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Minimum Aviation System Performance Standard for AMS(R)S Data and Voice Communications Supporting Required Communications Performance (RCP) and Required Surveillance Performance (RSP)

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FOREWORD

This document was prepared by Special Committee 222 (SC-222) jointly with EUROCAE Working Group 82 (WG-82) and approved by the EUROCAE Council on September 26, 2025 and the RTCA Program Management Committee (PMC) on September 25, 2025.

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- developing consensus on the application of pertinent technology to fulfill user and provider requirements, including development of minimum operational performance standards for electronic systems and equipment that support aviation; and

- assisting in developing the appropriate technical material upon which positions for the International Civil Aviation Organization and the International Telecommunication Union and other appropriate international organizations can be based.

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1 INTRODUCTION

1.1 Objective and Scope

This document contains Minimum Aviation System Performance Standards (MASPS) for Aeronautical Mobile Satellite (Route) Services (AMS(R)S) that provide safety communications to aircraft in airspace where 1) procedural separation is applied or 2) ATS surveillance services are provided. The performance defined in this document is intended to provide (1) data communication services that comply to the RCP130/A1, RCP240/A1, RCP400/A1 or RCP400/A2 standards of Required Communications Performance (RCP) for two-way, bidirectional, Controller Pilot Data Link Communications (CPDLC) and to the RSP160/A1, RSP180/A1 or RSP400/A1 standards of Required Surveillance Performance (RSP) for one-way aircraft-to-Air Navigation Service Provider surveillance-related information, and (2) voice communication services that comply to the RCP400/V_{RO} standard for two-way, bidirectional voice communications between pilots and controllers via radio operator and to the RSP400/V_{RO} standard for one-way voice communications between pilots and controllers via radio operator.

Note:

1. *RCP400/V_{RO} and RSP400/V_{RO} is for airspace where procedural separation is applied.*
2. *The voice quality defined for AMS(R)S in this document (requirement V70) is consistent with the noise expected in a jet transport aircraft.*

Requirements for data communication services are referenced to and refined from the RTCA DO-350B/EUROCAE ED-228B documents and requirements for voice services are referenced to and refined from the ICAO Performance Based Communication and Surveillance (PBCS) manual. In keeping with the intent of DO-350B/ED-228B and the PBCS manual, this document provides requirements at the Communication Service Provider (CSP) level. In addition, other requirements are refined from the ICAO AMS(R)S SARPs.

Note: This document recognises that data link communications meeting the RSP standard are traditionally associated with the surveillance community. However, at the CSP level, there is no fundamental distinction between traditional two-way communications and the one-way surveillance applications. Therefore, both RCP and RSP specifications are treated as data communications services in this document.

This document anticipates that more than one CSP may provide RCP/RSP-compliant services, and that the same CSP may also provide a different suite of services using a different satellite subnetwork for air-ground communications. Therefore, in addition to the technical requirements at the CSP level that apply to any and all of the CSPs, regardless of subnetwork, this document also provides instructions for the preparation of system-specific material related to CSP-level requirements and performance using an individual specific satellite service provider. Such system-specific information will become part of a system-specific attachment to this document.

Compliance with the standards in the main body and the related system-specific material of this document is recommended as one means of assuring that an air-to-ground/ground-to-air communications service based on a particular satellite service will perform its intended function(s) satisfactorily under conditions normally encountered in routine aeronautical operations for the designated operational environment(s). Any regulatory

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application of this document is the sole responsibility of appropriate governmental agencies.

The specific requirements for the Aircraft Earth Station (AES) element that supports a particular satellite subnetwork used in such an AMS(R)S system will be found in the appropriate Normative Appendices to DO-262/ED-243 *Minimum Operational Performance Standards (MOPS) for Avionics Supporting Next Generation Satellite Systems (NGSS)*. The latest revision of that document should be consulted for the technical requirements related to the design and performance of AES equipment used in the system described in this document.

1.2 Document Overview

This document is organised as follows.

The main body of the document follows the RTCA/EUROCAE guidelines for MASPS preparation. After this initial introductory section, Section 2 contains the system requirements at the CSP level. Most of these requirements are presented in tabular form to simplify the cross-reference matrices required in the system-specific material. Section 3 is retained to maintain compliance with the MASPS drafting guidelines. Section 3 content is minimal, however, because partitioning below the CSP level, if any, will be on a system-specific basis, and will be covered in the system-specific material. The RCP/RSP concept is applied at the CSP level. Section 4 contains suggested verification methods for the CSP level requirements defined in Section 2.

This document adds a Section 5 to the standard MASPS outline. Section 5 contains guidance for the preparation of system-specific attachments to this document.

System-specific material as defined in Section 5 will be provided as attachments to this document. Each system-specific attachment will describe the system that provides AMS(R)S and will contain information detailing system compliance with the requirements in the main body of this document and verification plans. Each system-specific attachment is expected to function as a stand-alone MASPS for that system.[1] Each system-specific attachment may include its own appendices, as necessary for the description and declaration of the system performance. Suggested appendices are identified in Section 5.

1.3 AMS(R)S System Overview

The boundary of the AMS(R)S system described in this document is shown in Figure 1-1. On the ground side, the AMS(R)S system receives inputs from and provides outputs to the Air Traffic Service Provider (ATSP). On the air side, the AMS(R)S system receives baseband inputs from and provides baseband outputs to the User Avionics, which typically consists of Communication Management Units (CMUs) and the Audio Management System (AMS). Networking within the aircraft and networking within the ATSP ground network is not included in the AMS(R)S system. CSP networking from the ATSP interface to the appropriate satellite service provider interface, satellite service provider networking, satellite ground facilities, satellites, and satellite system avionics[2] are included within the AMS(R)S system.

[1] Without such a system-level description, including a description of the various services provided, there will be no basis for establishing the technical requirements on the Aeronautical Earth Station (AES) described in the equivalent system-specific material in DO-262/ED-243 or successor documents.

[2] Usual practice within the community refers to the satcom-specific avionics, including antennas, as the Aeronautical Earth Station or AES.