



AEROSPACE RECOMMENDED PRACTICE

ARP6161™

REV. A

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Superseding ARP6161

(R) Flight Compartment Glare

RATIONALE

SAE Five-Year Review: Revision A introduces several formatting changes and restructuring of sections. The only significant content update was the addition of Section 6, which outlines recommendations for Certification Testing for 14 CFR § 25.773(a)(2) and some of the common compensating factors to support an Equivalent Level of Safety finding for simulated night ground testing.

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1. SCOPE

This document is a tool for the certifying authority, flight deck crew station designers, instrument suppliers, lighting suppliers, and component suppliers. It is an aid to understanding and meeting relevant regulatory requirements, particularly those relating to pilot compartment view (refer to 14 CFR § 25.773[a][2]) and instrument lights (refer to 14 CFR § 25.1381[a][2]) for glare arising from visible electromagnetic radiation.

1.1 Purpose

The purpose of this document is to assist users in developing and certifying flight compartments that meet the regulatory requirements and to provide for greater levels of flight deck comfort with respect to glare. The guidance herein provides the user with an understanding of potential sources of glare, the effects of glare on the human visual system, and strategies to mitigate glare in the design and layout of the flight deck.

1.2 Goal

To improve the visual comfort and visual performance on the flight deck and comply with regulatory requirements by increasing awareness of the factors that contribute to glare, providing strategies to mitigate glare, providing methodology to design and certifying activities, improving the understanding, and bringing awareness to the intended audience.

2. REFERENCES

2.1 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 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.

2.1.1 SAE Publications

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

AMS2521 Coating, Reflection-Reducing for Instrument Glasses

ARP4392 Lighting, Aircraft Exterior, Night Vision Imaging System (NVIS) Compatible

2.1.2 ACGIH Publications

Available from American Conference of Governmental Industrial Hygienists, 3640 Park 42 Drive, Cincinnati, OH 45241, Tel: 513-742-2020, www.acgih.org.

Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)

2.1.3 ANSI Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ANSI/ISEA Z87.1-2020 American National Standard for Occupational and Educational Personal Eye and Face Protection Devices

2.1.4 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9500, www.astm.org.

ASTM D523 Standard Test Method for Specular Gloss

2.1.5 CIE Publications

Available from CIE Central Bureau, Babenbergerstrasse 9/9A, 1010 Vienna, Austria, Tel: +43 1 714 31 87, www.cie.co.at.

CIE 117-1995 Discomfort glare in interior lighting

2.1.6 Code of Federal Regulations (CFR) Publications

Copies of these documents are available online at www.ecfr.gov.

14 CFR Part 25 Airworthiness Standards: Transport Category Airplanes

14 CFR Part 29 Airworthiness Standards: Transport Category Rotorcraft

NOTE: Some applicable sections may include but are not limited to the following:

14 CFR § 25.773: Pilot compartment view; refer to paragraph (a)(2)

14 CFR § 25.1381: Instrument lights; refer to paragraph (a)(2)

14 CFR § 25.1383: Landing lights; refer to paragraph (a)(1)

14 CFR § 25.1401: Anticollision light system; refer to paragraph (a)(1)

14 CFR § 25.1403: Wing icing detection lights

21 CFR Part 1040: Performance Standards for Light Emitting Products

2.1.7 FAA Publications

Available from Federal Aviation Administration, 800 Independence Avenue SW, Washington, DC 20591, Tel: 866 835 5322, www.faa.gov.

AC 25-11 FAA Advisory Circular, Electronic Flight Deck Displays

FAA Memorandum ODA-GED-P298-25.773(a)(2), Equivalent Level of Safety (ELOS) Finding for Flight Test Requirements for Effects on Pilot Compartment View on a Boeing 737-8, FAA Project # ODA-GED-P298 and similar FAA Memorandums ODA-GED-P333-25.773(a)(2), ODA-GED-P331-25.773(a)(2) (<https://drs.faa.gov/browse>).

Nakagawara, V.B, Wood, K.J., and Montgomery, R.W. (2003). *Natural sunlight and its association to aviation accidents: Frequency and prevention* (Report No. DOT/FAA/AM-03/6). Federal Aviation Administration.

2.1.8 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

MIL-C-675 Coating of Glass Optical Elements (Anti-Reflection)

MIL-C-14806 Coating, Reflection Reducing, for Instrument Cover Glasses and Lighting Wedges

MIL-STD-2161 Paint Schemes and Exterior Markings for U.S. Navy and Marine Corps Aircraft (refer to paragraph 5.1.8, "Antiglare")

MIL-STD-3009 Lighting, Aircraft, Night Vision Imaging System (NVIS) Compatible