



SURFACE VEHICLE RECOMMENDED PRACTICE

J3069™

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Superseding J3069 JUN2016

Adaptive Driving Beam System

RATIONALE

Added the word "System" to the title.

Section 2.2.1: Moved SAE J599 reference from Applicable SAE Publications to Related SAE Publications since it was removed in 5.5.1 as an option for aiming the adaptive driving beam (ADB).

Section 3: Alphabetized definitions.

Section 3.2: Updated non-glare zone definition to remove unnecessary text.

Section 3.3: Added definition for transition zone. The existence of a transition zone was understood since the initial publication of SAE J3069 in June 2016; however, a definition was added for clarity.

Section 5.5.1: SAE J599 was removed as an option to aim ADB since SAE J599 does not contain information for aiming ADB.

Sections 5.5.2.1 and 5.5.3.1: Added note requiring that any PWM or similar frequency control shall be sufficiently above the commercial power grid frequency to prevent the ADB sensor system from mistaking the stimulus lamps for lighting devices powered by the commercial power grid, which are typically cycled at 50 Hz or 60 Hz. Also updated conical angle specification to 15 degree radius from ± 15 degrees to be consistent with how conical angles are specified.

Sections 5.5.2.1 and 5.5.3.1: Added allowance for the stimulus test fixture to appear like the vehicle it represents to prevent the ADB sensor system from recognizing that the stimulus fixture is not a vehicle and reverting back to full high beam at some point during the approach. Replaced "fixture" with "stimulus," as well as throughout the remainder of the document.

Section 5.5.4.2: Added a note that the approach path shall be sufficient to run the tests. This was requested to ensure that a test facility quoting this procedure includes this in their quote.

Sections 5.5.6.3.3 and 5.5.6.3.6: Added a warning that care must be taken to accurately simulate the sudden appearance of a vehicle without causing stray light and reflections which could be interpreted by the ADB sensor system as something other than a stationary vehicle.

Section 6.1.1.1: Excluded the boundaries of 10U to 90U and 90L to 90R for ADB. Since the initial publication of SAE J3069, testing of ADB lamp assemblies demonstrated that light from areas of unreduced intensity would extend into the area of reduced intensity in this zone, exceeding the requirements in this zone. However, it was determined that restricting light in this zone with the ADB activated does not help the driver, since just outside the non-glare zone full high beam would exist. For this reason, this requirement was omitted from the standard from the initial publication of SAE J3069 in June 2016; however, the requirement was re-worded to add clarity.

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Documents

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Figure 4: Updated graphic to correctly show the motorcycle mirror separation of 0.4 m from centerline to be consistent with F/CMVSS 111 required minimum. Previous graphic incorrectly showed this at 0.2 m from centerline.

Figure 5: Updated graphic to correct IRI value of 1.5.

1. SCOPE

This SAE Recommended Practice provides test procedures, performance requirements, and design guidelines for adaptive driving beam (ADB) and associated equipment.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 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 J565	Semiautomatic Headlamp Beam Switching Devices
SAE J575	Test Methods and Equipment for Lighting Devices for Use on Vehicles Less than 2032 mm in Overall Width
SAE J576	Plastic Material or Materials for Use in Optical Parts Such as Lenses and Reflex Reflectors of Motor Vehicle Lighting Devices
SAE J578	Color Specification
SAE J759	Lighting Identification Code
SAE J1383	Performance Requirements for Motor Vehicle Headlamps
SAE J2357	Application Guidelines for Electronically Driven and/or Controlled Exterior Automotive Lighting Equipment

2.1.2 Code of Federal Regulations (CFR) Publications

Available from the United States Government Printing Office, 732 North Capitol Street, NW, Washington, DC 20401, Tel: 202-512-1800, www.gpo.gov.

CFR Title 49 Part 571.108 Lamps, Reflective Devices and Associated Equipment (FMVSS 108)

2.1.3 Transport Canada Publications

Transport Canada documents are available from Transport Canada, Tower C, Place de Ville, 330 Sparks Street Ottawa, Ontario K1A 0N5, Tel: 1-800-305-2059, www.tc.gc.ca.

CMVSS 108	Lighting System and Reflective Devices
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2.1.4 United Nations Publications

Available from United Nations Economic Commission for Europe, Palais des Nations, CH-1211, Geneva 10, Switzerland, or at: <http://www.unece.org/trans/main/welcwp29.html>.

UN Regulation No. 48	Uniform Provisions Concerning the Approval of Vehicles with Regard to the Installation of Lighting and Light-Signalling Devices
UN Regulation No. 123	Uniform Provisions Concerning the Approval of Adaptive Front-Lighting Systems (AFS) for Motor Vehicles
UN Regulation No. 149	Uniform Provisions Concerning the Approval of Road Illumination Devices (Lamps) and Systems for Power-Driven Vehicles

2.1.5 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E1926	Standard Practice for Computing International Roughness Index of Roads from Longitudinal Profile Measurements
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2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 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 J387	Terminology - Motor Vehicle Lighting
SAE J599	Lighting Inspection Code
SAE J1330	Photometry Laboratory Accuracy Guidelines
SAE J2442	Harmonized Provisions for Installation of Exterior Lamps and Retro-Reflecting Devices on Road Vehicles Except Motorcycles

3. DEFINITIONS

3.1 ADAPTIVE DRIVING BEAM (ADB)

A long-range light beam for forward visibility, which automatically modifies portions of the projected light to reduce glare to traffic participants on an ongoing, dynamic basis.

3.2 NON-GLARE ZONE

The area of reduced light intensity in the ADB directed towards opposing or preceding vehicles.

3.3 TRANSITION ZONE

The area in the ADB where the unreduced intensity transitions to the non-glare zone.

4. LIGHTING IDENTIFICATION CODE, MARKINGS, AND NOTICES

Lamp providing ADB may be marked XADB per SAE J759.

5. TESTS

5.1 SAE J1383 is part of this document with sections and modifications as indicated.

5.1.1 Photometry

5.1.1.1 Mounting hardware, test stand, and components shall be those necessary to operate the lamp(s) over all adaptive conditions.

5.1.1.2 Aim the ADB according to the manufacturer's instructions.

5.1.1.3 The lamp providing ADB shall be photometered at the applicable test points specified in SAE J1383 with ADB activated and producing adaptations. The ADB shall be in operation a minimum of 3 minutes prior to photometry.

5.1.2 Aiming Adjustment Test

5.1.3 Aim Range Test

5.1.4 Inward Force Test

5.2 SAE J575 is part of this document with sections and modifications as indicated. In addition, if the ADB lamp includes electronically driven and/or controlled equipment, SAE J2357 is applied to the following tests when there is a corresponding SAE J2357 test.

5.2.1 Vibration

5.2.2 Humidity

5.2.3 Dust Exposure Test

5.2.4 Corrosion Test

5.2.5 Chemical Resistance Test

5.2.6 Thermal Cycle Test

5.2.7 Internal Heat Test

5.2.8 Impact Test

5.2.9 Abrasion Test

5.3 Color Test

SAE J578 is part of this document.

5.4 Plastic Materials

SAE J576 is part of this document.

5.5 Test Drive

5.5.1 Test Drive Setup

The ADB equipped test vehicle shall be representative of production, with proper ADB and lower beam aiming following the manufacturer's instructions.