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Standard Practice for Remote ID Means of Compliance to Federal Aviation Administration Regulation 14 CFR Part 89¹

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1. Scope

1.1 This practice provides a Means of Compliance (MOC) that gives sufficient clarity to the Unmanned Aircraft System (UAS) or Broadcast Module manufacturers to produce a compliant Remote ID (RID) System (RIDS) such that submitting a Declaration of Compliance² (DOC) to this MOC will satisfy the requirements of the Federal Aviation Administration (FAA) 14 CFR Part 89 (Part 89) rule.³ This practice also explains what to expect from aircraft operating in compliance to this MOC.

1.2 The FAA provided three options to comply with the Remote ID regulations: Standard Remote ID UAS, Remote ID Broadcast Modules, and FAA-recognized identification areas (FRIAs). The scope of this MOC is to cover both Standard RID and RID Broadcast Modules.

1.3 The FRIA portion of the rule is out of scope since it provides a means to avoid the technical RID requirements by operating within administrative boundaries.

1.4 Both SI and non-SI units are used in this document. Since this is an aviation standard and it addresses FAA rules, some units are used in preference of being consistent with industry and regulatory norms.

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¹ This practice is under the jurisdiction of ASTM Committee F38 on Unmanned Aircraft Systems and is the direct responsibility of Subcommittee F38.02 on Flight Operations.

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² See FAA Advisory Circular 89-2, https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_89-2.pdf.

³ Available from <https://www.federalregister.gov/documents/2021/01/15/2020-28948/remote-identification-of-unmanned-aircraft>. Portions of Part 89 are reproduced (in italics) in Section 7 and Appendix X1.

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1.6 *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.*

1.7 *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.*

2. Referenced Documents

2.1 ASTM Standard:⁴

F3411 Specification for Remote ID and Tracking

2.2 Other Documents:

14 CFR Part 89 Remote Identification of Unmanned Aircraft³

47 CFR Part 15 Radio Frequency Devices⁵

Advisory Circular AC 89-2 Declaration of Compliance Process for Remote Identification of Unmanned Aircraft²

ANSI/CTA-2063-A Small Unmanned Aerial Systems Serial Numbers⁶

Technical Standard Order TSO-C199 Traffic Awareness Beacon System (TABS)⁷

⁴ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁵ Available from <https://www.ecfr.gov/current/title-47/chapter-I/subchapter-A/part-15>.

⁶ Available from Consumer Technology Association, 1919 S. Eads Street, Arlington, VA 22202, <https://www.cta.tech/>.

⁷ Available from [https://rgl.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/0/1600df588a6f53ae86257d710070d105/\\$FILE/TSO-C199.pdf](https://rgl.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/0/1600df588a6f53ae86257d710070d105/$FILE/TSO-C199.pdf).

WGS-84 World Geodetic System⁸

3. Significance and Use

3.1 The general approach to this practice is to serve as an “overlay” of requirements to the ASTM F3411-22a Standard Specification for Remote ID and Tracking by identifying mandatory portions, substituting values as needed, overriding items that may be optional, and providing additional requirements that are beyond the scope of Specification F3411, yet are necessary to provide proper guidance to meet the requirements set forth in Part 89.

3.2 Furthermore, this practice provides additional details on minimal testing requirements for those submitting a DOC based on this MOC.

4. Subset of Options in the F3411 Specification Considered

4.1 The F3411 Specification provides four broadcast methods and one network method to implement RID:

4.1.1 Bluetooth⁹ Legacy Advertising (also known as the “Bluetooth 4” method): Specification F3411, Subsection 5.4.6.

4.1.2 Bluetooth 5 Long Range + Extended Advertising (also known as the “Bluetooth 5” method), Specification F3411, Subsection 5.4.7: this includes the requirement to implement Bluetooth Legacy, Specification F3411, Subsection 5.4.6.

4.1.3 Wi-Fi¹⁰ Neighbor Awareness Networking (NAN): Specification F3411, Subsection 5.4.8.

4.1.4 Wi-Fi Beacon: Specification F3411, Subsection 5.4.9.

4.1.5 Network RID with Service Suppliers, Display Providers, and Discovery and Synchronization Service (DSS): Specification F3411, Subsection 5.5.

4.2 To meet the “broadcast,” “error correction,” and “maximum range” requirements of Part 89, and to converge on better interoperability, this MOC requires broadcasting using methods 4.1.2 or 4.1.4.

5. Requirements and Exceptions from the F3411 Specification

5.1 The requirements in this MOC are design requirements of UAS Remote ID. They are not operational requirements. Although a UAS may be designed to these requirements, there may be times when, operationally, certain information cannot perform to the intended requirements. For example, Global Navigation Satellite Systems (GNSS) may have limited reception in certain environments (such as indoors). These requirements do not seek to remedy those conditions. Both Standard RID and Broadcast Modules shall implement all mandatory requirements in the following sections of the F3411 Specification:

5.1.1 Subsections 5.1 through 5.4.5.

5.1.2 Either (or both) of the following:

5.1.2.1 If Implementing Bluetooth, all of Subsection 5.4.6 and all of Subsection 5.4.7 (includes both Bluetooth 5 and Bluetooth 4).

5.1.2.2 If Implementing Wi-Fi Beacon, all of Subsection 5.4.9.

5.1.3 The following FAA requirements take precedence over certain requirements, options, and values in the F3411 Specification.

5.1.3.1 Specification F3411, Subsection 5.4.3, only Wave Law “Type 1” in Tables A3.2 and A3.3 shall apply.

5.1.3.2 Specification F3411, Subsection 5.4.5.6, for Standard RID, the Basic ID message shall include either:

(1) The Unmanned Aircraft (UA) serial number in the format required by the F3411 Specification (in the format of ANSI/CTA-2063-A); or

(2) A unique Session ID (UTM Assigned universally unique identifier (UUID) or Specific Session ID) as described in Specification F3411, Table 1 and Subsection 5.4.5.6, which can be resolved to the corresponding serial number, with access limited to authorized parties only, through a system and process accepted by the FAA.

For Broadcast Modules, the Basic ID message shall be the broadcast module’s serial number in the format required by the F3411 Specification (which requires the format of ANSI/CTA-2063-A).

5.1.3.3 Specification F3411, Subsection 5.4.5.18, The System Message is required.

5.1.3.4 In the System Message, the following fields are required (the remaining fields in the System Message can be filled with default values when not used):

(1) Operator Location/Altitude Type

(2) Operator Latitude

(3) Operator Longitude

(4) Operator Altitude

(5) Timestamp

5.1.3.5 For Standard Remote ID, the Operational Status field (Specification F3411, Subsection 5.4.5.7) in the Location/Vector Message is required.

5.1.3.6 For Standard Remote ID, the Operator Location/Altitude Type (Specification F3411, Subsections 5.4.5.18–5.4.5.19) in the System Message shall be either “1. Dynamic” and use a system that accurately (as described in MOC 7.1) reports the location of the ground control station (GCS); or “2. Fixed” where the location is automatically programmed into the UAS based on the actual location of the GCS within the accuracy requirements of Part 89 (as described in MOC 7.1). The GCS location must correspond with the location of the operator.

NOTE 1—UAS designers and producers may determine which part or element of the control station represents the location to be incorporated into “System Message” if it corresponds to the actual operator’s location.

5.1.3.7 For Broadcast Modules, the Operator Location/Altitude Type (F3411, Subsection 5.4.5.18) in the System Message shall be “0. Take Off.” The source of the “operator location” shall be based on the location of take off within the accuracy requirements of Part 89 (as described in 7.1).

⁸ Available from International Civil Aviation Organization (ICAO), 999 Robert-Bourassa Boulevard, Montréal, Quebec, Canada H3C 5H7, <https://www.icao.int/safety/pbn/Documentation/EUROCONTROL/Eurocontrol%20WGS%2084%20Implementation%20Manual.pdf>.

⁹ Used throughout the practice, Bluetooth is a registered trademark of Bluetooth SIG, Inc., 5209 Lake Washington Blvd. NE, Suite 350, Kirkland, WA 98033.

¹⁰ Used throughout the practice, Wi-Fi is a registered trademark of Wi-Fi Alliance, 10900-B Stonelake Boulevard, Suite 126, Austin, TX 78759.