RTCA, Inc.
1140 Connecticut Avenue, NW, Suite 1020
Washington, DC 20036-4001 USA

# Environmental Conditions and Test Procedures for Airborne Equipment

**Change 2**

RTCA DO-160D Change 2
January 12, 2001

Prepared by: SC-135
© 2001 RTCA, Inc.

Copies of this document may be obtained from

RTCA, Inc.

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

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

## A.1 Introduction and Scope

Minimum operational performance standards (MOPS) prepared by RTCA, Inc. for airborne equipment contain requirements that the equipment must meet to ensure reliable operation in actual aeronautical installations. These equipment requirements must be verified in ambient and stressed environmental conditions. The MOPS contains recommended bench test procedures for ambient conditions and refers to RTCA Document DO-160, "Environmental Conditions and Test Procedures for Airborne Equipment," for the stressed environmental testing. DO-160 encompasses the full spectrum of environmental conditions that airborne equipment may experience: from benign to very hostile.

A need exists to provide a permanent record of the particular environmental test categories that the equipment has passed. This need includes post-incident or accident investigation, installation certification, repair, etc. This procedure provides for a paper record (hereafter referred to as the Environmental Qualification Form) to be included in the equipment data package submitted for Technical Standard Order (TSO) authorization and in the installation and maintenance instructions. In addition to the Environmental Qualification Form, the traditional nameplate marking system may be used. This nameplate marking system is a supplemental and optional method of identifying the environmental test results. Nameplate marking is useful in those markets where the customers may not request or be in a position to review the TSO data package for a particular equipment.

Since it is not envisioned that the Environmental Qualification Form will be related to a particular equipment by serial number or date of manufacture, association must be achieved through the equipment type, model or part number. Manufactures should identify the method used to establish traceability to the environmental test categories to which the equipment was tested, including the applicable revision number of the test procedure (Section of RTCA/DO-160) used.

## A.2 Environmental Qualification Form (see Figure A-1)

This form provides the necessary information regarding which environmental tests were conducted and, where applicable, the appropriate environmental category of the equipment being tested.

Additional information is included to identify the specific equipment type or model to which the environmental test results apply. A suggested format is depicted in Figure A-1. An example Environmental Qualification Form is shown is Figure A-2 and has been annotated to illustrate a completed form. Equipment manufacturers should expand on the data included on this form to provide added clarity.

In some cases, the manufacturer may wish to qualify the equipment to more than one category for a particular environmental test. If one category is more stringent, only the more stringent category need be identified. In other cases, such as Temperature/Altitude or Vibration, where

© 2001 RTCA, Inc.