SURFACE VEHICLE STANDARD

J585™	APR2023
Issued 1918-03 Revised 2023-04 Superseding J585 JUN2014	

(R) Tail Lamp (Rear Position Lamp) for Use on Motor Vehicles Less than, Equal to, or Greater than 2032 mm in Overall Width

RATIONALE

The Lighting Systems Steering Committee agreed to merge SAE J2040 into SAE J585. In general, there is a large amount of redundancy in these two documents and there was a desire to merge the document for vehicles equal to or greater than 2032 mm in overall width with the document for vehicles less than 2032 mm in overall width.

SAE J2040 will become obsolete when the merged SAE J585 document is published. There will be a reference when SAE J2040 is searched that will direct users to SAE J585.

Updates to this revision include:

- Document title revised to include lamps on vehicles less than, equal to, and greater than 2032 mm in overall width.
- Table of contents revised.
- Section 1: Scope revised to include lamps on vehicles less than, equal to, and greater than 2032 mm in overall width.
- 2.1.1: Added SAE J2139 test document reference for vehicles greater than 2032 mm in overall width.
- 2.1.1: Moved SAE J2040 from 2.2.1.
- 2.1.1: SAE J578 “Color Specification” changed to “Chromaticity Requirements.”
- 2.2.1: Removed reference to SAE J2040.
- 2.2.1: Removed reference to SAE J567 and SAE J2139.
- 2.2.1: SAE J567, SAE J1330, and SAE 830566 documents added.
- 2.2.1: SAE J1319 moved from 2.1 to 2.2.
- 2.2.3: “ECE” changed to “UN.”
- 2.2.3: UN R148 added.
- 2.2.4: Section and publications added.

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https://www.sae.org/standards/content/J585_202304/

- 3.1: Tail light function definition added.
- 3.1: Tail lamp definition revised (now 3.2).
- 3.3: Revised, formatting.
- 3.3: “Tail lamp function” changed to “tail light function.”
- 3.4: Removed “Tail lamp arrangement means all the elements or components that comprise the tail lamp function.”
- 4.0: “T” and “T2” tail lamp codes identified and defined.
- 5.1: “Are applicable” inserted in sentence after “SAE J2139.”
- 5.1: Wording revised to be analogous to 6.1.
- 5.1.5.2: Edited to include lighting identification codes T and T2 type lamps.
- 5.1.5.2: Corrected grammar by removing “are” from sentence to read: “… the photometric requirements specified …”.
- 5.2: Revised from “… shall be determined by SAE J578” to “… shall be tested according to SAE J578.”
- Table 1: Title and content revised.
- 6.1: Added reference to SAE J2139.
- 6.1.5.1: Revised for clarity.
- 6.1.5.2: Revised for clarity.
- 6.1.5.3: Revised for clarity.
- 6.1.5.4: Revised for clarity.
- Figure 1: Title revised for T1 and T2 lamps.
- Figures 2 and 3: Title revised for T1 lamps.
- Figure 2: Maximum revised to “20 cd.”
- Figure 3: Maximum revised to “25 cd.”
- 6.2: “Tail lamp function” changed to “tail light function.”
- 6.2: Color revised to “The tail light function shall be red as specified in SAE J578.”
- 6.4.1: Revised for clarity and updated for all light sources.
- 6.4.2: Reference to SAE J1889 revised for clarity, removed, and added to 5.1.
- 6.4.3: Added T2 lamp type area requirement.
- 6.4.4: Added for clarification of optically combined functions.

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- 6.5: "… Figures 1, 2, and 3 …" changed to ."‥ Figure 1, 2, or 3…."
- 7.1.1: Revised to add the clarification for vehicles "less than 2032 mm in overall width" since this was not part of the existing SAE J2040 document wording.
- 7.1.1: Revised installation guideline eliminating reference to "width."

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1. SCOPE

This SAE Standard provides test procedures, requirements, and guidelines for tail lamps (rear position lamps) intended for use on vehicles of less than, equal to, or greater than 2032 mm 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 +1 724-776-4970 (outside USA), www.sae.org.

SAE J387 Terminology - Motor Vehicle Lighting

SAE J567 Light Source Retention System

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 Chromaticity Requirements for Ground Vehicle Lamps and Lighting Equipment

SAE J759 Lighting Identification Code

SAE J1889 LED Signal and Marking Lighting Devices

SAE J2040 Tail Lamps (Rear Position Lamps) for Use on Vehicles 2032 mm or More in Overall Width

SAE J2139 Tests for Signal and Marking Devices Used on Vehicles 2032 mm or More in Overall Width

2.2 Related Documents

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 J586 Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width

SAE J588 Turn Signal Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width

SAE J594 Reflex Reflectors

SAE J1319 Rear fog Lamp System

SAE J1330 Photometry Laboratory Accuracy Guidelines

SAE J1957 Center High Mounted Stop Lamp Standard for Vehicles Less than 2032 mm Overall Width

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SAE J2042 Clearance, Sidemarker, and Identification Lamps for On-Road Vehicles 2032 mm or More in Overall Width

SAE 830566 Henderson, R., Ziedman, K., Burger, W., and Cavey, K., "Motor Vehicle Conspicuity," SAE Technical Paper 830566, 1983, https://doi.org/10.4271/830566.

2.2.2 Federal Publications

Available from the Superintendent of Documents, U.S. Government Printing Office, Mail Stop: SSOP, Washington, DC 20402-9320, http://www.gpoaccess.gov/cfr/index/htlm.

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

2.2.3 United Nations Publications

Available from United Nations Economic Commission for Europe, Palais des Nations, CH-1211, Geneva 10, Switzerland, Tel: +44-0-22-917-12-34, http://www.unece.org/trans/main/wp29/wp29regs.htlm.

UN Regulation 7 Uniform Provisions Concerning the Approval of Front and Rear Position Lamps, Stop-Lamps and End-Outline Marker Lamps for Motor Vehicles (Except Motorcycles) and Their Trailers

UN R148 Uniform Provisions Concerning the Approval of Light-Signaling Devices (lamps) for Power-Driven Vehicles and their Trailers

2.2.4 TMC and TTMA Publications

Available from the Technology and Maintenance Council, American Trucking Associations, 950 North Glebe Road, Suite 210, Arlington, VA 22203-4181, Tel: (703) 838-1700, www.truckline.com.

TTMA #RP-9 Location of Lighting Devices for Trailers

TMC #RP-702A Trailer Lamp and Reflector Placement

TMC #RP-704B Heavy Duty Lighting Systems for Trailers

TMC #AV 7-1 Heavy Duty Lighting Systems for Trailers

3. DEFINITIONS

3.1 TAIL LIGHT FUNCTION (Rear Position Light Function)

Light signal indicating the presence and width of the vehicle when viewed from the rear.

3.2 TAIL LAMP (Rear Position Lamp)

Lamp providing the tail light function.

3.3 TAIL LAMP ARRANGEMENT

All the elements or components that comprise the tail light function.

4. LIGHTING IDENTIFICATION CODE

Tail lamps for use on vehicles less than 2032 mm in overall width may be identified by the code “T.”

Tail lamps for use on vehicles equal to or greater than 2032 mm in overall width may be identified by the code “T2.”

These codes are in accordance with SAE J759.

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5. TESTS

5.1 With modifications as indicated, the following tests in SAE J575 are applicable for tail lamps on vehicles less than 2032 mm in overall width and tests in SAE J2139 are applicable for tail lamps on vehicles 2032 mm or more in overall width.

5.1.1 Vibration Test

5.1.2 Moisture Test

5.1.3 Dust Test

5.1.4 Corrosion Test

5.1.5 Photometry Test

5.1.5.1 Test distance shall be at least 3 m or at least 10 times the maximum linear extent of the effective projected luminous area of the signal lamp, whichever is greater. The H-V axis shall be taken as parallel to the axis of reference of the lamp as mounted on the vehicle.

5.1.5.2 For lamps identified “T,” the photometric requirements specified in Figures 1, 2, and 3 shall be applied based on the effective projected luminous area for the entire tail light function on each side, as depicted in Table 1 and the following paragraphs.

For lamps identified “T2,” the photometric requirements specified in Figure 1 shall be applied (see 6.4.3).

Table 1 - Assignment of photometry requirements based on the size of the effective projected luminous lens area of lamps identified “T”

Lamps on vehicles less than 2032 mm in overall width

Effective Projected Luminous Lens Area	Size	Photometry Figure
Less than 225 cm^2	1	1
225 to 450 cm^2	2	2
Greater than 450 cm^2	3	3

5.1.5.3 Photometric measurements of multiple lamp arrangements shall be made by one of the following methods:

5.1.5.3.1 If a multiple lamp arrangement on each side of the vehicle is used to obtain the tail light function, all lamps shall be photometered together provided that a line from the optical axis of each lamp to the center of the photometer sensing device does not make an angle of more than 0.6 degree with the photometer H-V axis. When lamps are photometered together, the H-V axis shall intersect the midpoint between their optical axes. If these conditions are not met use the following method.

5.1.5.3.2 Each lamp shall be photometered separately by aligning the axis of each lamp with the photometer. The photometric measurement for the multiple lamp arrangement shall be determined by adding the photometric outputs from each individual lamp at corresponding test points.

5.1.5.4 The test methods and procedures of SAE J1889 shall also be applied if LED light sources are present in the lamp.

5.1.6 Warpage Test for Devices with Plastic Components

5.2 Color Test

The color of the tail light function shall be tested according to SAE J578.

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5.3 Materials Test

Plastic materials used in the optical parts shall be tested according to SAE J576.

6. REQUIREMENTS

6.1 Performance Requirements

A device when tested in accordance with the test procedures specified in Section 5 shall meet the following requirements per SAE J575 for lamps on vehicles less than 2032 mm in overall width and SAE J2139 for lamps on vehicles greater than or equal to vehicles 2032 mm in overall width.

6.1.1 Vibration Test

6.1.2 Moisture Test

6.1.3 Dust Test

6.1.4 Corrosion Test

6.1.5 Photometry Test

6.1.5.1 For vehicles less than 2032 mm in overall width the lamp(s) providing tail light function shall be designed to conform to the zone total photometric requirements of Figure 1, 2, or 3 and corresponding footnotes. The summation of the luminous intensity measurements at the test points in a zone shall be at least the value shown. The lamp size, either 1, 2, or 3 is determined by its effective projected luminous area from Table 1.

For vehicles 2032 mm or more in overall width, the lamp(s) providing tail light function shall be designed to conform to the zone total photometric requirements of Figure 1 and corresponding footnotes. The summation of the luminous intensity measurements at the test points in a zone shall be at least the value shown.

6.1.5.2 A multiple lamp arrangement on each side of the vehicle may be used to meet the photometric requirements of a tail light function. If multiple lamps are used and the distance between optical axes of the contributing, adjacent lamps does not exceed 560 mm for two lamp arrangement or 410 mm for an arrangement of three or more lamps, then the entire lamp arrangement shall be used to determine the size of the lamp and select the appropriate photometric requirement (Figure 1, 2, or 3). If the distance between adjacent optical axes exceeds the previous dimensions, each lamp shall comply with the applicable photometric performance provisions stated in Table 1 and the corresponding Figure 1, 2, or 3.

6.1.5.3 When a tail light function is combined with the turn signal or stop signal function, the turn or stop signal function intensity shall not be less than three times the luminous intensity of the tail light function at any test point, except that at 5U-V, H-5L, H-V, and H-5R, the turn or stop signal function intensity shall not be less than five times the luminous intensity of the tail light function. When the tail light function is combined with the turn or stop signal function and the maximum luminous intensity of the tail light function is located below horizontal and within an area generated by a 1.0-degree radius around a test point, the ratio for the test point may be computed using the lowest value of the tail light function luminous intensity within the generated area.

6.1.5.4 For vehicle less than 2032 mm in overall width, if a size 2, 3, or multiple lamp arrangement is used and the distance between optical axes for both the tail light function and the turn or stop signal function is within the dimensions specified in 6.1.5.2, the ratio of the turn or stop signal function to the tail light function shall be computed with the entire lamp or all lamps lighted. If a multiple lamp arrangement is used and the distance between optical axes for one of the functions exceeds the dimensions specified in 6.1.5.2, the ratio shall be computed for only those lamps where the tail lamp and turn signal or stop lamp are optically combined.

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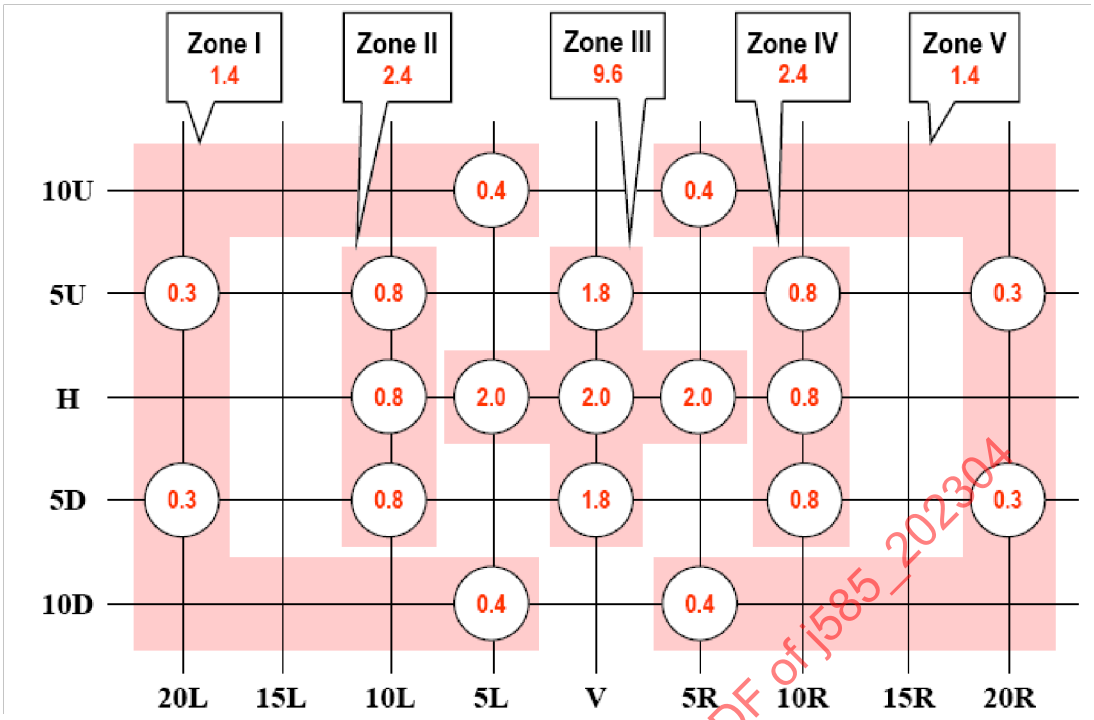

1. The maximum luminous intensity is 18 cd within the photometric pattern shown.
2. The measured value at each test point shall not be less than 60% of the required minimum value for that individual test point location.
3. The sum of the luminous intensity measurements at each test point within a zone shall not be less than the zone total shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.
5. Ratio requirements of 6.1.5.3 apply.
6. Multiple lamps requirements of 6.1.5 and its sub paragraphs apply.
7. Where tail lamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5 degrees down may be met at 5 degrees down rather than the required downward angle.

Figure 1 - Photometric requirements -
Minimum luminous intensity (cd) for size 1 of lamps identified "T" and lamps identified "T2"

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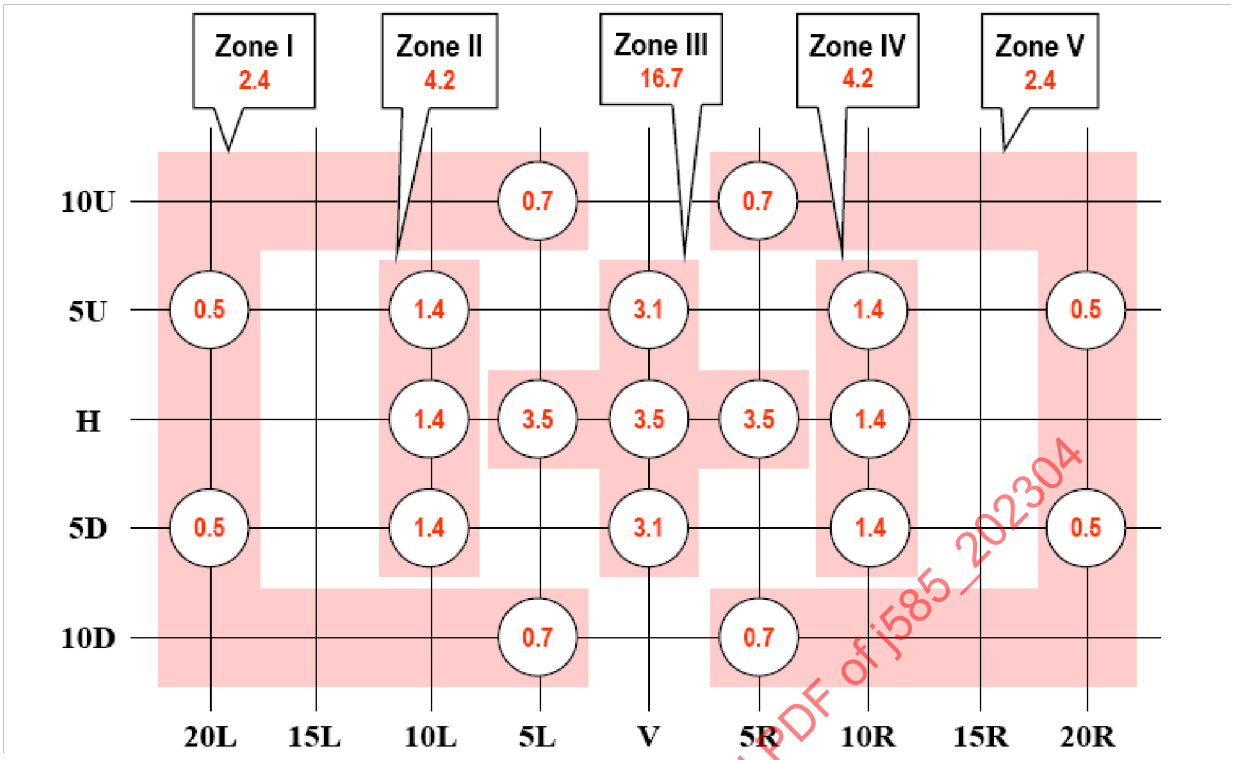

1. The maximum luminous intensity is 20 cd within the photometric pattern shown.
2. The measured value at each test point shall not be less than 60% of the required minimum value for that individual test point location.
3. The sum of the luminous intensity measurements at each test point within a zone shall not be less than the zone total shown. The luminous intensity measurements at each discrete test point shown within the corresponding zone are the values used to calculate the specified zone total.
4. The listed maximum shall not be exceeded over any area larger than that generated by a 0.5 degree radius within the solid angle defined by the test points.
5. Ratio requirements of 6.1.5.3 apply.
6. Multiple lamps requirements of 6.1.5 and its sub paragraphs apply.
7. Where tail lamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5 degrees down may be met at 5 degrees down rather than the required downward angle.

Figure 2 - Photometric requirement -
Minimum luminous intensity (cd) for size 2 of lamps identified "T"

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