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MINIMUM AVIATION SYSTEM PERFORMANCE STANDARDS (MASPS) FOR THE HIGH FREQUENCY DATA LINK (HFDL) OPERATING IN THE OPERATING IN THE AERONAUTICAL MOBILE (ROUTE) SERVICE (AM (R)S)

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Prepared by SC-188
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FOREWORD

This document was prepared by RTCA Special Committee 188 (SC-188). It was approved by the Program Management Committee on March 5, 2002.

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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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Appendices C and E are normative appendices.

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1 PURPOSE AND SCOPE

1.1 Introduction

This document contains minimum aviation system performance standards for communications utilizing High Frequency Data Link systems for the air-ground communications subnetwork in an Aeronautical Telecommunications Network (ATN) environment. The FANS 1/A data link environment is also addressed. These standards specify characteristics that should be useful to designers, installers, manufacturers, service providers and users of systems intended for operational use within the United States National Airspace System (NAS). Where systems are global in nature, the system may have international applications that are taken into consideration.

Compliance with these standards is recommended as one means of assuring that the system and each subsystem will perform its intended function(s) satisfactorily under conditions normally encountered in routine aeronautical operations for the environments intended. The MASPS may be implemented by one or more regulatory documents and/or advisory documents (e.g., certification, authorization, approval, commissioning, advisory circular, notice, etc.) and may be implemented in part or in total. Any regulatory application of this document is the sole responsibility of appropriate governmental agencies.

It is anticipated that regional service contracts may require additional declaration of performance values for smaller coverage volumes using the methodologies described in this document and its appendices.

Section 1 of this document describes a generalized High Frequency Data Link (HF Data Link) System, and the data link environment in which it is used, and provides information needed to understand the rationale for system characteristics and requirements that are stated within this document. This section also contains typical applications and envisioned operational goals and assumptions necessary to establish a basis for the subsequent sections.

Section 2 defines the general requirements of an HF Data Link subnetwork, specific requirements for its interfaces, and specific minimum Installed Communications Performance (ICP) requirements when viewed as an air/ground subnetwork of an end-to-end data network. The ICP requirements include delay, integrity, availability and continuity of service parameters.

Section 3 establishes requirements for specific information that must be provided in the system-specific attachments and establishes pro-forma tables and methodology by which that information is to be provided. The purpose of this disclosure is to provide confidence that the subnetwork design will achieve the "Point B-to-Point C" performance specified in Section , prior to the approval of that system for HF Data Link. A system-specific attachment will not require RTCA approval or publication. The ultimate proof of performance at the subnetwork level is the verification procedures of Section 4.

Section 4 describes procedures recommended for verifying compliance of the subnetwork and its elements with the minimum performance requirements in Section 2.

Appendices of this document are structured to contain either normative or informative material, and are so identified in each case. Normative appendices contain material, such as descriptions of acceptable analytic methodologies, where the inclusion of such material

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in the main body of the document would be cumbersome. The main body references appendix material wherever appropriate.

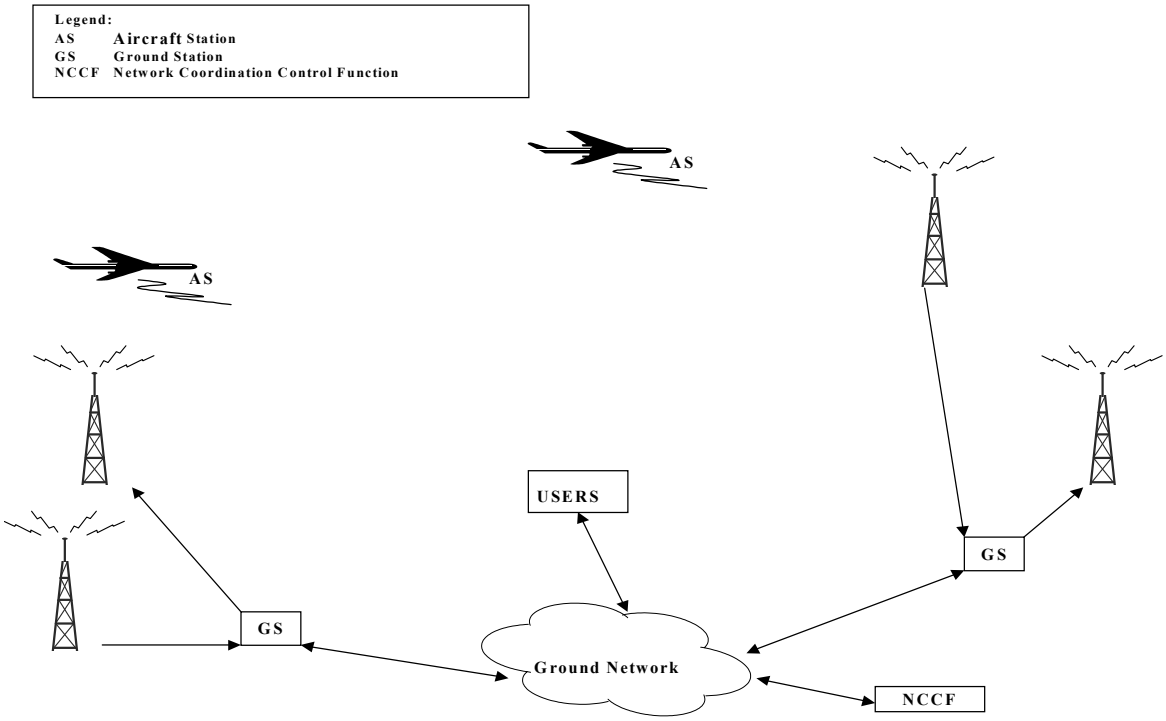


Figure 1-1: High Frequency Data Link System Elements

The words "subnetwork and its elements" as used in this document are intended to include all components that make up a major independent, necessary and essential functional part of the air-ground communications subsystem so that the system can properly perform its intended functions. If any element includes computer software, then the guidelines contained in RTCA DO-178B should be considered for ground-based, as well as airborne, applications. Users of this document are urged to become familiar with the tutorial material on HF Data Link communications and the various aeronautical communications networks contained in Appendix F.

1.2 System Overview

1.2.1 System Architecture

The HF Data Link system conforms to International Civil Aviation Organization (ICAO) Chapter 11 SARPs (see Section 1.7 for reference documents). A brief overview of the HF Data Link architecture is provided in Appendix F. Additional detail is contained in the ICAO Document 9741.

1.2.2 ICAO Global CNS/ATM and System Performance Concepts

The goal of the ICAO Global Communications, Navigation, and Surveillance/Air Traffic Management (CNS/ATM) concept is to implement a global system with cost-effective communications, navigation, and surveillance systems integrated with appropriate automation and procedural solutions leading to major enhancements in air traffic management (ATM). A primary emphasis is also placed on digital communications, supporting information transfer via both data link and voice. The ICAO concept for navigation and communications solutions emphasize satellite sys-

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