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ENVIRONMENTAL CONDITIONS AND TEST PROCEDURES FOR AIRBORNE EQUIPMENT

July 29, 1997
RTCA/DO-160D

Prepared by SC-135

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Foreword

This document was prepared by Special Committee 135 of the RTCA, Inc. It supersedes RTCA Document DO-160C dated December 4, 1989; Change 1 dated September 27, 1990; Change 2 dated June 19, 1992; Change 3 dated May 13, 1993.

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 Telecommunication 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.

Since RTCA is not an official agency of the United States Government, its recommendations may not be regarded as statements of official government policy unless so enunciated by the U.S. government organization or agency having statutory jurisdiction over any matters to which the recommendations relate.

These standards were coordinated by RTCA SC-135 with the European Organisation for Civil Aviation Electronics (EUROCAE) Working Groups (WGs) 14, 31, and 33. EUROCAE concurs with RTCA on the environmental conditions and test procedures set forth herein. When approved by EUROCAE, this document will be identified jointly as RTCA DO-160D/EUROCAE ED-14D.

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Environmental Conditions and Test Procedures for Airborne Equipment

Section 1

Purpose and Applicability

Section 2

Definitions of Terms—General

Section 3

Conditions of Tests

Important Notice

Information contained in these sections is pertinent to all test procedures described in the other sections of this document. Further, Appendix A is applicable for identifying environmental tests performed.

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1.0 Purpose and Applicability

This document defines a series of minimum standard environmental test conditions (categories) and applicable test procedures for airborne equipment. The purpose of these tests is to provide a laboratory means of determining the performance characteristics of airborne equipment in environmental conditions representative of those which may be encountered in airborne operation of the equipment.

The standard environmental test conditions and test procedures contained herein may be used in conjunction with applicable equipment performance standards as a minimum specification under environmental conditions, which can ensure a sufficient degree of confidence in performance during operations.

Note: In each of the test procedures contained herein, the following phrase will be seen several times:

"DETERMINE COMPLIANCE WITH APPLICABLE EQUIPMENT PERFORMANCE STANDARDS."

The "applicable equipment performance standards" referred to are either:

a. EUROCAE Minimum Operational Performance Specifications (formerly Requirements) (MOPS/MOPR).

b. RTCA Minimum Performance Standards (MPS) and/or RTCA Minimum Operational Performance Standards (MOPS).

c. The manufacturer's equipment specification(s), where applicable.

Some of the environmental conditions and test procedures contained in this document are not necessarily applicable to all airborne equipment. The selection of the appropriate and/or additional environmental conditions and test procedures is the responsibility of the writers (authors) of the performance standards for the specific airborne equipment.

Notes:

1. There are several additional environmental conditions (categories), that specific airborne equipment may be subjected to, that have not been included in this document. These include, but are not limited to: hail, acceleration and acoustic vibration.

2. The procedures for testing airborne equipment for special environmental conditions that are usually uniquely related to that specific type of airborne