

1.1 Equipment Performance—Environmental Conditions

The environmental tests and performance requirements described in this section are intended to provide a laboratory means of determining the overall performance characteristics of the equipment under conditions representative of those that may be encountered in actual aeronautical operation.

Unless otherwise specified, the test procedures applicable to a determination of equipment performance under environmental test conditions are contained in RTCA Document DO-160E Environmental Conditions and Test Procedures for Airborne Equipment. General information on the use of RTCA/DO-160E is contained in sections 1 through 3 of that document. Also, a method of identifying which environmental tests were conducted and other amplifying information on the conduct of the tests is contained in Appendix A of RTCA/DO-160E.

Some of the performance requirements in section **Error! Reference source not found.** are not required to be tested to all of the conditions contained in RTCA/DO-160E. Judgment and experience have indicated that these particular parameters are not susceptible to certain environmental conditions and that the level of performance specified in section **Error! Reference source not found.** will not be measurably degraded by exposure to these conditions.

Review of the requirements provided in section **Error! Reference source not found.** indicates that such requirements will be satisfied through software implementations which are not normally affected by environmental conditions. Therefore, the detailed environmental test procedures provided in section 1.1.2 are established in order to verify only the various interface functions of the Airborne Surveillance Application Processing function under environmental conditions. These test procedures are to be performed only for non-integrated Airborne Surveillance Application Processing implementations. When the ASAP implementation is integrated with a TCAS receiver the environmental tests specified in DO-185() are sufficient to validate the environmental performance of ASAP.

1.1.1 Environmental Test Conditions

Table 2-10a lists all of the environmental conditions and test procedures (hereafter referred to as environmental procedures) that are documented in RTCA DO-160E (EUROCAE ED-14E). Table 2-10b lists the sets of ASAP performance tests that are specified in detail in this section and which are intended to be performed subject to the various environmental procedures of RTCA DO-160E (EUROCAE ED-14E). Table 2-10a divides the environmental procedures into groups. The environmental procedures that apply to all of the sets of ASAP tests fall into group 1. Group 2, which applies to none of the ASAP performance tests, includes only environmental procedures that are intended to determine the effect of the ASAP function on rack mounting hardware, compass needles, explosive gases, and other RF hardware.

Table 2-10b indicates which of the groups of environmental procedures is related to each set of ASAP performance tests. Each ASAP performance test **shall** (R2.1.) be validated under all of the environmental procedures in the groups required for that test as indicated in Table 2-10b.

Table 2-10a Environmental Test Groups

Test#	Environmental Condition	RTCA Do-160e Paragraph	EUROCAE Ed-14e Paragraph	Groups	Remarks
4a	Temperature	4.5	4.4 – 4.5	1	
4b	Altitude	4.6.1	4.6.1	1	
4c	Decompression & Overpressure	4.6.2 - 4.6.3	4.6.2 - 4.6.3	1	
5	Temperature Variation	5.0	5.0	1	
6	Humidity	6.0	6.0	1	
7a	Operational Shock	7.2	7.1	1	
7b	Crash Safety	7.3	7.2	2	NO TESTS
8	Vibration	8.0	8.0	1	During and After
9	Explosion	9.0	9.0	1	NO TESTS
10	Waterproofness	10.0	10.0	1	
11	Fluids Susceptibility	11.0	11.0	1	
12	Sand and Dust	12.0	12.0	1	
13	Fungus Resistance	13.0	13.0	1	
14	Salt Spray	14.0	14.0	1	
15	Magnetic Effect	15.0	15.0	2	NO TESTS
16	Power Input Momentary Interruptions All Others	16.0	16.0	1	During and After
17	Voltage Spike	17.0	17.0	1	
18	Audio Frequency Conducted Susceptibility	18.0	18.0	1	
19	Induced Signal Susceptibility	19.0	19.0	1	
20	RF Susceptibility	20.0	20.0	1	
21	Emission of RF Energy	21.1	21.1	2	NO TESTS
22	Lightning Induced Transient Susceptibility	22.0	22.0	1	
23	Lightning Direct Effects	23.0	23.0	1	
24	Icing	24.0	24.0	1	
25	Electrostatic Discharge	25.0	25.0	2	NO TESTS

Note:

1. Tests in Group 2 determine the effects of the STP equipment on other equipment (mounts, compass needles, explosive gases, and other RF equipment) and therefore do not involve the STP equipment performance requirements of this document.
2. Environmental test conditions specified in these MOPs are not directly applicable to non-aircraft installations. Manufacturers of such equipment may be permitted to substitute appropriate test standards, such as SAE J1455 (Joint SAE/TMC Recommended Environmental Practices for Electronic Equipment Design (Heavy Duty Trucks)).

Table 2-10b Environmental Test Groups

Test Procedure Paragraph	TEST DESCRIPTION	Required Environmental Test Group
		1
TBD	TBD	X
TBD	TBD	X
TBD	TBD	X

1.1.2 Detailed Environmental Test Procedures

The test procedures set forth below are considered satisfactory for use in determining equipment performance under environmental conditions. Although specific test procedures are cited, it is recognized that other methods may be preferred. These alternative procedures may be used if the manufacturer can show that they provide at least equivalent information. In such cases, the procedures cited herein should be used as one criterion in evaluating the acceptability of the alternative procedures. The ASAP performance tests do not include specific pass/fail criteria. It is intended that those criteria be obtained from the ASAP performance requirements provided in section **Error! Reference source not found.**

1.1.2.1 TBD

Perform all of the procedures provided in section TBD of this document.

1.1.2.2 TBD

Perform all of the procedures provided in section TBD of this document.

1.1.2.3 TBD

Perform all of the procedures provided in section TBD of this document.