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Standard Terminology for Unmanned Aircraft Systems¹

This standard is issued under the fixed designation F3341/F3341M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This terminology standard covers definitions of terms and concepts related to unmanned aircraft systems (UAS). It is intended to encourage the consistent use of terminology throughout all ASTM unmanned aircraft system standards and is intended to complement F3060 Standard Terminology for Aircraft. Terms already included in Terminology F3060 are not duplicated here.

1.2 A definition adapted from a particular standard within the ASTM F38 collection of standards is not limited to use within only those standards.

1.3 Additional terms specific to a given standard may be defined solely within that standard and not included here.

1.4 *Units*—The definitions of units will be as defined in NIST SP 330, and will not be duplicated in this document. NIST SP 330 is available on the internet.² The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This terminology is under the jurisdiction of ASTM Committee F38 on Unmanned Aircraft Systems and is the direct responsibility of Subcommittee F38.03 on Personnel Training, Qualification and Certification.

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² Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.

2. Referenced Documents

2.1 ASTM Standards:³

- F2395 Terminology for Unmanned Aircraft Systems (Withdrawn 2014)⁴
- F2908 Specification for Unmanned Aircraft Flight Manual (UFM) for an Unmanned Aircraft System (UAS)
- F2909 Specification for Continued Airworthiness of Lightweight Unmanned Aircraft Systems
- F2910 Specification for Design and Construction of a Small Unmanned Aircraft System (sUAS)
- F2911 Practice for Production Acceptance of Small Unmanned Aircraft System (sUAS) (Withdrawn 2023)⁴
- F3002 Specification for Design of the Command and Control System for Small Unmanned Aircraft Systems (sUAS)
- F3060 Terminology for Aircraft
- F3178 Practice for Operational Risk Assessment of Small Unmanned Aircraft Systems (sUAS)
- F3196 Practice for Seeking Approval for Beyond Visual Line of Sight (BVLOS) Small Unmanned Aircraft System (sUAS) Operations
- F3201 Practice for Ensuring Dependability of Software Used in Unmanned Aircraft Systems (UAS)
- F3266 Guide for Training for Remote Pilot in Command of Unmanned Aircraft Systems (UAS) Endorsement
- F3269 Practice for Methods to Safely Bound Behavior of Aircraft Systems Containing Complex Functions Using Run-Time Assurance
- F3298 Specification for Design, Construction, and Verification of Lightweight Unmanned Aircraft Systems (UAS)
- F3322 Specification for Small Unmanned Aircraft System (sUAS) Parachutes
- F3330 Specification for Training and the Development of Training Manuals for the UAS Operator
- F3364 Practice for Independent Audit Program for Unmanned Aircraft Operators
- F3365 Practice for Compliance Audits to ASTM Standards on Unmanned Aircraft Systems

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ The last approved version of this historical standard is referenced on www.astm.org.



F3366 Specification for General Maintenance Manual (GMM) for a small Unmanned Aircraft System (sUAS)
 F3379 Guide for Training for Public Safety Remote Pilot of Unmanned Aircraft Systems (UAS) Endorsement
 F3389/F3389M Test Method for Assessing the Safety of Small Unmanned Aircraft Impacts
 F3411 Specification for Remote ID and Tracking
 F3423 Specification for Vertiport Design
 F3442/F3442M Specification for Detect and Avoid System Performance Requirements
 F3548 Specification for UAS Traffic Management (UTM) UAS Service Supplier (USS) Interoperability
 F3563 Specification for Design and Construction of Large Fixed Wing Unmanned Aircraft Systems
 2.2 *Other Documents:*
 14 CFR 107 Small Unmanned Aircraft Systems⁵
 ICAO UTM Framework Unmanned Aircraft Systems Traffic Management (UTM) – A Common Framework with Core Principles for Global Harmonization⁶
 NIST SP 330 The International System of Units²

NOTE 1—A source reference will be given for all terms herein. That original source may no longer contain the definition or that definition may have been edited for inclusion herein.

3. Terminology

3.1 Definitions:

associated elements, *n*—those elements that are not airborne or directly affixed to the unmanned aircraft (UA) and are necessary to interact with the UA for safe initiation, conduct, or termination of flight, for all normal, abnormal, or emergency operations.

⁵ Available from U.S. Government Publishing Office (GPO), 732 N. Capitol St., NW, Washington, DC 20401, <http://www.gpo.gov>.

⁶ Available from International Civil Aviation Organization (ICAO), 999 Robert-Bourassa Boulevard, Montréal, Québec H3C 5H7, Canada, <https://www.icao.int>.

constrained-space operation, *n*—an unmanned aircraft systems operation in which UA's flight environment is limited by walls, ceiling, net, or other physical limitation of the volume; also referred to as an “indoor operation.” This definition is not to be used to denote virtual constraints, such as geofences or geocages.

strategic deconfliction, *n*—the arrangement, negotiation, coordination, and prioritization of intended operational volumes, routes, or trajectories to minimize the likelihood of airborne conflicts between operations. **(adapted from ICAO UTM Framework)**

tethered aircraft, *n*—a configuration where the unmanned aircraft remains securely attached (tethered) via a physical link to an anchor (a surface vehicle, the ground, or other object on the ground) at all times while it is flying and is unable to cause the anchor to move.

DISCUSSION—This is different from the recreational practice of “control line model aircraft,” where the aircraft is flown in a circular pattern in close proximity to the remote pilot, who is acting as the anchor.

unmanned aircraft, UA, *n*—an aircraft operated without the possibility of direct human intervention from within or on the aircraft. **14 CFR 107.3**

visual range, *n*—distance that unaided (except for normal prescription eyewear) human vision can effectively monitor and provide deconfliction during a UAS operation. **F2395**

3.2 Abbreviations and Acronyms:

UA—unmanned aircraft

4. Keywords

4.1 aircraft; remotely piloted aircraft; terminology; sUAS; UAS; unmanned aircraft system

APPENDIXES

(Nonmandatory Information)

X1. AIRWORTHINESS TERMINOLOGY

INTRODUCTION

This terminology appendix contains a listing of terms, abbreviations, acronyms, and symbols related to UAS airworthiness covered by published ASTM Subcommittee F38.01 standards. The intent is to provide baseline definitions that will result in consistent definitions across all of the ASTM UAS standards.

As terms, abbreviations, acronyms, and symbols are incorporated into new standards, and actually used, they may require some slight modification prior to being incorporated into the mandatory section of F3341/F3341M.