SAE International™

SURFACE VEHICLE STANDARD

SAE J2087

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Superseding J2087 JUL1997

(R) Daytime Running Light

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1. Scope

This SAE Standard provides test procedures, requirements, and guidelines for a daytime running light (DRL) function.

1.1 Rationale

After many years of implementation of daytime running lamps, their safety benefits have been demonstrated. The application of DRLs in the United States, however, has not been consistent. For example, both reduced voltage and full voltage operation low beam headlamps are used to serve as DRL function at present time. The photometric performance of the two types of operation low beam headlamps is significantly different in some testing points of DRL function. The Task Force has determined that it is more important to make the light intensity values (candela) distribution for effective DRL function more consistent. Several major revisions are listed as follows:

a. Maximum Candela Values Allowed
   Based on several study reports released from UMTRI as concerns from federal regulatory authorities regarding complains for glare, the new maximum candela values have been set for two cases. For the dedicated DRL, it is 1500 cd. This is harmonized with the current ECE requirement. For other lamps serving for DRL function, the maximum is kept at 3000 cd, however, it must be below the H-H line from H-V to left: to avoid glare.

b. Unified Photometry Table for Other Lamps Serving DRL Function
A new photometry table has been introduced in this version of J2807 in 6.2.2 as Table 2. This table is based on the bench mark studies of many existing DRLs and other lamps on the road. The photometry values have been derived with considerations of both the most effective DRL (reference to UMTRI reports) and adequate DRL when using other lamps. The new table provides the industry, in additional to consistence, more design freedom and flexibility. Table 1 has been kept in this version with only change for the maximum allowed candela value for the reasons stated in the above. The latest UMTRI report indicates that the (minimum) photometry values in the Table 1 is still most effective for DRL function. For those of the vehicle and lamp manufactures who apply dedicated DRLs on vehicle, Table 1 should be the standard to be used. The UMTRI report also indicates that other lamps serve as DRL functions provide some effectiveness for safety and conspicuity.

c. Masking Requirements
For the dedicated DRL with maximum candela value of 1500, no masking is needed in relating to the front turn signal lamps. For other lamps serving DRL function, the masking requirements are specified in 6.2.2.

The study and road practice show that DRL is serving for conspicuity and not for road illumination, therefore the DRL now is categorized as a signal and marking device. The photometry testing used for DRL is stated in 5.2. In addition, the Task Force decided to eliminate all light source requirements in this standard based on the reason that all light source requirements shall be integrated into one SAE standard (reference to J2560).

2. References

2.1 Applicable Publications

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

2.1.1 SAE PUBLICATIONS

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

SAE J567—Lamp Bulb Retention System
SAE J575—Tests for Motor Vehicle Lighting Devices and Components
SAE J576—Plastic Materials for Use in Optical Parts Such as Lenses and Reflectors of Motor Vehicle Lighting Devices
SAE J578—Color Specifications for Electric Signal Lighting Devices
SAE J588—Turn Signal Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width
SAE J759—Lighting Identification Code
SAE J1050—Describing and Measuring the Driver's Field of View
SAE J2560—Forward Lighting Halogen Bulb Performance Requirements for Motor Vehicles

2.2 Related Publications

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

2.2.1 SAE Lighting Committee DRL Test Reports, 1974–1989, nine separate reports

2.2.2 CIE TC4.13 Report—Automobile Daytime Running Lights (DRL), Third Draft, July 1990

2.2.3 UMTRI Reports

2.2.4 CMVSS Publications (CMVSS 108, Canadian Motor Vehicle Safety Standard for Exterior Lighting)—Available from Transport Canada, Road Safety and Motor Vehicle Regulation Directorate, P.O. Box 8880, Ottawa Post Terminal, Ottawa, Ontario, K1G 3J2 or at www.tc.gc.ca.

3. Definitions

3.1 Daytime Running Light (DRL)

Steady operating light function that is used to improve the conspicuity of a vehicle from the front and front-sides when the regular headlamps are not required for driving. DRL function can be achieved with low or high beam headlamps, parking lamps, turn signal lamps, fog lamps, as well as dedicated lamps.

3.2 Daytime Running Light Telltale

An indicator that provides a visual signal to advise the driver that only the lamps providing daytime running light function are operating.

4. Lighting Identification Code, Markings and Notices

Lamps providing daytime running light function meeting the performance requirements of Section 6 of this document may be identified by the code Y2 in accordance with SAE J759.

5. Tests

5.1 SAE J575 is a part of this document. The following tests, from that document, are applicable with the modifications as indicated.

5.1.1 VIBRATION TEST

5.1.2 MOISTURE TEST

5.1.3 DUST TEST

5.1.4 CORROSION TEST

5.1.5 WARPAGE TEST ON DEVICES WITH PLASTIC COMPONENTS

The bulb operation for this test shall be steady burning.

5.1.6 COLOR TEST

SAE J578 is a part of this document.

5.2 Photometry

In addition to the test procedures stated in SAE J575, the following applies: Photometric measurements shall be made with the light source of the lamp providing DRL function located at least 3 m from the photometer

6. Requirements

6.1 Performance Requirements

A lamp proving DRL function, when tested in accordance with the test procedures specified in Section 5, shall meet the following requirements:

6.1.1 VIBRATION

SAE J575.

6.1.2 MOISTURE

SAE J575.

6.1.3 DUST

SAE J575.

6.1.4 CORROSION

SAE J575.

6.1.5 WARPAGE

SAE J575.

6.1.6 COLOR

SAE J578. The color of the light from a DRL shall be white to yellow as specified in SAE J578.

6.2 Photometry

SAE J575.

6.2.1 Dedicated Lamp Providing DRL Function

The device under test shall be designed to conform to the light intensity distribution (candela) values as shown in Table 1 when tested accordance with 5.2.

TABLE 1—PHOTOMETRIC REQUIREMENTS FOR DEDICATED LAMP PROVIDING DRL FUNCTION

Minimum candela value (cd) at each test point and each zone:

	20L	10L	5L	V	5R	10R	20R
5U		100		350		100	
H	50	350	450	500	450	350	50
5D		100		350		100	
	Zone II 600		Zone I 2100			Zone III 600	

Maximum candela value (cd): 1500. When using zone requirements, no test point shall be less than 60% of the test point minimum.

6.2.2 If the DRL function is achieved by other lamps, the device under test shall be designed to conform to the light intensity distribution (candela) values as shown in Table 2 when tested accordance with 5.2.

TABLE 2—PHOTOMETRIC REQUIREMENTS FOR DRL FUNCTION ACHIEVED BY OTHER LAMPS

Minimum candela value (cd) at each test point and each zone:

	20L	10L	5L	V	5R	10R	20R
5U		100		100		100	
H	50	350	450	500	450	350	50
5D		100		100		100	
	Zone II 600		Zone I 2100			Zone III 600	

Maximum candela value (cd) at H-H line from H-V to left and above: 3000. When using zone requirements, no test point shall be less than 60% of the test point minimum.

If a lamp providing DRL function is located within 100 mm of the front turn signal lamp, then:

a. the front turn signal lamp shall meet 2.5 times photometry requirement, or
b. the lamp providing DRL function within 100 mm of the front turn signal lamp is extinguished during the turn signal operation.