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Minimum Operational Performance Standards for Automatic Direction Finding (ADF) Equipment

RTCA DO-179
May 13, 1982

Prepared by:
SC-146

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FOREWORD

This document was prepared by Special Committee 146 of the Radio Technical Commission for Aeronautics (RTCA). It was approved by RTCA on May 13, 1982, and supersedes RTCA/DO-137, "Minimum Operational Characteristics Airborne Automatic Direction Finding (ADF) Systems," April 11, 1968 and RTCA/DO-142, "Minimum Performance Standards - Airborne Radio Receiving and Direction Finding Equipment Operating Within the Radio-Frequency Range of 200-850 Kilohertz," January 8, 1970.

RTCA is an association of aeronautical organizations of the United States from both government and industry. Dedicated to the advancement of aeronautics, RTCA seeks sound technical solutions to problems involving the application of electronics and telecommunications to aeronautical operations. Its objective is the resolution of such problems by mutual agreement of concerned organizations.

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Although these standards were coordinated with the European Organisation for Civil Aviation Electronics (EUROCAE) WG-7D, it should be noted that the NDB environment in Europe is significantly different from that in the United States and the work of EUROCAE addresses factors outside the scope of this document. Therefore, the standards specified in this document pertain only to the NDB environment of the United States.

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1.0 PURPOSE AND SCOPE

1.1 Introduction

This document sets forth minimum operational performance standards for automatic direction finding (ADF) equipment within the United States NDB environment. Incorporated in these standards are system characteristics that will benefit users of the system as well as designers, manufacturers and installers. These characteristics are intended to be in accord with requirements of various users. These characteristics are also intended to be in accord with the ground system characteristics and the intended operational use.

Section 1.0 of this document is intended to be tutorial in nature and provides information needed to understand the rationale for equipment characteristics and requirements stated in the remaining sections. It describes typical equipment applications and operational goals, as envisioned by the members of Special Committee 146, and is the basis for the standards stated in Sections 2.0 through 4.0. Definitions and assumptions essential to proper understanding of this document are also provided in Section 1.0.

Section 2.0 contains the minimum performance standards for the equipment. These standards define the required performance under standard operating conditions and stressed physical environmental conditions. It also details the recommended bench test procedures necessary to demonstrate compliance.

Section 3.0 describes the performance required of the installed equipment. Tests for the installed equipment are included when performance cannot be adequately determined through bench testing.

Section 4.0 describes the operational characteristics for equipment installations and defines conditions that will assure the operator that operations can be conducted safely and reliably in the expected operational environment.

Compliance with these standards by manufacturers, installers and users is recommended as a means of assuring that the equipment will satisfactorily perform its intended function(s) under all conditions normally encountered in routine aeronautical operations.

If the equipment implementation includes a computer software package, the guidelines contained in RTCA/DO-178, "Software Considerations in Airborne Systems and Equipment Certification," November 18, 1981, should be considered.

It is recognized that any regulatory application of this