



SURFACE VEHICLE RECOMMENDED PRACTICE

J2139

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Superseding J2139 APR2013

Tests for Signal and Marking Devices Used on Vehicles
2032 mm or More in Overall Width

RATIONALE

Changed 4.5.2.7.7 - Photometric measurements and scan shall be performed with the light source(s) steady burning. The luminous intensity measurements (in candela) shall be recorded for each of the test points and zones specified for the function of the device under test. This is consistent with SAE J575

Changed 4.10.2.2 to reference SAE J1455 instead of SAE J1889. Tests are very similar and was already referencing J1455 for the temperatures.

Added 5.5.1.1 - For any signal and marking device, unless otherwise specified in the applicable SAE document, the minimum luminous intensity (candela) requirement between any two adjacent test points shall be no less than 60% of the lower specified minimum value of the two test points on a horizontal or vertical or diagonal line. The specified minimum value is defined by the individual test point value not the zonal value. This is consistent with SAE J575

1. SCOPE

This SAE Recommended Practice provides standardized laboratory tests, test methods, and performance requirements applicable to signal and marking devices used on vehicles 2032 mm or more in overall width.

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 724-776-4970 (outside USA), www.sae.org.

SAE J387 Terminology - Motor Vehicle Lighting

SAE J577 Vibration Test Machine and Operation Procedure

SAE J1330 Photometry Laboratory Accuracy Guidelines

SAE J1455 Recommended Environmental Practices for Electronic Equipment Design in Heavy-Duty Vehicle Applications

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on this Technical Report, please visit
http://www.sae.org/technical/standards/J2139_201412**

- SAE J1889 L.E.D. Signal and Marking Lighting Devices
- SAE J2357 Application Guidelines for Electronically Driven and/or Controlled Exterior Automotive Lighting Equipment
- SAE J2721 Recommended Corrosion Test Methods for Commercial Vehicle Components

2.1.2 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 B 117 Method of Salt Spray (Fog) Testing
- ASTM C 150-84 Specification for Portland Cement
- ASTM E 308-85 Standard Method for Computing the Colors of Objects by Using the CIE System

2.1.3 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 20653:2006 Road vehicles - Degrees of protection (IP-Code) - Protection of electrical equipment against foreign objects, water and access

2.2 Related Documents

2.2.1 SAE Publications

- 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 J2577 Heavy Duty Lamp Electrical Connector Standard

3. DEFINITIONS

3.1 DISCHARGE SIGNAL LIGHTING (DSL) SYSTEM

A vehicular lighting system used in signal and marking applications. The DSL system is composed of a discharge light source, interconnecting wiring, and a signal or marking lighting assembly.

3.2 DISCHARGE LIGHT SOURCE

An electric light source in which light is produced by a stabilized electric discharge through an ionized gas. The light source consists of a sealed glass/tube envelope wall and ballast. The size, shape, and color will depend on the application. (For example, but not limited to: neon, or fluorescent lamps.)

3.3 LIGHT EMITTING DIODE (LED) LIGHTING DEVICE

A lighting device in which light is produced by an LED or an array of LEDs.

3.4 LIGHTING DEVICE LIGHT CENTER

The geometric center of the light source or sources used to illuminate the device function or the geometric center of the illuminated area if the light output is produced indirectly.

3.5 INCANDESCENT LIGHTING DEVICE

A lighting device in which light is produced by a filament being heated to incandescence by an electrical current.

3.6 INTEGRATED ELECTRONIC COMPONENT

Electronic component(s) integrated within the housing of the lamp assembly or physically inseparable from the lighting device used to produce the desired output.

3.7 SAMPLES

Samples submitted for test shall be representative of the device as regularly manufactured and marketed. Each sample shall be securely mounted on the test fixture in its design position and shall include all accessory equipment necessary to operate the device in its normal manner.

3.8 SEALED LIGHTING DEVICES

A lighting device that does not allow the passage of gas or water between the interior environment and the exterior environment.

3.9 TEST FIXTURE

Fixture specifically designed to support the device in its designed operating position during a laboratory test.

3.10 VIBRATION TEST FIXTURE

A fixture specifically designed to support the device in its operating position during the vibration test. The fixture shall not have a resonant frequency in the test range.

4. TESTS

The following sections describe the individual tests which need not be performed in any particular sequence, except as noted in the test procedure. Unless otherwise specified all tests will be done at an ambient room temperature of $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$. The completion of the tests may be expedited by performing the tests simultaneously on separately mounted samples. However, it is recommended that the design of each device be evaluated to determine if the vibration test or the warpage test affect other tests, in which case, those tests shall be performed first.

4.1 Vibration Test

This test evaluates the ability of the sample device to resist damage from vibration-induced stresses. This test is not intended to test the vibration resistance of bulb filaments, but may be used to evaluate the effects of vibration-induced stresses on shock-mounted devices.

4.1.1 Vibration Test Procedures

4.1.1.1 The DUT (Device Under Test), as mounted on the support supplied, shall be bolted to the anvil end of the table of the SAE J577 vibration test machine.

4.1.1.2 Test duration is $60 +1/-0$ min.