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Minimum Operational Performance Standards for  
Required Navigation Performance  
for Area Navigation

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## **Foreword**

This report was prepared by RTCA Special Committee 181 and approved by the RTCA Program Management Committee (PMC) on October 28, 2003.

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## 1.0 Purpose and Scope

### 1.1 Introduction

This document contains 2D Minimum Operational Performance Standards (MOPS) for airborne area navigation (RNAV) equipment operated in a Required Navigation Performance (RNP) or conventional RNAV operational environment. These standards specify system characteristics that should be useful to designers, manufacturers, installers and users of the equipment. General guidance for vertical navigation is provided in Appendix H, consistent with that provided in RTCA DO-236A. Future revisions of this document will further address 3D and 4D requirements.

Equipment conforming to the requirements of this document are herein referred to as “RNP RNAV” equipment. This term merges the ICAO *Manual on Required Navigation Performance* (ICAO Doc. 9613) accuracy requirement with containment, and area navigation functional and performance requirements contained in RTCA DO-236A *Minimum Aviation System Performance Standards: Required Navigation Performance for Area Navigation*. RNP RNAV equipment provides a level of confidence for navigation accuracy while providing a reliable, predictable, and repeatable ground track.

Compliance with these standards is recommended as one means of assuring that the equipment will perform its intended function(s) satisfactorily under all conditions normally encountered in routine aeronautical operations. Any regulatory application of this document is the sole responsibility of the appropriate governmental agencies.

Section 1.0 of this document 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 Special Committee 181, and forms the basis for standards stated in Sections 2.0 through 3.0. Definitions and assumptions essential to proper understanding of this document are also provided in this section.

Section 2.0 contains the minimum performance standards for the equipment. These standards specify the required performance under standard operating conditions and stressed physical environmental conditions. Also included are 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.

Appendix A contains glossary, acronyms, and abbreviations.

Appendix B contains example system compliance analysis.

Appendix C contains navigation system requirements and infrastructure characteristics.

Appendix D contains leg type definitions.