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User Guide
Supplement to DO-160G

RTCA DO-357
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FOREWORD

This document was prepared by Special Committee 135 (SC-135) and was approved by the RTCA Program Management Committee (PMC) on December 16, 2014.

RTCA, Incorporated is a not-for-profit corporation formed to advance the art and science of aviation and aviation electronic systems for the benefit of the public. The organization functions as a Federal Advisory Committee and develops consensus-based recommendations on contemporary aviation issues. RTCA's objectives include but are not limited to:

- coalescing aviation system user and provider technical requirements in a manner that helps government and industry meet their mutual objectives and responsibilities;

- 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 Telecommunications Union and other appropriate international organizations can be based.

The organization's recommendations are often used as the basis for government and private sector decisions as well as the foundation for many Federal Aviation Administration Technical Standard Orders.

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Purpose and Applicability

The purpose of this document is to provide users of DO-160G additional background information for the associated test procedures and requirements in DO-160G. This information includes rationale for requirements, guidance in applying the requirements, commentary, possible trouble shooting techniques, and lessons learned from laboratory experience. This User Guide is provided for guidance purposes and does not contain requirements. This information is intended to help users understand the objective and rationale behind the requirements, and to help users develop detailed test procedures based on the general test procedures in this document. It is highly recommended that detailed discussion will take place between the equipment manufacturer and the equipment installer during the development of the test plan.

Note that the User Guide subsections are numbered independently of the subsections in DO-160G.

DO-357 replaces the User Guides previously included in DO-160G.

DO-160G Change 1 has been published to remove all User Guides previously included in DO-160G.

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DO-160G

Environmental Conditions and Test Procedures for Airborne Equipment

User Guide for Section 4

Temperature & Altitude

Based on
DO-160G Section 4

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4.UG.0 Temperature and Altitude

4.UG.1 Purpose of the Tests

4.UG.2 General

1. The measurement of the " EUT temperature stabilization time" can be performed by one of two methods:

2. A preliminary "engineering test" can be performed using the DO-160G test conditions on the EUT. The maximum value of the "EUT temperature stabilization time" measured should be then included in the determination of temperature cycles and used during the "qualification test".

3. Instrumented EUT temperature measurement is allowed during the test as long as there is no impact on EUT and test integrity. Use of embedded internal temperature measurement function' when available' is also permitted. Prior to start of test user should validate the temperature sensor planned to be used for verification of temperature stabilization.

Note: This test applies to equipment that requires cooling for proper operation during the operating high temperature test, paragraph 4.5.4, has functions whose failure following in-flight loss of cooling would contribute to or cause a failure condition that would prevent the continued safe flight and landing of the airplane, and in which the cooling is externally supplied or powered.

4.UG.3 Equipment Categories

4.UG.4 Definitions of Terms

4.UG.5 Temperature Tests

4.UG.5.1 Ground Survival Low Temperature Test and Short-Time Operating Low Temperature Test

User guide information applicable to Section 4.5.1, Note 2:

When the Short-Time Operating Low Temperature test is deleted, the intent is that the Ground Survival Low Temperature Test (Section 4.5.1) be combined with the Operating Low Temperature Test (Section 4.5.2); to ensure appropriate cold start conditions are simulated. The combined test is described in Figure 4-UG-1.

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