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BSI Standards Publication

## Test methods for civil multi-copter unmanned aircraft system

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## National foreword

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The UK participation in its preparation was entrusted to Technical Committee ACE/20, Unmanned Aircraft Systems.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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## Test methods for civil multi-copter unmanned aircraft system

*Méthodes d'essai pour les multicoptères civils télépilotés*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 16, *Unmanned aircraft systems*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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## Introduction

Multi-copter unmanned aircraft system (UAS) is the most popular UAS in the market at the time of publication of this document, but the quality of products can vary significantly. However, it is difficult to evaluate the function and performance of these products as there is no unified standard test method and means to evaluate and test the multi-copter UAS. Therefore, the development of test method standards for civil multi-copter UAS is intended to provide a basis for product testing, in order to improve the product quality of the multi-copter UAS as a whole.



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# Test methods for civil multi-copter unmanned aircraft system

## 1 Scope

This document specifies test methods for civil electric multi-copter unmanned aircraft systems (UAS). This document is intended to be a general standard for testing the overall UAS functionality with the support of subsystems.

It is applicable to the category of civil electric multi-copter UAS with maximum take-off mass (MTOM) level I to level V according to ISO 21895. The configuration control and subsystem (e.g. energy system and flight control system tests) test methods are out of the scope of this document. In addition, test methods for operations in snow and icing conditions are not included either, manufacturers have procedures identified to cope with flight in those conditions.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21384-4, *Unmanned aircraft systems — Part 4: Vocabulary*

ISO 21895, *Categorization and classification of civil unmanned aircraft systems*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 21384-4, ISO 21895 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### **mission profile**

specified mission to be performed, including the event and the environment sequence that the test article experiences

### 3.2

#### **multi-copter UAS**

rotorcraft lifted by two or more power-driven rotors on a substantially vertical axis, capable of hovering, taking off and landing vertically

## 4 General principles

### 4.1 Test purpose

The purpose of the test is to:

- a) check whether the functionality, performance of the UAS meets the design requirements;