

MANUAL FOR AERONAUTICAL MOBILE SATELLITE (ROUTE) SERVICE

Executive Summary

Satellite technology has a unique potential to satisfy many present and future communication, navigation and surveillance (CNS) needs. A key part of future system improvement is the introduction of air ground digital communication services which could provide substantial benefits in air traffic services (ATS) efficiency and capacity, satisfying the needs of air traffic safety as well. Important system considerations included world wide interoperability, access by all classes of aeronautical users, the need to accommodate evolutionary system growth in terms of functional capability and capacity in an adaptive manner, considering different requirements in different areas, and the potential for taking advantage of satellite service capability from different service providers.

The ICAO Aeronautical Communications Panel (ACP) has carried forward future air navigation systems planning that designated basic architectural concepts for using satellite communications, initially in oceanic and remote environments, and eventually in continental airspace. Progress in satellite communications for aeronautical safety is realized through the revision of Standards and Recommended Practices (SARPs) and guidance material by ICAO for the aeronautical mobile satellite (route) service (AMS(R)S), and through the interactions of ICAO with other international bodies to assure that resources are coordinated and available.

Acceptance of the applicability of data links to support air traffic services (ATS) as largely replacing voice communications requires assurance that all relevant elements of data link network(s) and sub-networks (such as a satellite sub-network) are properly coordinated and interoperable. AMS(R)S is considered a global satellite sub-network of the aeronautical telecommunications network (ATN) that provides end-to-end voice and data connectivity among end-users, such as air traffic controllers, pilots, aircraft operators. Interoperability with the ATN is assured by means of a standardized architecture for all elements of the ATN, based on ICAO SARPs and guidance material.

The objective of this Manual is to provide an overview of systems operating in the Aeronautical Mobile Satellite (Route) Service (AMS(R)S) and offer guidance on the consideration of satellite networks as a platform for AMS(R)S communications for the safety and regularity of flight. The Aeronautical Mobile Satellite (Route) Service is a service providing communications between the aircraft earth stations (on-board an aircraft) and ground stations through a satellite link for the safety, regularity and efficiency of flight. This manual is to be considered in conjunction with ICAO Standards and Recommended Practices (SARPs) as contained in Annex 10, Volume III, Part I, Chapter 4. This manual provides implementation guidance for specific satellite systems operating in the AMS(R)S.

About the document

The AMS(R)S manual is divided into the following parts:

Part I – General information on AMS(R)S

Part I contains a general description of aeronautical mobile satellite communications including information on applications, user requirements, potential operational benefits, information on standardization activities undertaken by ICAO and aviation industry bodies. Information on institutional guidelines related to AMS(R)S services, the Standards and Recommended Practices (SARPs) and AMS(R)S spectrum availability are provided.

Part II – Iridium Satellite Network

Part II of the manual deals with aeronautical mobile satellite communications provided by the Iridium satellite network. Information on the compliance with AMS(R)S SARPs and Iridium-specific performance parameters pertaining to minimum operation performance standard for avionics supporting next-generation satellite systems as specified in RTCA DO-262 is provided.

Part III – Inmarsat and MTSAT

Part III contains information on aeronautical mobile satellite communications provided by the “classic” Inmarsat and the MTSAT satellite networks.

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