

RTCA, Inc.  
1828 L Street, NW, Suite 805  
Washington, DC 20036 USA

**MINIMUM OPERATIONAL PERFORMANCE  
STANDARDS (MOPS) FOR  
TRAFFIC ALERT AND COLLISION AVOIDANCE  
SYSTEM II (TCAS II)  
HYBRID SURVEILLANCE**

RTCA/DO-300  
December 13, 2006

Prepared by: SC-147  
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RTCA, Inc.  
1828 L Street, NW, Suite 805  
Washington, DC 20036 USA

Telephone: 202-833-9339  
Facsimile: 202-833-9434  
Internet: [www.rtca.org](http://www.rtca.org)

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## FOREWORD

This report was prepared by Special Committee 147 (SC-147) and approved by the RTCA Program Management Committee on December 13, 2006. It provides modifications to RTCA/DO-185A, *Minimum Operational Performance Standards for Traffic Alert and Collision Avoidance System II (TCAS II) Airborne Equipment* that are required to implement hybrid surveillance techniques in conjunction with the other functions of that equipment.

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- 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.

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# 1 PURPOSE AND SCOPE

## 1.1 Introduction

This document contains Minimum Operational Performance Standards for Traffic Alert and Collision Avoidance System II (TCAS II) equipment that uses hybrid surveillance. Hybrid surveillance includes both passive surveillance using the Mode S extended squitter as well as the active interrogations used in TCAS II systems built in compliance with RTCA/DO-185A. These standards specify system characteristics that should be useful to designers, manufacturers, installers and users of the equipment.

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

Section 1 of this document provides information needed to understand the rationale for equipment characteristics and requirements stated in the remaining sections. It describes typical equipment operations and operation goals, as envisioned by the members of Special Committee 147 (SC-147) and establishes the basis for the standards stated in Sections 2 and 3. Definitions and assumptions essential to proper understanding of this document are also provided in this section.

Section 2 contains the minimum operational performance standards for the equipment. These standards specify the required performance under standard environmental conditions. Also included are recommended bench tests necessary to demonstrate equipment compliance with the stated minimum requirements.

Section 3 describes the performance required of installed equipment. Tests for the installed equipment are included when performance cannot be adequately determined through bench testing.

This document considers an equipment configuration as specified in Ref. A with the following additions:

- The TCAS Processor Unit is implemented with the ability to perform crosslink interrogations. This was identified as an optional feature in Ref. A, §1.3.2.2.
- The TCAS Processor Unit is implemented with the ability to decode the extended squitter. This was identified as an optional feature in Ref. A, §1.3.2.1. The TCAS Processor Unit must meet the additional requirements (defined in Ref. C) of a receiver that is shared between TCAS and a 1090 MHz Automatic Dependent Surveillance-Broadcast (ADS-B) receiver.
- The TCAS Processor Unit is provided own position latitude and longitude information from the aircraft.
- The TCAS Processor Unit with hybrid surveillance can optionally use passive surveillance to modify the count of other TCAS-equipped aircraft within a 30 NM area (NTA). This optional requirement is defined in §2.2.10.