



AEROSPACE STANDARD

AS5452™**REV. C**Issued 2000-04
Revised 2026-03

Superseding AS5452B

Night Vision Goggles (NVG) Compatible Lighting for Civil Aircraft

RATIONALE

This SAE Aerospace Standard (AS) is revised to update and improve specifications of technical requirements. This document recommends standards for night vision goggles (NVG) compatibility for civil aircraft lighting and performance criteria to ensure compatibility of aircraft instruments and displays lighting with NVGs.

FOREWORD

The purpose of this document is to provide a standard to which civil aircraft can be designed, modified, qualified, and certified to be operated by specially trained pilots using approved night vision goggles (NVGs). This will allow the operators to conduct essential night operations utilizing approved NVGs with minimal degradation of the night vision image caused by the spectrum of the crew station and exterior lighting of their aircraft overlapping the spectral response of the NVGs. At the same time, the modified aircraft will maintain a visible presence for other aircraft that are being operated by pilots who are not using night vision devices flying in the same vicinity. Safety of flight is the primary concern while conducting flight operations utilizing NVGs, which replace normal color vision with a monochromatic image and have a narrower field of view than normal vision. Training must minimize the effect of these limitations. This standard makes no affirmations, positive or negative, about the operational safety of aircraft being operated by pilots using NVGs. Operational issues and safety are the responsibility of the certifying organization. Operational approval must be obtained from the Standards District Office of the certifying organization.

1. SCOPE

This SAE Aerospace Standard (AS) will specify what type of NVGs are required and minimum requirements for compatible crew station lighting, aircraft exterior lighting such as anti-collision lights, and position/navigation lights that are "NVG compatible." Also, this document is intended to set standards for NVG utilization for aircraft so that special use aircraft such as the Coast Guard, Border Patrol, Air Rescue, Police Department, Medivacs, etc., will be better equipped to chase drug smugglers and catch illegal immigrants, rescue people in distress, reduce high-speed chases through city streets by police, etc. Test programs and pilot operator programs are required.

For those people designing or modifying civil aircraft to be NVG compatible, the documents listed in 2.1.3 are essential.

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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: 1-877-606-7323 (U.S. and Canada only) or 1-724-776-4970 (outside U.S. and Canada), www.sae.org.

ARP1161	Crew Station Lighting - Commercial Aircraft
ARP4103	Flight Deck Lighting for Aircraft
ARP4168	Night Vision Goggle (NVG) Compatible Light Sources
ARP4169	Night Vision Goggles (NVG) Filters
ARP4260	Photometric and Colorimetric Measurement Procedures for Airborne Electronic Flat Panel Displays
ARP4822	Night Vision Imaging System (NVIS) Compatible Illuminated Pushbutton Switches and Indicators
ARP4967	Night Vision Imaging Systems (NVIS) Integrally Illuminated Information Panels
ARP5825	Design Requirements and Test Procedures for Dual Mode Exterior Lights
AS7788	Panels, Information, Integrally Illuminated
AS8017	Minimum Performance Standard for Anticollision Light Systems
AS8037	Minimum Performance Standard for Aircraft Position Lights

2.1.2 U.S. Government Publications

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

MIL-L-85762A	Lighting, Aircraft, Interior, Night Vision Imaging System (NVIS) Compatible
MIL-STD-3009	Lighting, Aircraft, Night Vision Imaging System (NVIS) Compatible

2.1.3 Publications Available for Civil Aircraft

2.1.3.1 RTCA Publications

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

DO-268	Concept of Operations, Night Vision Imaging System for Civil Operations
DO-275	Minimum Operational Performance Standard for Integrated Night Vision Imaging System Equipment
DO-295	Civil Operators' Training Guidelines for Integrated Night Vision Imaging System Equipment

2.1.3.2 FAA Publications

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

14 CFR Part 23 Airworthiness Standards: Normal, Utility, Acrobatic and Commuter Airplanes

14 CFR Part 25 Airworthiness Standards: Transport Category Airplanes

14 CFR Part 27 Airworthiness Standards: Normal Category Rotorcraft

14 CFR Part 29 Airworthiness Standards: Transport Category Rotorcraft

Night NVG Aided Readability Ground Evaluation,

https://www.faa.gov/sites/aa.gov/files/aircraft/air_cert/design_approvals/rotorcraft/ROT_NVISLightingNightAidedEvaluation_r1.pdf

2.1.3.3 Aerospace Lighting Institute Publications

Available from Aerospace Lighting Institute, 3128 Red Hill Avenue, Costa Mesa, CA 92626, Tel: 714-545-5560, www.aerospacelightinginstitute.com.

Godfrey, G.W. *Night Vision Goggle Compatible Aircraft Lighting*

Godfrey, G.W. *Principles of Display Illumination Techniques for Aerospace Vehicle Crew Stations*

Pieroway, C. Power Point Presentation - NVIS Compatible Lighting in Civil Aircraft

2.1.4 Other Publications

AL/HR-TR-1995-0167. *Procedure for Conducting a Field Evaluation of Night Vision Goggle Compatible Cockpit Lighting*. Armstrong Laboratory - U.S. Air Force Material Command, Brooks Air Force Base, Texas

AN/AVS-9(V), NVIS-9 Performance Specification

ASC EN 981, Lighting, Aircraft Interior Night Vision Imaging System (NVIS) Compatible

Decusatis, C. (Ed.). (1997). *Handbook of Applied Photometry*. Sponsored by the Optical Society of America, American Institute of Physics Press.

McCluney, R. (1994). *Introduction to Radiometry and Photometry*. Artech House, Inc.

Optical Specification for F-16 Left and Right-Hand Inlet Position Lights, Document No. 01/QS/3397, and Optical Specification for F-16 Tail Position Light, Document No. 01/QS/3405. Oxley, Inc., Cumbria, England.

2.2 Definitions

NVG COMPATIBLE INTERIOR LIGHTING: NVG compatible interior lighting is lighting which meets the requirements of MIL-STD-3009 and ASC EN 981 for Type I Class B.

NVG FRIENDLY EXTERIOR LIGHTING: NVG friendly exterior lighting is exterior lighting which shall not degrade the performance of the goggles.