



AEROSPACE RECOMMENDED PRACTICE

ARP5297™

REV. C

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Superseding ARP5297B

Recommended Qualification Tests for
Halogen Miniature Lamps Less Than 35 Watts
for Aircraft Applications

RATIONALE

The technology of low wattage halogen lamps is very mature and it is unlikely that this document will need to be updated.

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1. SCOPE

This SAE Aerospace Recommended Practice (ARP) provides the qualification test procedure requirements for low wattage halogen lamps (less than 35 watts) intended for use primarily in aircraft applications. The purpose of these tests is to provide a laboratory means of determining the performance characteristics of lamps under airplane power and other environmental conditions and to verify the integrity of the lamp design and production processes.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of the other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1330 Photometry Laboratory Accuracy Guidelines

2.2 CEN Publications

Available from the European Committee for Standardization, CEN-CENELEC Management Centre, Avenue Marnix 17 – B-1000 Brussels, Belgium, Tel: +32 2 550 08 11

EN 2756 Aerospace Series - Lamps, incandescent – Test methods

2.3 RTCA Publications

Available from RTCA, Inc., 1150 18th Street, NW, Suite 910, Washington, DC 20036, Tel: 202-833-9339, www.rtca.org.

DO-160 Environmental Conditions and Test Procedures for Airborne Equipment (latest applicable revision).

3. GENERAL REQUIREMENTS

3.1 Test Conditions

Unless otherwise specified, tests are to be conducted under the following ambient conditions:

- a. Temperature: 10 to 30 °C (50 to 86 °F)
- b. Humidity: 20 to 80%
- c. Pressure: 25 to 31 inches of Mercury (846.5 to 1049.8 mbar)

The following tolerances apply to the test conditions:

- a. Temperature: ± 2 °C (± 3.6 °F)
- b. Humidity: $\pm 5\%$ Relative
- c. Altitude: $\pm 5\%$

3.1.1 Performance Degradation

Regarding photometric performance, “without performance degradation” means that the lamp should not suffer any significant visually detectable loss of intensity during and following any test, as applicable. Typically, any change in intensity $>30\%$ would be regarded as visually detectable.

3.1.2 Test Configuration

It is recommended that the environmental tests listed in this document be performed with the lamp in its actual fixture and with the lens in place, as applicable.

3.2 Test Samples and Group Samples

Test samples must represent production lamps and must be subjected to production screening. In order to reduce time in a qualification program, lamps are to be divided into five groups of ten lamps each, and they should be tested per the sequence shown in Table 4.

3.3 Production Screening Test

The purpose of this test is to eliminate lamp infant mortality failures. Every production lamp should be subject to an operational screening at rated voltage for 0.2% of its rated life or 5 hours, whichever is lower.

3.4 Control Test

Purpose: The purpose of this test is to verify the lamp’s performance before and after each qualification test.

Procedure: This test should include a physical examination along with photometric and lamp current measurements at rated voltage. Lamps should be physically inspected for conformance with the appropriate lamp specification regarding physical dimensions and workmanship.

Pass/Fail Criteria: After 5 minutes of operation or thermal stabilization (whichever is longer), if the light output is less than or greater than 20% of the lamp’s rated mean spherical candle power (MSCP) intensity specified values, or the lamp current is less than or greater than 5% of its rated current at rated voltage, then the lamp fails the control test.