RTCA, Inc.
1150 18th Street NW, Suite 910
Washington, DC 20036
USA

# Minimum Operational Performance Standards for Traffic Alert and Collision Avoidance System II (TCAS II)

**Version 7.1**

**Change 2**

RTCA DO-185B: Change 2
March 28, 2013

Prepared by: SC-147

Copies of this document may be obtained from:

RTCA, Inc.
1150 18th Street, NW, Suite 910
Washington, DC 20036, USA

Telephone: 202-833-9339
Facsimile: 202-833-9434
Internet: www.rtca.org

Please visit the RTCA Online Store for document pricing and ordering information

**Executive Summary**

Change 2 to DO-185B provides for the following five (5) changes:

1. Improve the efficiency of the TCAS surveillance function so as to reduce utilization of the 1030 and 1090 MHz channel without reducing the effectiveness of the equipment's collision avoidance function.

2. Allow TCAS to implement a narrow band Mode S receive function compatible with the RTCA/DO-260B ADS-B receiver requirements without negatively impacting the TCAS receiver function.

3. Update the flight test requirements to add Atlanta as an alternate location for high density Mode S flight testing and to modify the combined air and ground density requirement accordingly.

4. Decrease the TCAS RA broadcast interval from 8 seconds to 1 second to be compatible with the intended use of this data by ground controllers.

5. Clarify the intent of interference limiting by adding text to the requirements and adding a new test.

This Page Intentionally Left Blank

# 1 CHANGES TO VOLUME I

(1.1) The following changes to §2.2.2, §2.2.3.6.3, §2.2.4.6.2.2.1, §2.2.4.6.2.2.2, §2.4.4 (Tables 2-69 and 2-70), and creation of §2.4.2.1.7.4.4 reduce TCAS 1030 and 1090 MHz channel utilization. Specifically it reduces unnecessary TCAS interrogations when operating on the airport surface. These changes reduce initial TCAS interrogation power by 10 dB when TCAS is powered-on, and ensures that TCAS aircraft on the ground do not interrogate other on-ground TCAS aircraft while maintaining proper NTA3 and NTA6 counts for TCAS aircraft approaching an airport. The Mode S surveillance volume is also limited to ± 3000 feet while the TCAS unit is operating on the ground. Any proposed new text will be highlighted in gray while text intended to be deleted will be marked with red ~~strikethrough~~ font.

## 2.2.2 System Performance

*Note:* *When operating within the maximum aircraft transponder population and electromagnetic interference levels defined in subparagraph 2.2.3.6.2, TCAS II will provide a level of performance for active surveillance of targets-of-interest that will support the requirements for generation of collision advisory information.*

*Specifically, TCAS II will generate a surveillance track in range and altitude on a target-of-interest at the range and with the track probability and range accuracy specified below. This is to ensure that a correct resolution advisory can be issued in time for the pilot to maintain adequate vertical separation at closest-point-of-approach.*

*TCAS II will also generate, whenever possible, a surveillance track in range and altitude on a target-of-interest at the range and with the track probability and range accuracy specified below such that a correct traffic advisory can be issued as a precursor to the resolution advisory.*

*In addition to the surveillance requirements to support generation of resolution and traffic advisories, TCAS II will display the range and, if available, the altitude and bearing position information on targets that generate advisories. The bearing position information will be generated according to the accuracy requirement specified below.*

*TCAS II will also generate for display, whenever possible, surveillance range, altitude and bearing position information on Mode C and Mode S aircraft that are within the range specified below and within ±10,000 ft altitude relative to TCAS II when airborne, and within ±3,000 ft altitude relative to TCAS II when on the ground.*

## 2.2.3.6.3 Interrogations From TCAS on the Ground

Whenever the TCAS aircraft determines that it is on the ground, TCAS interrogations shall be limited by setting the *NTA* count in the interference limiting inequalities to a value three times the measured value. This value will ensure that a TCAS operating on the ground does not add unnecessary



 