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UAS Traffic Management (UTM) —

Part 8: Remote identification

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Foreword

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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).

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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 Organisation (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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UAS Traffic Management (UTM) —

Part 8: Remote identification

1 Scope

This document provides a high-level concept and framework of UAS remote identification that is mainly used to electronically identify an in-flight UA. This document defines UAS remote identification generic concept, common framework, and minimum performance standards for direct remote identification.

This document does not cover requirements for modules installed in UA nor requirements for network remote identification.

This document does not cover the identity of other Information Technology (IT) entities, such as the station of the Remote Pilot or the workstation of the Fleet Manager or any other connected entity.

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/DIS 23629-5, *UAS Traffic Management (UTM) — Part 5: UTM Functional Structure*

ISO/FDIS 23629-12, *UAS Traffic Management (UTM) — Part 12: Requirements for UTM service providers*

3 Terms and definitions

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

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

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

3.1

ADS-B

automatic dependent surveillance – broadcast

ADS is a means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link

[SOURCE: ICAO Doc 4444 PANS-ATM]

3.2

altitude

vertical distance of a level, a point or an object considered as a point, measured from mean sea level

**3.3
GCS**

ground control station
the part of a UAS that remotely controls the UA

[SOURCE: ASTM F3411-19, Standard specification for remote ID and tracking]

**3.4
height**

vertical distance of a level, a point or an object considered as a point, measured from a specified datum

4 Introduction

While UAS have been used in various commercial fields, it also increases the risks associated with unidentified UA. Safety is the top priority for national airspace in each country. Remote Identification is the ability of a UAS in flight to provide identification information that can be received by other parties. The objective of this document is to increase UAS operator accountability by removing anonymity. While network remote identification is important for UTM and safety, Direct remote identification contributes more to protect citizens in terms of security, privacy and enforcement.

Some organizations already created specific performance requirements of remote identification functions, for example, existing documents and ongoing discussion in other organizations such as ASTM International, ASD-STAN and EUROCAE (see Figure 1). ISO/TC20/SC16 recognise these models share a lot of common aspects and concepts.

NOTE 1 ASTM F3411-19, Standard specification for remote ID and tracking.

NOTE 2 prEN 4709-002, Aerospace series – Unmanned Aircraft Systems -Part 002: Direct Remote Identification.

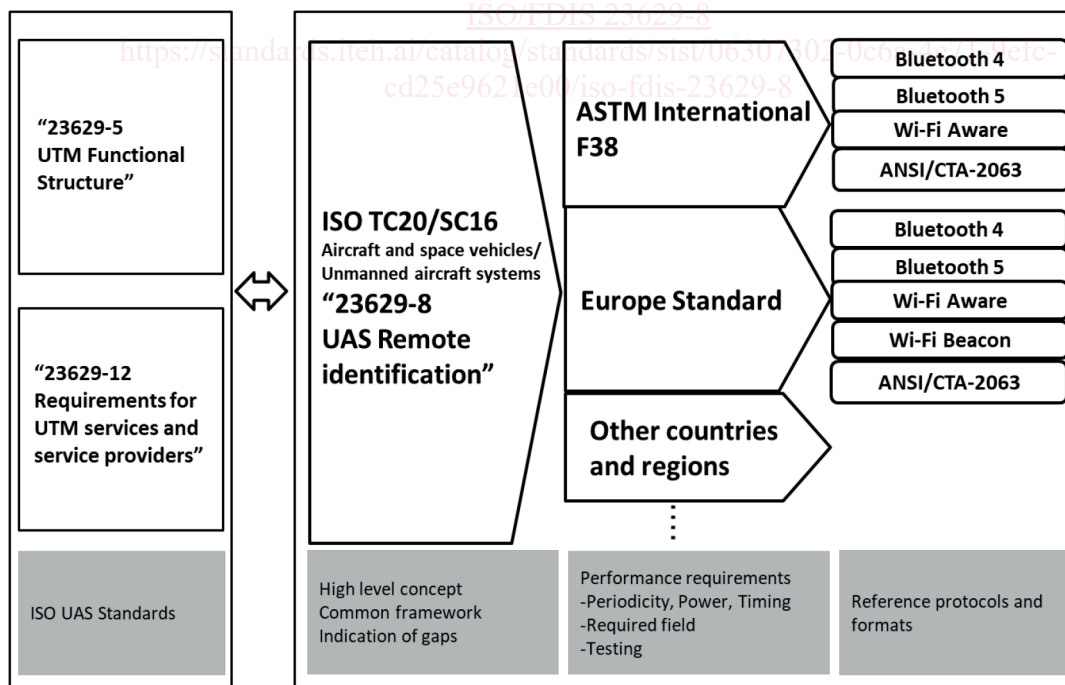


Figure 1 — Document structure of remote identification

The document is applicable to UAS that operate at low-altitude over diverse environments including but not limited to rural, urban, networked, network degraded, and network denied environments, regardless of airspace class.

This document does not purport to address UAS operating with approval to use ADS-B or secondary surveillance radar transponders nor does it purport to solve ID needs of UAS for all operations.

5 UAS Remote Identification Overview

5.1 General

UAS remote identification provides a means to address public concerns and provide address public safety vulnerabilities associated with low altitude UAS operations, including privacy and security threats. UAS remote identification allows electronic identification of a UA through use of a unique identifier (similar in concept to an automobile license plate). This clause provides a conceptual overview of UAS remote identification and minimum requirements of direct remote identification. Specific requirements are standardized in detail by ASTM international, ASD-STAN and each country or region body.

The intention is to provide a framework to understand the generic concept and method of UAS remote identification and some requirements in this standard.

5.2 Classification of UAS Remote Identification

UAS remote identification is composed of categorise as

- a) Direct remote identification (the top of the [Figure 2](#))

Direct remote identification uses the transmit protocol for devices such as smartphones, which allows the device to receive directly from the UA without having to complete a two-way connection. Pervasive technologies such as Bluetooth or Wi-Fi apply to this method.

- b) Network remote identification (the bottom of the [Figure 2](#))

Network remote identification is based on obtaining UAS remote identification information via the internet from UA directly or indirectly with the UA or supporting GCS. This document does not provide requirements of networked remote identification.

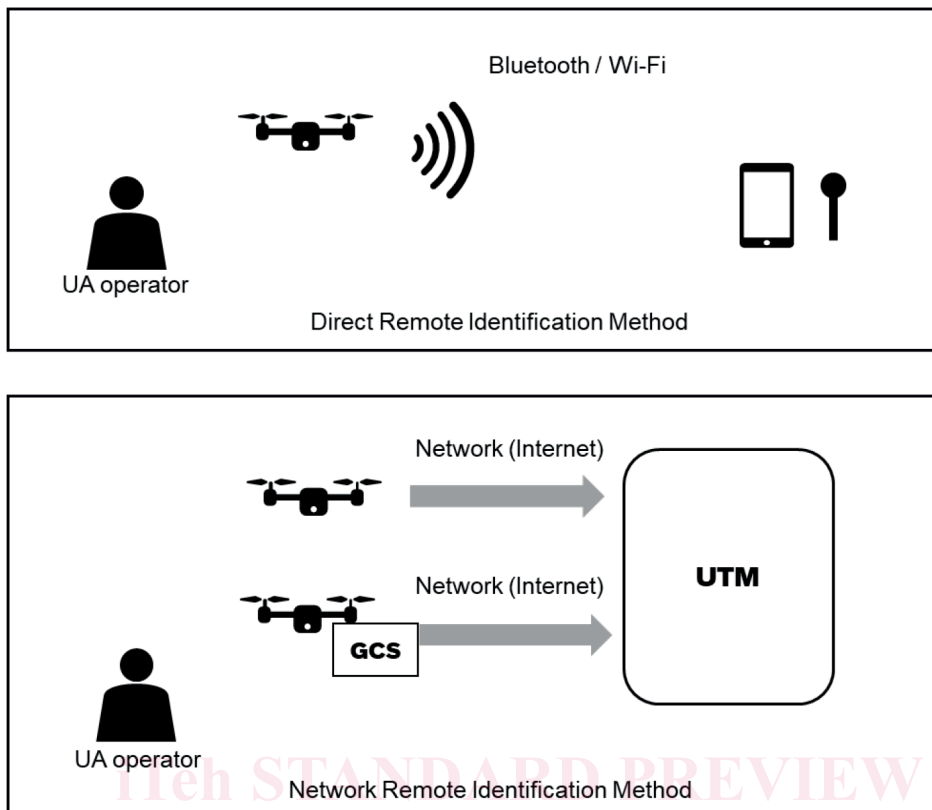


Figure 2 — UAS remote identification overview.

6 Direct Remote Identification

6.1 General

Equipment on participating UAS continuously transmits remote identification data using one of the transmit protocols (Wi-Fi/Bluetooth). It is possible that additional transmit protocols will be added in the future as warranted by available technology. The initial technologies were selected for compatibility with commonly carried hand-held devices such as smartphone or receiver on ground (see [Figure 3](#)). However, equipment to receive the broadcast data is not part of this document. Other implementations, such as receivers not integrated with hand-held devices to get messages from UA or add-on device, are possible,

Both Bluetooth and Wi-Fi include messages broadcast at a certain rate to advertise the presence of the associated device. These advertisements normally allow other devices to discover and establish connections with the associated device, but the advertisements themselves can carry a payload. These advertisements contain the direct remote identification data. A hand-held device does not need to establish a connection to receive direct remote identification data, just receive and process the advertisements.

Direct remote identification can be used anywhere, but is necessary in areas where network coverage is not available, unreliable, or has been disrupted.

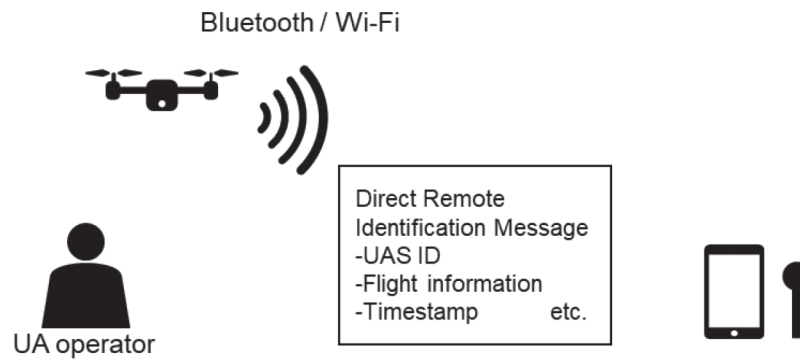


Figure 3 — Direct remote identification overview

6.2 Direct Remote Identification message

Direct remote identification messages are packed into lightweight direct broadcast packets within Wi-Fi or Bluetooth advertisements. In order to identify a UA remotely, the message includes a unique UAS ID within the national air space, flight information and timestamp. In addition, that includes authentication information defined by civil aviation authorities of each country as necessary.

UAS ID shall be one or more of the following and comply with specific standards.

- a) ANSI/CTA-2063-A-2019 Serial Number format
- b) Civil Aviation Authority issued Registration ID
- c) UTM Assigned ID called Session ID

In addition to the UAS ID, the UA shall send the flight information below.

- a) Operational status of the UA (e.g. Ground, Airborne, Emergency)
- b) Latitude
- c) Longitude
- d) Altitude or height
- e) Ground speed
- f) Timestamp

The UA should send the flight information below.

- g) Direction
- h) Vertical Speed

6.3 Transmission method and transport protocols

This Clause describes requirements for the RF broadcast of remote identification messages from a participating UA. Below broadcast transport mechanisms that have already been standardized by industry groups. The UA shall use one or more of the following transmission methods.

- a) Bluetooth
- b) Wi-Fi

6.4 Transmission performance

Direct remote identification messages are received by hand-held device (such as smartphone) or placed receiver.

Direct remote identification messages shall be transmitted at regular intervals during flight by the UA.

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