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Guidance on Aeronautical Mobile Satellite Service (AMSS) End-to-End System Performance

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FOREWORD

This document was prepared by RTCA Special Committee 165 (SC-165). It was approved by the RTCA Technical Management Committee on February 21, 1995.

RTCA, Incorporated is a not-for-profit corporation formed to advance the art and science of aviation and aviation electronic systems for the benefit of the public. The organization functions as a Federal Advisory Committee and develops consensus based recommendations on contemporary aviation issues. RTCA's objectives include but are not limited to:

- coalescing aviation system user and provider technical requirements in a manner that helps government and industry meet their mutual objectives and responsibilities;

- analyzing and recommending solutions to the system technical issues that aviation faces as it continues to pursue increased safety, system capacity and efficiency;

- 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.

The organization's recommendations are often used as the basis for government and private sector decisions as well as the foundation for many Federal Aviation Administration Technical Standard Orders.

Since RTCA is not an official agency of the United States Government, its recommendations may not be regarded as statements of official government policy unless so enunciated by the U. S. government organization or agency having statutory jurisdiction over any matters to which the recommendations relate.

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1.0 INTRODUCTION

1.1 Purpose and Scope

This document contains guidance for the system and service requirements -- performance, availability and integrity -- for an End-to-End System providing Aeronautical Mobile Satellite Services (AMSS) to end users. The primary elements of the End-to-End System are also considered individually. The material should be useful to users, designers, manufacturers and installers of the AMSS system and its elements.

Compliance with these guidelines is recommended as one means of assuring that the AMSS End-to-End system will perform its intended function(s) satisfactorily under all conditions normally encountered in aeronautical operations. Any regulatory application of this document is the sole responsibility of the appropriate authority.

A near-term perspective is taken in anticipating AMSS service development and thus in defining system and service performance criteria. Development can be foreseen in the evolution toward full utilization of AMS(R)S services, and in implementation of the Aeronautical Telecommunications Network (ATN). Certain performance criteria herein may not be met by one or more of the possible modes of operation of AMS(R)S.

Associated with this document is the companion "AMSS Minimum Operational Performance Standards," (MOPS) RTCA Document No. DO-210. It defines the parameters for the Aeronautical Earth Station (AES), a portion of the Satellite subsystem on-board an aircraft, which provides communications functions necessary for air-ground communications via satellite.

1.2 Document Organization

Section 1.0 of this document contains the Introduction, providing an overview of AMSS systems and the applications being planned by users of AMSS.

Section 2.0 establishes the End-to-End System and service criteria for AMSS communications as developed from the expected needs of users and system characteristics. These criteria are expressed in terms of performance, integrity and availability parameters. Section 2 also defines the four primary elements of the End-to-End System.

Section 3.0 addresses the system and service criteria for each of the four Subsystems comprising the End-to-End System -- the Aircraft, Satellite, Terrestrial Distribution and Ground User Subsystems. As the Satellite Subsystem plays the key role in end-to-end AMSS service, particular attention is devoted to that element.

Section 4.0 provides guidelines for verification of the system elements.

Appendix A provides explanation of key terms and acronyms in a glossary.