RTCA, Inc.
1828 L Street, NW, Suite 805
Washington, DC 20036-5133 USA

Environmental Conditions and Test Procedures for Airborne Equipment

RTCA DO-160A
Supersedes RTCA DO-160
January 25, 1980
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Includes Change 1

Prepared by: SC-135

Copies of this document may be obtained from

RTCA, Inc.

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

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F O R E W O R D

This Document was prepared by Special Committee 135, of the Radio Technical Commission for Aeronautics (RTCA). It was approved by RTCA on January 25, 1980, and supersedes RTCA Document DO-160 dated February 28, 1975.

The objective of Special Committee 135 was to review and update RTCA Document DO-160, "Environmental Conditions and Test Procedures for Airborne Electronic/Electrical Equipment and Instruments". The Terms of Reference for SC-135 were as follows:

> Undertake the task of updating RTCA Document DO-160, "Environmental Conditions and Test Procedures for Airborne Electronic/Electrical Equipment and Instruments".
>
> With regard to this updating task, SC-135 shall coordinate these efforts with the European Organisation for Civil Aviation Electronics (EUROCAE) to insure that the updated RTCA/EUROCAE companion Documents are in agreement, or, as a minimum, compatible.
>
> Further, attention shall be given to the related ongoing efforts of the International Organization for Standardization Technical Committee 20, Subcommittees 1 and 5 (ISO/TC 20/SC 1 and ISO/TC 20/SC 5), and liaison should be conducted to the extent necessary to keep the ISO Group informed of SC-135 progress. Also, members of ISO/TC 20, as appropriate, shall be invited and encouraged to participate in this task.

RTCA is an association of aeronautical organizations of the United States from both government and industry. Dedicated to the advancement of aeronautics, RTCA seeks sound technical solutions to problems involving the application of electronics and telecommunications to aeronautical operations. Its objective is the resolution of such problems by mutual agreement of its member organizations.

The findings of RTCA are in the nature of recommendations to all organizations concerned. As RTCA is not an official agency of the Government of the United States, its recommendations may not be regarded as statements of official government policy unless so enunciated by the government organization or agency having statutory jurisdiction over any matters to which the recommendations relate.

Coordination of these standards was accomplished by RTCA SC-135, the European Organisation for Civil Aviation Electronics (EUROCAE) Working Group 14 (WG-14), and the International Organization for Standardization Technical Committee 20, Subcommittees 1 and 5 (ISO/TC 20/SC 1 and ISO/TC 20/SC 5). EUROCAE concurs with RTCA on the Environmental Conditions and Test Procedures set forth herein.

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1.0 PURPOSE AND APPLICABILITY

1.1 This Document sets forth a series of 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 the equipment under environmental conditions representative of those which may be encountered in operation of the equipment.

1.1.1 The standard environmental test conditions and applicable test procedures contained herein may be used as a minimum performance specification under environmental conditions which can assure a sufficient degree of confidence in performance during operations.

NOTE: In each of the procedures contained herein, the following phrase will be encountered one or more times:

"DETERMINE COMPLIANCE WITH APPLICABLE EQUIPMENT PERFORMANCE STANDARDS".

In the case of EUROCAE minimum performance standards, these are found in the chapter titled "Minimum Performance Specifications Under Environmental Test Conditions", of the applicable performance standard. When testing to other than EUROCAE specifications, refer to the applicable portions of those specifications. In the case of RTCA standards, these are found in the section titled "Minimum Performance Standards Under Environmental Conditions" of the appropriate RTCA airborne electronic minimum performance standards document. When testing to other than RTCA standards, refer to the applicable portions of those specifications.

1.2 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 environmental conditions and test procedures is the responsibility of the writers (authors) of the performance standards for the specific airborne equipment.

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

THE PROCEDURES FOR TESTING AIRBORNE EQUIPMENT UNDER ENVIRONMENTAL CONDITIONS ARE USUALLY UNIQUELY RELATED TO THAT SPECIFIC TYPE OF AIRBORNE EQUIPMENT. IF A TEST PROCEDURE IS REQUIRED FOR ANY ONE OF THESE UNIQUE ENVIRONMENTAL CONDITIONS, IT SHOULD BE THE