aspects of the UAS operation and includes both design and operational requirements, assigning to the UAS operator the responsibility to demonstrate compliance. However, often UAS operators are not manufacturers, so they do not have the necessary data to substantiate compliance.

Moreover, the UAS Regulation was developed using a performance-based approach, defining the safety objective to be reached. To support an applicant to demonstrate compliance with the regulatory provisions, the identification of acceptable industrial standards or means of compliance developed by EASA is needed.

### 2.2. What we want to achieve — objectives

The overall objectives of the EASA system are defined in Article 1 of the Basic Regulation. This Decision will contribute to achieving the overall objectives by addressing the issues described in Section 2.1.

The specific objectives of this Decision are, therefore, to:

- increase safety, efficiency, and harmonisation of the implementation of the UAS Regulation;
- support the harmonised application of the published standard scenarios (STs) across the EASA MSs;
- foster the development of the UAS market in the EU.

### 2.3. How we want to achieve it — overview of the amendments

The overview of the proposed amendments is presented in Section 2.3 of NPA 2021-09. The following paragraphs present the major changes compared to the text proposed in NPA 2021-09. These changes are the result of the comments received on the NPA during its public consultation. Also, the two additional topics introduced after consultation of the UAS TeB are described.

#### 2.3.1. Changes to AMC1 to Article 11 (SORA)

SORA includes, as part of the operational safety objectives (OSOs), also the provisions for the design of a UAS. Depending on the level of robustness of the OSOs, compliance may be declared by the applicant, or a third-party verification may be required. To consider the peculiarity of the EU system (EASA is the competent authority for the verification of compliance with the design provisions), when the first version of SORA was introduced in the EU regulatory framework, some adaptations were included. It was clarified that when a third-party verification of the design of the UAS is required, EASA will issue a type certificate (TC) or restricted type certificate (RTC) according to Annex I (Part 21) to Regulation (EU) 748/2012.



In NPA 2020-07<sup>9</sup> an impact assessment was performed to analyse possible options related to the classification of operations conducted beyond visual line of sight (BVLOS) over a populated area, indicating as preferred option the classification of all operations conducted in populated areas in the ‘certified’ category (defined as Option 3). After analysing the information provided by the stakeholders during the consultation of the NPA, in the resulting Decision 2020/022/R<sup>10</sup> EASA opted for requiring the use of UAS with a TC or a RTC (defined as Option 2 in the impact assessment). Such option was considered more proportionate since it does not require the increase of the training of remote pilots and the robustness of operational procedures for all UAS operations conducted over populated areas.

After collecting experience from the UAS operators and NCAs, as explained in Section 2.3.2 of NPA 2021-09, in March 2021 EASA developed a more proportionate approach to assess design of UAS, called design verification report (DVR). In NPA 2021-09 EASA proposed to require the DVR for UAS intended to be operated in what is considered medium-risk operations (i.e. SAIL III and IV), keeping the TC or RTC only for higher-risk operations. This topic again attracted a large number of comments proposing a further increase in the proportionality. Several commenters claimed that after 2 years of experience in applying the UAS Regulation, thousands of UAS operations are conducted in Europe without any major accident being recorded. Industry finds challenging to step up to SAIL III operations due to the complexity and the cost to demonstrate compliance with a DVR with the potential risk that some of the operators may go out of the market. There was a general agreement on the proportionality of DVR for a SAIL IV operation.

Based on these comments and on the experience gained in these 2 years, EASA reviewed the impact assessment included in NPA 2020-07. From the perspective of the safety impact, the safety records from the operations conducted in the last 2 years show that Option 1 provides an adequate level of safety. EASA therefore agrees that verification of the design, using a DVR, is appropriate for UAS designed to be operated in SAIL IV. For operations classified in SAIL III or lower, the competent authority issuing the operational authorisation may accept a declaration of compliance for the design requirements. However, in case it is considered necessary, the competent authority may ask for additional evidence or even ask the UAS operator to use a UAS with a DVR issued by EASA. Referring to the impact assessment conducted in NPA 2020-07, this approach corresponds to Option 1, e.g. use of the data provided in Table 2 ‘Intrinsic ground risk classes (GRC) Determination’ of JARUS SORA, Main Body, edition 2.0. As a consequence, SORA has been amended accordingly.

In addition, when a UAS operator claims a design mitigation to reduce the ground risk (referred as M2 in SORA) with a high level of robustness, the verification by EASA through a DVR, limited to the system supporting the mitigation only, is considered appropriate. This is valid independently of the SAIL level of the operation. For M2 mitigations with medium level of robustness, EASA finalised a means of compliance (MoC) allowing UAS manufacturers to declare compliance. Other types of ground mitigations, such as M1 using tethered aircraft, do not require verification from EASA. Compliance will be verified by the competent authority issuing the operational authorisation.

A similar approach is used for enhanced containment (according to SORA Step#9) where the following options are considered appropriate:

---

<sup>9</sup> <https://www.easa.europa.eu/en/document-library/notices-of-proposed-amendment/npa-2020-07>

<sup>10</sup> <https://www.easa.europa.eu/en/document-library/agency-decisions/ed-decision-2020022r>

- verification by EASA through a DVR of the systems supporting the enhanced containment;
- manufacturer declaration of compliance with MoC SC Light UAS 2511 published by EASA. It should be noted that EASA will develop additional declarative MoC for enhanced containment;
- assessment by the competent authority, in particular for those configurations where containment is ensured by a tether.

In SORA Step #9 a note has been added to clarify that in the case of basic containment, the UAS is not required to be equipped with systems with independence, separation and redundancy.

### 2.3.2. Changes to Annex B to AMC1 to Article 11

According to SORA, the compliance with provisions defined with a high level of robustness should be verified by a competent third party. It has been clarified that in the case of design-related provisions, EASA is the third party, while in all other cases it is the competent authority of the EASA MS or an entity designated by it. For tethered operations, the assessment of compliance with the technical design criterion #1, related to the mitigation M1, is under the competence of the competent authority, as the design verification is limited to the strength of the tether and its attachment to the ground and to the UA. In this case, it is not appropriate to require a DVR issued by EASA.

Moreover, the possibility to declare compliance with MoC Light-UAS.2512, recently published by EASA, was included. MoC Light-UAS.2512 defines the possibility to declare compliance with the requirements of the M2 with medium level of robustness.

### 2.3.3. Changes to Annex C to AMC1 to Article 11

SORA Annex C refers to 400 ft as the limit for low-level flights. The original JARUS SORA instead used 500 ft. The change in the EU SORA was introduced to add consistency with the 'open' category where the limit is 400 ft. At the time, it was not considered that the limit identified in Annex C refers to the height of the operational volume, while in the 'open' category the 400 ft refer to the height of the flight geography. So, this Decision reinstates the correct value of 500 ft.

### 2.3.4. Changes to Annex E to AMC1 to Article 11

As for Annex B, the competent third party to assess evidence has been clarified (see Section 2.3.2).

In addition, OSO #2 has been modified to reflect the European peculiarity. The original OSO #2 addresses UAS manufacturers considering both design and production. In the EU, the verification of design is under the competence of the EU while the verification of the production is under the competence of EASA MSs. Therefore, for OSO#2 two criteria are set, one for design and one for production organisations.

In addition, for all design-related OSOs, the text in the level of assurance has been updated, introducing:

- the need for a DVR for UAS operated in SAIL IV; and
- compliance with Regulation (EU) No 748/2012 (Part 21) for SAIL V and VI.

### 2.3.5. Predefined risk assessments (PDRAs) G-01, G-02 and G-03

In the case of enhanced containment, the UAS needs to comply with some technical requirements defined in SORA Step#9. As stated above, EASA developed MoC SC-light UAS 2511 that is applicable to PDRAs G-01, G-02 and G-03 when they need to comply with the enhanced containment requirement. Therefore, the possibility to declare that the drone is compliant with MoC SC-light UAS 2511 was introduced. Moreover, in PDRAs G-02 and G-03 a few mistakes were corrected such as:

- the provision to keep the UA clear of clouds, which clearly is not applicable for very low-level operations as the ones considered in PDRAs G02 and G-03;
- the maximum vertical distance above obstacle listed in point 3.9.1 of PDRA G-03 that was not consistent with the one contained in the introduction of the PDRA.

### 2.3.6. Predefined risk assessments PDRA S-01

PDRA S-01 was developed to address the same operations as those of STS 01 without the need to use a UAS with a class label C5. Some EASA MSs highlighted that with small amendments, that do not affect the level of risk or the type of mitigations to be applied, the same PDRA may be used for additional operations such as agricultural spraying.

Therefore, the following modifications were introduced:

- the weight limitation of 25 kg has been removed, keeping the limit of 3 m as maximum dimension, considering that the risk class in SORA is driven only by this last factor;
- in the case of operations where UAS operators spray pesticides or other chemical products, a note reminding that compliance with Directive 2009/128/EC is required has been added;
- a note specifying that the operational authorisation may define the locations where the operation can be carried out, in a generic way, as long as the operator has clear procedures on how to assess that the location meets the condition of the PDRA;
- in the table defining the values of the ground risk buffer, very low-level operations were not considered. Therefore, an additional value applicable to operations at a height of up to 10 m was added;
- in the case of operations in controlled airspace, the need to develop procedures to communicate with the entity responsible for the management of the airspace was added;
- the possibility to identify different training for the remote pilot, acceptable to the NCA, compared to the STS certificate of remote pilot competence was added;
- the possibility of not using a UAS compliant with the enhanced containment requirement in case the operator intends to conduct operations only in areas where the adjacent volume has a low risk.

### 2.3.7. Operations with unmanned free balloons

Unmanned free balloons fall within the definition of UAS under the Basic Regulation. Therefore, their operations should be authorised according to the UAS Regulation. Since such operations typically exceed a height of 120 m and the remote pilot cannot control the trajectory of the balloon, these operations shall be usually performed in the 'specific' category.





According to Article 5 of the UAS Regulation, operations in the ‘specific’ category are subject to an operational authorisation. At the same time, the SERA Regulation also requires that all unmanned free balloon operations are authorised, detailing in Appendix 2 the authorisation procedure.

After assessing the requirements in SERA, EASA concluded that these requirements are equivalent to those defined in the UAS Regulation. Therefore, an authorisation issued to operate unmanned free balloons according to SERA may be considered equivalent to the authorisation required by the UAS Regulation for operations in the ‘specific’ category.

#### **2.4. What are the stakeholders’ views**

During the consultation of the draft regulatory material, EASA received 979 comments from 74 stakeholders, notably from NCAs, UAS operators, UAS manufacturers, air navigation services providers and research institutes. Of those, more than 300 comments were related to the changes proposed in the NPA to SORA and the verification of design of UAS.

In general, the additional clarity on the design verification process was very much appreciated. However, almost all stakeholders considered the proposal to apply a DVR to UAS operated in SAIL III and IV not proportionate.

After discussion in several workshops, EASA decided to modify the approach considering a DVR appropriate only for UAS designed to be operated in SAIL IV, or when a technical mitigation with a high level of robustness is applied.

A detailed comment-response document (CRD) will be available at a later stage.



### 3. What are the expected benefits and drawbacks of the regulatory material

Based on the amendments to the AMC and GM to the UAS Regulation, the harmonised implementation of several elements will be fostered.

UAS operators may propose solutions, and the competent authorities of EASA MSs may issue operational authorisations based on additional guidance provided by EASA.

The requirements related to operations classified in SAIL III provide a proportionate framework for UAS operators by limiting the verification of the design of a UAS by EASA to operations in SAIL IV. This framework would overall foster the development of the UAS market.

PDRAs may be used for more UAS operations.

No drawbacks have been identified.



## 4. Monitoring and evaluation

Monitoring is a continuous and systematic process of data collection and analysis about the implementation/application of a rule/activity. It generates factual information for future possible evaluations and impact assessments; it also helps to identify actual implementation problems.

During standardisation meetings and audits to NCAs, EASA will verify the application of the AMC and GM, and will collect feedback to be considered for possible future amendments.

The following indicators will be checked:

What to monitor	How to monitor	Who should monitor	How often to monitor
Occurrences, incidents, and accidents involving UASs that conduct BVLOS operations over populated areas and assemblies of people	European Co-ordination Centre for Accident and Incident Reporting Systems (ECCAIRS)	EASA and/or NCAs	On a regular (e.g. yearly) basis



## 5. Proposed actions to support implementation

EASA will perform the following actions:

- focused communication for Advisory Body meeting(s) (MAB, UAS TeB);
- promotion material published on the EASA website;
- dedicated thematic webinars;
- series of implementation support visits organised based on the regional principle.



## 6. References

### 6.1. Related EU regulations

Commission Implementing Regulation (EU) 2019/947 of 24 May 2019 on the rules and procedures for the operation of unmanned aircraft (OJ L 152, 11.6.2019, p. 45)

### 6.2. Related EASA decisions

Executive Director Decision 2019/021/R of 9 October 2019 issuing Acceptable Means of Compliance and Guidance Material to Commission Implementing Regulation (EU) No 2019/947

### 6.3. Other reference documents

— n/a

