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## **Minimum Operational Performance Standards for Nose-Mounted Radomes**

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## FOREWORD

This document was prepared by RTCA Special Committee 173 (SC-173). It was approved by the RTCA Technical Management Committee on January 14, 1993.

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## **EXECUTIVE SUMMARY**

In response to the development of Predictive Windshear Weather Radar systems, RTCA Special Committee 173 (SC-173) was formed to prepare the minimum operational performance standards (MOPS) for this category of weather radar system. At the beginning of this activity, it was found that the nose-mounted radome characteristics have a significant impact on a windshear detection system, and that its performance requirements would need to be established. Until now, there has been no specific MOPS defining the electromagnetic performance requirements and other guidelines for nose-mounted radomes. A special Working Group of SC-173 was formed to establish these requirements. This document resulted in and is written to address requirements for radomes used to work with either predictive windshear detection weather radar systems, standard weather radar systems or both.

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## 1.0 PURPOSE AND SCOPE

### 1.1 Introduction

This document contains minimum operational performance standards for radomes for use with airborne doppler weather radars having forward-looking windshear detection capability and for use with airborne weather radars. These standards specify radome characteristics for designers, manufacturers, installers and users of the equipment.

The radome is an integral part of the aircraft's structural, aerodynamic and electromagnetic design. In radome design, these factors must be considered for certification.

Compliance with these standards is recommended as one means of assuring that the radome 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 appropriate governmental agencies.

Section 1.0 of this document provides information needed to understand the rationale for radome characteristics and requirements stated in the remaining sections. It describes typical equipment applications and operational goals, as envisioned by RTCA, and establishes the basis for the 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 under standard and environmental conditions. Also included are recommended ground test procedures necessary to show equipment compliance with the stated minimum requirements.

Section 3.0 describes the performance required of the installed radome.

The word "radome" as used herein includes all components necessary (as determined by the manufacturer or installer) for the radome to properly perform its function. For example, the "radome" normally includes the basic radome structure (electromagnetic window), a paint system on the outside (standard aircraft polyurethane paint or a rain erosion paint), antistatic protection system, other rain erosion protection such as an adhesive-backed polyurethane film or rubber boot, lightning protection devices, etc. In this illustrative example, all these components comprise the "radome." It should not be inferred from this example that every radome configuration will necessarily include (or be limited to) these components or units. This will depend on the design chosen by the radome manufacturer.

Some radome designs, as an example, may not include rain erosion protection or antistatic protection, *per se*.