modifications for nitrogen oxides as precursors to ozone under § 52.21.

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DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA–2007–28322]

RIN 2127–AL00

Federal Motor Vehicle Safety Standards; Lamps, Reflective Devices, and Associated Equipment

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Final rule; response to petitions for reconsideration.

SUMMARY: On December 4, 2007, NHTSA published a final rule that amended the Federal motor vehicle safety standard for lamps, reflective devices, and associated equipment with an effective date of September 1, 2008. In response, the agency received thirteen petitions for reconsideration. The effective date of the final rule was delayed in subsequent notices to December 1, 2012. This document corrects several technical errors in the final rule and completes the agency's response to the issues raised in the submitted petitions for reconsideration.

DATES: *Effective Date:* The final rule is effective December 1, 2012. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of December 1, 2012.

Compliance Date: Voluntary early compliance is permitted beginning August 8, 2011.

Petitions for Reconsideration: Petitions for reconsideration of this final rule must be received not later than September 22, 2011.

ADDRESSES: Any petitions for reconsideration should refer to the docket number of this document and be submitted to: Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., West Building, Ground Floor, Docket Room W12–140, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT:

For technical issues: Mr. Markus Price, Office of Crash Avoidance Standards (NVS–121), NHTSA, 1200 New Jersey Avenue, SE., West Building, Washington, DC 20590 (Telephone: (202) 366–0098) (Fax: (202) 366–7002).

For legal issues: Mr. Thomas Healy, Office of the Chief Counsel (NCC–112), NHTSA, 1200 New Jersey Avenue, SE., West Building, Washington, DC 20590 (Telephone: (202) 366–2992) (Fax: (202) 366–3820).

SUPPLEMENTARY INFORMATION:

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I. Executive Summary

On December 4, 2007 NHTSA published a final rule [1] that amended Federal Motor Vehicle Safety Standard (FMVSS) No. 108, *Lamps, reflective devices, and associated equipment.* That final rule reorganized the regulatory text and explicitly added to the text existing requirements from third-party standards that had previously been incorporated by reference. In rewriting the standard NHTSA sought not to make any substantive changes or impose new requirements on regulated parties. The objectives of the rewrite were to: (1) Make requirements easier to find and comprehend; (2) present performance requirements and test procedures together in one place, instead of obliging the user to locate the relevant provisions of third-party documents previously incorporated by reference; and (3) update FMVSS No. 108 to reflect significant letters of interpretation. The rewrite of FMVSS No. 108 was considered administrative in nature because the standard's existing requirements and obligations were not increased, decreased, or substantively modified.

The agency received several petitions for reconsideration which stated some aspects of the final rule failed to adhere to the agency's stated goal of not substantively modifying the standard's existing requirements. Also, the agency received petitions for reconsideration that identified formatting and grammatical errors. In addition to the petitions addressing the technical aspects of the standard, the agency also received a submission questioning the discussion of the preemptive effect of FMVSS No. 108 included in the preamble of the final rule. After careful review and consideration of the petitions for reconsideration, the agency is amending FMVSS No. 108 in order to correct technical errors within the final rule and is providing a partial response to petitions for reconsideration including the submission addressing the preemptive effect of the rule. The remaining items in the petitions for reconsideration, which include substantive issues and are not addressed within this partial response, will be addressed in a separate notice. We expect to publish that notice before the final rule effective date of December 1, 2012.

II. Background

NHTSA published a Notice of Proposed Rulemaking (NPRM) on December 30, 2005 [2] proposing to reorganize FMVSS No. 108 and improve the clarity of the standard's requirements, thereby increasing its utility for regulated parties. The proposed administrative rewrite attempted to make the standard more understandable by adopting a simplified numbering scheme to improve organization; by grouping related materials in a more logical and consistent sequence; and by reducing the certification burden of regulated parties who previously needed to review a few dozen third-party documents.

From a regulatory perspective, it was the agency's intention, as expressed in the NPRM, that the administrative rewrite of FMVSS No. 108 would neither result in any current obligations being diminished, nor any new obligations being imposed. In other words, the substantive requirements of the standard would be identical to those of the currently-applicable version of FMVSS No. 108 and underlying documents incorporated by reference. Therefore, we stated that regulated parties would not need to make any changes to their respective products or production processes if our proposal were made final.

The agency considered comments received on the NPRM and published a final rule on December 4, 2007. The final rule incorporated some of the comments received in response to the NPRM by further consolidating test procedures and performance requirements from multiple tables to single paragraphs, incorporating additional Society of Automotive Engineers (SAE) documents directly

[1] 72 FR 68234, (Dec. 4, 2007).

[2] 70 FR 77454, (Dec. 30, 2005).

into the regulatory text, and further consolidating marking requirements. The final rule also added additional tables and figures and changed the structure of the standard to present the requirements in a more standardized and user-friendly manner. The final rule amended FMVSS No. 108 by: (1) Reorganizing the regulatory text so that it provides a more straightforward and logical presentation of the applicable regulatory requirements; (2) incorporating important agency interpretations of the existing requirements; and (3) reducing reliance on third-party documents incorporated by reference. The preamble of the final rule again stated that it was not the agency's intention to create any substantive changes to the standard through the administrative rewrite.

III. Petitions for Reconsideration

NHTSA received thirteen timely petitions for reconsideration from automotive manufacturers, lighting suppliers, motorcycle manufacturers, material manufacturers, a testing laboratory, and a trial bar association.[3] The Alliance of Automobile Manufacturers (AAM), Ford Motor Company (Ford), Nissan North America (Nissan), Toyota Motor North America (Toyota), Koito Manufacturing Co. LTD (Koito), Valeo Lighting Systems (Valeo), Grote Industries LLC (Grote), Harley-Davidson Motor Company (Harley-Davidson), GE Consumer & Industrial—Lighting (GE), SABIC Innovative Plastics (SABIC), Calcoast, and American Association for Justice (AAJ) submitted petitions for reconsideration of the final rule. The Motor and Equipment Manufacturers Association (MEMA), the Transportation Safety Equipment Institute (TSEI), and the Motor Vehicle Lighting Council (MVLC), collectively the Associations, submitted a joint petition for reconsideration. Several of the petitions claimed that the final rule imposed new substantive requirements that were not previously included in the old standard. Many of the petitions pointed out grammatical and formatting issues contained in the final rule. The petitions also requested that the agency make additional technical changes and amend the format of some areas of the final rule to further advance the goals of the rewrite. Other petitions claimed that the final rule failed to accurately transpose previously referenced documents or interpretation letters into the regulation text. The petition submitted by AAJ challenged the preemptive language of the final rule preamble. The remaining petitions requested substantive changes to the rule.

The matters raised in the petitions fall generally into four categories and will be answered as follows: (1) Requests that additional definitions be added to the final rule; (2) requests for technical amendments to the final rule to correct grammar, formatting, and technical issues; (3) claims that the agency added new substantive requirements to the standard during the rewrite; and (4) requests for amendments to the standard to improve readability or clarify certain language. The petitions requesting substantive amendments to the rule will be addressed in another notice.

A. Definitions

Several petitioners requested that the agency add new definitions to clarify terms used in the text of the final rule. AAM and Nissan requested that the definition of a clearance lamp be modified to remove the language containing the mounting and spacing requirements for the lamp. AAM and Nissan claimed that the mounting and spacing requirements are contained elsewhere in FMVSS No. 108, therefore, it was not necessary that these requirements be included in the definition. Nissan claimed that removing the mounting and spacing requirements would make the definition more consistent with the definitions of other lamps regulated by the standard. Similarly, both petitioners requested that language regarding mounting and spacing requirements be removed from the definitions of identification and side marker lamps. AAM and Nissan suggested a definition that would eliminate the mounting location description and spacing requirements from each of these three lamp definitions.

The Associations, Grote, and Valeo suggested creating a definition for the term ''headlamp system.'' Each of these petitioners suggested the following definition: ''A vehicle-based headlighting system which is composed of headlamps mounted on opposite sides of and symmetrical to the centerline of the vehicle.''

Nissan suggested a definition for the term ''multiple compartment lamp.'' Nissan suggested the following definition: ''Multiple compartment lamp means a device which gives its indication by two or more areas, illuminated by separate light sources, which are joined by one or more common parts, such as a housing or lens.'' Nissan pointed out that this definition was similar to the definition used in an interpretation letter to Al Cunningham on November 3, 1988[4] that responded to his request for clarification as to the meaning of the term ''multiple compartment lamp.''

The Associations pointed out that the agency placed the definitions for all of the various headlamp types, except ''combination headlamp,'' in the definition section of the final rule. They suggested the following definition be added to the definitions section: ''Combination headlamp system: For a two lamp system, a combination of two different headlamps chosen from: Type F, an integral beam headlamp, or a replaceable bulb headlamp and for a four lamp system, any combination of four different headlamps chosen from: Type F, an integral beam headlamp, or a replaceable bulb headlamp.'' The Associations and Grote recommended replacing the terms ''lamps section'' or ''compartments'' with a universal term ''lighted sections.''

B. Technical Amendments

The petitions requested various technical amendments to the standard to amend formatting and grammatical issues. Nissan stated that the agency referenced an American Society for Testing and Materials (ASTM) specification in the final rule in paragraph S14.5.3.2 yet this specification was not listed in paragraph S5.

Nissan pointed out a grammatical error in paragraph S6.4.4. Nissan suggested changing the phrase ''* * * overall width, that are * * *'' to ''* * * overall width, that is * * *''

AAM requested that the ''DOT marking'' requirement for headlamps located in paragraph S6.5.1 be moved to paragraph S6.5.3 so that it would be located with the other headlamp markings.

The Associations and AAM noted that paragraph S6.5.3 occurs twice, once marked *Headlamp markings* and once marked *Trademark.* They requested that the Trademark paragraph numbering change to S6.5.3.1.

AAM requested that the format of ''SEALED BEAM,'' as shown in paragraph S6.5.3.3.1, be standardized with the format as it appears in Table III, which is not fully capitalized. AAM requested that the phrase be modified to ''Sealed Beam'' in paragraph S6.5.3.3.1.

AAM stated that in paragraph S7.1.1.11, FMVSS No. 108's revised text uses the term ''compartments'' even though the preamble to that rule stated

[3] NHTSA also received several petitions for reconsideration after the January 18, 2008 deadline specified in the final rule. It is the agency's policy to treat untimely petitions for reconsideration as petitions for rulemaking. *See* 49 CFR 553.35.

[4] *http://isearch.nhtsa.gov/files/3135o.html.*

that this term would be used in the singular form.

AAM recommended adding a qualifying statement ''provided that the requirements of S6.1.3.2 are met'' to paragraphs S7.1.1.11.1, similar to the statements used in paragraphs S7.1.2.11.1, S7.2.11.1, and S7.3.11.1, in order to clarify the requirements for multiple compartment lamps.

Nissan requested that the phrase ''generated by a 1.0 radius around * * *'' be changed to ''generated by a 1.0 degree radius around * * *'' in paragraph S7.1.1.12.4.

AAM recommended a modification to paragraph S7.2.9, which deals with taillamp markings. AAM requested that the agency change the pointing statement in that paragraph to point to the specific subparagraph S6.5.1.2 rather than paragraph S6.5. AAM also requested that a more specific pointer be added for paragraphs S7.3.9, S7.4.9, S7.5.9, S7.6.9, S7.7.9, S7.8.9, S7.9.9, S7.10.9, S7.11.9, and S8.1.9.

AAM requested that S7.7.4 be changed from pointing to Tables I (a–c) that state ''No requirement,'' to simply state within that text ''No Requirement.'' AAM pointed out that this is consistent with other areas of the regulatory text such as in paragraphs S7.7.7 and S7.7.8.

The Associations requested that the paragraph numeration be corrected in the subparagraphs of S7.9.14. They stated that the paragraph structure contains S7.9.14.1.1 and S7.9.14.1.2, however, it does not contain a paragraph S7.9.14.1.

Nissan noted a grammatical error in paragraph S14.2.1.5.2. It requested that the wording be modified from ''* * * of multiple compartment lamp or * * *'' to ''* * * of multiple compartment lamps or * * *''.

Toyota requested that paragraph S14.3.1 be modified to use the abbreviation ''in.'' for the unit inch instead of the abbreviation ''in'' without a period.

GE and the Associations requested a modification to paragraph S14.6.9.1.1, which they pointed out incorrectly converts 176 degrees Fahrenheit to 60 degrees Celsius. They requested the Celsius number be changed to 80 degrees.

Nissan and AAM stated that within Table I–a, the subtitle *Additional Lamps, Required on All Multipurpose Passenger Vehicles (MPV), Trucks, and Buses, 2032 MM or More in Overall Width* appears twice. AAM and Nissan also requested that the activation criteria text be moved to the *Device Activation* column from the *Mounting Height* column for the lower beam headlamp, which is currently blank. In addition, Nissan requested that the activation specifications for the upper beam headlamp read: ''Steady burning, except may be flashed for signaling purposes.'' Nissan also requested that English units of measurement be added to the *Mounting Height* column of Table I–a for the lower and upper beam headlamps. AAM requested that all measurements in Tables I–a, I–b, and I–c be displayed in both English and metric units. AAM requested that a horizontal line be placed above the DRL subtitle. Both Nissan and AAM requested that the mounting location and color information be moved to the appropriate column for reflex reflectors in Table I–a. Nissan asked that the subtitle for additional lamps required for wide vehicles change the word ''truck'' to ''trucks.'' AAM and Nissan requested that the turn signal truck tractor exception be moved to a new line.

AAM noted that a billing code is inappropriately located after Table I–c. AAM requested that, within the mounting location column for the upper beam headlamp, a note be added that states: ''See additional requirements in S10.14.1, S10.17.1.2, and S10.17.1.3,'' to reference additional mounting requirements for motorcycle headlamps. AAM also noted that the same column for the lower beam headlamp points to paragraph S6.1.4.2.1.3, however, this paragraph does not exist. The Associations and AAM requested that the word ''between'' be added to the turn signal minimum edge to edge distance.

AAM claimed that the term ''Motorcycle Headlamp'' in Table III should read ''Motorcycle Replaceable Bulb Headlamp'' so that it agrees with paragraph S10.17.2. AAM also suggested adding the word ''Optional'' in the markings of the Table III column for *Lamps (Other Than Headlamps), Reflective Devices, and Associated Equipment.* AAM also stated it found an incorrect pointing statement to S6.5.4.3 for the replaceable bulb headlamp in the *Requirement* column of Table III. AAM believed that the pointer should instead point to paragraph S6.5.3.4.1. AAM also pointed out that Table III does not contain the marking requirements for a replaceable lens headlamp called out in paragraph 5.8.11 of the existing FMVSS No. 108. Finally, AAM requested that the phrase ''See requirements'' be added to the sealed beam headlamp type designation in the *Marking Location* column.

For Table V–a, Nissan requested that the measurements for the required visibility for the backup lamp should be in both metric and English units.

The Associations, Nissan, and AAM pointed out that the alignment of lighting device functions to their corner points is incorrect in Table V–b. AAM requested the elimination of the billing code from the bottom of that table.

Nissan requested that the word ''zone'' be replaced with the word ''group'' in footnote 2 in Table VIII. Nissan also requested that the word ''group'' replace the word ''zone'' in footnote 4 of Table XII. Nissan made the same request of footnote 2 of Tables XIV and XV. Nissan requested that the agency amend footnote 2 of Table XVI to replace the word ''zone'' with the word ''group.''

AAM requested that the agency amend footnote 6 of Table IX so that the photometric intensity requirements for stop lamps combined with taillamps correspond with SAE J1398 (MAY 1985), *Stop Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width,* incorporated by reference in the currently applicable version of FMVSS No. 108. AAM stated that footnote 6 of Table IX should be changed to ''values followed by a slash * * *'' (in contrast to the current ''Values preceded by a slash'') for the H–5L test point so that the standard required the correct photometric multiplier for wide vehicles.

In Table XV, Nissan noted that the test points columns should be listed as horizontal first and vertical second.

The Associations claimed that the final rule had an error in Figure 8, ''Replaceable Light Source Detection Test Setup,'' and requested that dimension ''A'' be replaced with the term ''Light Center Length.'' The Associations also requested that Figure 14 be changed. They stated that the material specification for the ''Disc. arm Brace & Clamp'' should appear as ''SAE–AA–6061 T6 or equiv,'' and the ''Coil Spring and Level Clip'' should appear as ''Spring Steel SAE 1858 –Cadmium Plate.'' Also, they stated that in Figure 14, ''5.00 Bubble movement'' should be replaced by ''5.88 Bubble movement'' and the screw ''Typ. #18'' should be ''Typ. #10.'' Finally, in Figure 14, the Associations suggested that the dimension of ''100.33'' should instead be ''188.33.''

C. Claims of Substantive Amendment

Several of the petitions claimed that during the rewrite process the agency created new substantive requirements of FMVSS No. 108 when the agency incorporated SAE standards that petitioners claim were not fully incorporated or failed to accurately transpose the requirements of third party standards.

Valeo stated that paragraph S6.1.1.4 ''would prohibit daytime running lights (DRLs) in combination with parking lights.'' Valeo maintained that the existing regulatory text allowed DRLs to be incorporated with parking lamps and urged the agency to retain the existing provision. Valeo referenced paragraph S5.5.11(a) of the current standard, which states that any pair of lamps other than parking lamps or fog lamps may be wired as DRLs. Valeo claimed that the fact that parking lights cannot be used as DRLs is evident because parking lamps would not meet the photometric requirements of DRLs. Valeo claimed that there is no way to reconcile Table 1 of SAE J222 (DEC 1970), *Parking Lamps,* with the minimum requirement of 500 candela at point Horizontal-Vertical of the beam pattern required in the regulation text. Valeo pointed out that many vehicles currently use front turn signals that are optically combined with parking lamps as DRLs. Valeo requested that the agency clarify the wording of paragraph S6.1.1.4 to disallow a DRL consisting of the parking lamp alone, while allowing a DRL that is optically combined with the parking lamp.

Calcoast requested a modification to paragraph S6.1.3.2 to clarify the performance requirements for multiple lighted section lamps. This paragraph states that ''when multiple lamp arrangements or multiple compartment rear turn signal lamps, stop lamps, or taillamps are used, with only a portion of the compartments or lamps installed on a rigid part of the vehicle, that portion must meet at least the photometric requirements for the applicable single compartment lamp.'' Calcoast stated that it is concerned that this language could be interpreted as allowing a multiple lighted section lamp that is part of a multiple lamp arrangement, such as a light-emitting diode (LED) lamp, that is mounted on the fixed portion of the vehicle to comply only with the single lighted section rules and not the multiple lighted section rules. Calcoast asserted that this statement implies that when a multiple lamp arrangement is used, there is no need to confirm that the multiple lamp arrangement meets all requirements for multiple compartment lamps. Calcoast suggested that the text state that the lighting system must comply with all the relevant rules no matter what position the moveable parts have been placed in.

Koito requested that paragraph S6.1.3.2 replace the phrase ''rigid part of the vehicle'' with the term ''fixed body panel.'' Koito noted that the term ''rigid part of the vehicle'' was correctly used in paragraph S6.1.3.1, however, it stated that it appears the term ''fixed body panel'' reflects the intent of the July 7, 2000 letter of interpretation to Gary King [5] which states ''body mounted lamps (rear turn signal, stop, or tail lamps) are the ones that must be designed to comply with FMVSS [No.] 108.''

Harley-Davidson requested that paragraph S6.2.3 be revised to clarify that the headlamp ornamentation prohibition in paragraph S6.2.3.1 does not apply to motorcycles. Harley-Davidson noted that the provision of FMVSS No. 108 prohibiting headlamp ornamentation is contained in paragraph S7.8.5 of the current standard, a paragraph Harley-Davidson claimed does not apply to motorcycles. Harley-Davidson referenced a December 6, 1999 interpretation letter to Piaggio & C.S.p.A [6] and a September 29, 2000 letter to Carter Engineering [7] to support its view on these issues.

AAM requested that the markings requirements of a sealed beam headlamp remove the term ''molded'' in paragraph S6.5.3.3.1. AAM argued that the text of the currently applicable version of FMVSS No. 108 did not require the marking to be molded into the lens.

Ford and AAM requested that the hazard warning pilot indicator requirement be deleted from paragraph S6.6.2. They claimed that the current version of FMVSS No. 108 does not require a hazard pilot indicator light. They maintained that although SAE J910 (JAN 1966), *Hazard Warning Signal Switch,* incorporated by reference in the existing standard, recommends a pilot indicator, this provision was not directly incorporated into the currently applicable version of FMVSS No. 108. They argued that their view is supported by the explicit requirement in the existing regulation for a turn signal indicator lamp. They claimed that since a turn signal pilot indicator was specifically indentified in the regulatory text of FMVSS No. 108, not all the requirements of the referenced SAE standard were included in FMVSS No. 108. They maintained that the requirement for a hazard warning pilot indicator was one of the excluded requirements.

Both the Associations and Ford requested changes to paragraph S6.6.3, which specifies the orientation of the license plate holder. Ford requested that the paragraph be deleted, claiming that the rear license plate holder is not a lamp, reflective device, or piece of associated equipment and is not separately listed as an item in the Table I or Table III of the current rule, and therefore, is not regulated by FMVSS No. 108. Harley-Davidson suggested that this requirement does not apply to motorcycles. Harley-Davidson stated that paragraph S6.1.3.3 of the referenced SAE document SAE J587 (OCT 81), *License Plate Illumination Devices,* excludes motorcycles from that provision. Harley-Davidson also stated that the existing incorporation by reference only applied to the lamps, and not to the license plate holder.

The Associations and Ford requested a change to requirements for turn signal photometric multipliers contained in paragraphs S7.1.1.10.1 through S7.1.1.10.4. The Associations asserted that the currently applicable version of FMVSS No. 108 does not make any distinction between reflector-based, and non-reflector-based optics when calculating the turn signal spacing to other lamps. They requested that paragraphs S7.1.1.10.1 through S7.1.1.10.3 be replaced by the paragraph S5.3.1.7 of the current standard, which contains the currently applicable requirements for turn signal photometric multipliers. Ford referenced the preamble to a previous agency NPRM [8] incorporating an SAE standard on turn signals to support its claim that the graduated turn signal intensity requirements for turn signals located near auxiliary lamps in paragraph S7.1.1.10.4 were not included in the text of the currently applicable version of FMVSS No. 108. Ford requested that paragraphs S7.1.1.10.2, S7.1.1.10.3, S7.1.1.10.4 (b), (c), and (d) be deleted.

AAM requested that paragraph S9.3.4, which deals with turn signal pilot indicator size and color, be removed from the standard because AAM believed that the paragraph imposed new substantive requirements that were not contained in the currently applicable version of the standard. Although AAM noted that the initial requirements published on December 16, 1967 [9] did require a turn signal indicator, and specified its size and color based on requirements in SAE J588d (JUN 1966), *Turn Signal Lamps,* AAM claimed that a subsequent revision to the standard on October 31, 1970 [10] removed the size and color requirements. AAM claimed that the currently applicable version of FMVSS No. 108 only requires that the turn

[5] *http://isearch.nhtsa.gov/files/21605.ztv.html.*

[6] *http://isearch.nhtsa.gov/files/20867.ztv.html.*

[7] *http://isearch.nhtsa.gov/files/21971.ztv.html.*

[8] 53 FR 35097, (Sep. 1, 1988).

[9] 32 FR 18032, (Dec. 16, 1967).

[10] 35 FR 16840, (Oct. 31, 1970).

signal pilot indicator indicate a turn signal outage in accordance with SAE J588d (JUN 1966) and does not specify size and color requirements for the indicator.

Harley-Davidson requested clarification and confirmation that the headlamp aimability requirements of paragraph S10.18 do not apply to motorcycles. Harley-Davidson claimed that paragraph S7.8 of the currently applicable version of the standard did not require aimability for motorcycle headlamps. Harley-Davidson referenced a letter of interpretation to Piaggio & C.S.p.A dated December 6, 1999 and also a letter to Carter Engineering dated September 29, 2000 to support its argument.

The Associations, Koito, and Calcoast requested that the agency amend paragraph S10.18.9.1.5.1, which specifies the distance at which the cutoff parameter must be measured, to allow measurement from distances greater than 10 m. Paragraph S10.18.9.1.5.1 requires that the cut off parameter be measured at a distance of 10 m with a 10 mm diameter photosensor. The Associations recommended deleting the last sentence of paragraph S10.18.9.1.5.1, or stating that 10 m is the minimum distance allowable for measuring the cutoff parameter. Koito recommended allowing a measuring distance of 18.3 m or more for measuring the cutoff parameter. Calcoast requested that the agency permit cutoff measurements at both 10 m and 25 m. All petitioners agreed that the diameter of the photosensor should appropriately correspond to the measuring distance.

Nissan requested that the inward force test specified in paragraph S14.6.12 be excluded for vehicle headlamp aiming device (VHAD) and visually-optically aimable (VOA) lamps. Nissan stated that the text of the currently applicable version of FMVSS No. 108 does not require VHAD and VOA lamps to conform to this test. Nissan also stated that the test requires an aiming plane, typically found only on externally aimed systems. Finally, Nissan claimed that the test itself is intended to assure that an externally aimable headlamp system can withstand the normal force applied to seat the suction cup onto the lens when affixing the mechanical aiming device.

The Associations and Grote petitioned the agency to add language to allow stop and turn signal lamps designed for use on vehicles 2032 mm or more in overall width, that meet the one lighted section photometric values, to be used on narrow vehicles. They claimed that SAE J1395 (APR 1985), *Front and Rear Turn Signals for Use of Motor Vehicles 2032 mm or More in Overall Width,* and SAE J1398 (MAY 1985) expressly allow this. To support this position the Associations cited an August 22, 1990 interpretation letter from the agency to Hella [11] which stated:

> Beginning December 1, 1990, Standard No. 108 will specify two different standards for turn signal lamps. If the lamp is intended for use on multipurpose passenger vehicles, trucks, buses, and trailers whose overall width is 80 inches or more, it must be designed to conform to the SAE Standard J1395 * * *, ''Turn Signal Lamps for Use on Motor Vehicles 2032 mm or More in Overall Width,'' [(APR 1985)]. SAE J1395 also provides that these lamps may be used on vehicles less than this width, except for passenger cars. If a motor vehicle is not equipped with a turn signal lamp designed to conform to SAE J1395, it must be equipped with a turn signal lamp designed to conform to SAE standard J588 * * *, ''Turn Signal Lamps for Use on Motor Vehicles Less Than 2032 mm in Overall Width,'' [(NOV 1984)].

Finally, the Associations stated that a denial of this petition will have a significant cost to the market segment.

Harley-Davidson requested that the minimum Effective Luminous Lens Area requirement for multiple compartment motorcycle stop lamps be added to Table IV–a. Harley-Davidson suggested this value should be 2,200 square mm. Harley-Davidson maintained that the current version of FMVSS No. 108 permits multiple compartment lamps or multiple lamps on motorcycles if the effective projected luminous lens area of each compartment is 2,200 square mm. Harley-Davidson states that the agency confirmed this position in a April 21, 1997 letter of interpretation to Stanley Electric.[12]

Nissan asked that the legacy visibility wording be changed for the turn, stop, and tail lamps in Table V–d. Nissan claimed that Table V–d uses different language than the SAE sub-referenced standard for these lamps on both narrow and wide vehicles. AAM requested that footnote 1 and footnote 4 be removed from Table VIII, *Stop Lamp Photometry Requirements.* AAM maintained that both of these footnotes contain requirements not previously included in FMVSS No. 108.

Nissan requested that the agency reconsider its decision not to amend the footnotes to the photometric tables for required signal lamps in response to comments received by the agency on the NPRM. Nissan stated that the footnotes to the photometric tables could be amended to provide greater clarity to the requirements of the standard without creating any substantive changes.

In Table XIX, the Associations requested that the lower beam zone defined by the corner point 10U, 90U, 90L, 90R be modified to 10U, 90U, 45L, 45R. Valeo suggested modifying Table XIX(a)(b), and (c) by modifying the first row range from 10U to 90U, 90L to 90R to only state 10U to 90U, eliminating the horizontal angles. Both Valeo and the Associations claimed that the horizontal range was not defined in the currently applicable standard.

D. Amendments to Improve Clarity

Commenters requested the following changes to clarify certain provisions of the standard and to further improve readability. Nissan requested that paragraph S6.1.3.4.2 be revised to read: ''Accessibility. Each high mounted stop lamp must provide access for convenient replacement of the bulb without a tool specifically designed for that purpose.'' Nissan stated that this wording would incorporate a February 12, 1998 interpretation letter to Ford Motor Company [13] to clarify the meaning of ''special tool.''

Harley-Davidson requested that the agency clarify that dual motorcycle head lamps may be horizontally-mounted. Harley-Davidson stated that paragraph S6.1.3.5.1.3 of the rewrite seems to prohibit horizontally-mounted dual motorcycle headlamps. Harley-Davidson claimed that paragraph S7.9.6.2(c) of the current standard permits dual horizontal mounting. Harley-Davidson further claimed that paragraph S10.17.1.3.1 of the rewrite of FMVSS No. 108 continues to permit dual horizontally-mounted motorcycle headlamps.

Koito requested that the agency clarify paragraph S7.3.12.1, which deals with the ratio requirements between stop and tail lamp intensities. Koito requested that this paragraph be modified to say: ''When a taillamp on a multipurpose passenger vehicle, truck, trailer, or bus of 2,032 mm or more in overall width, is combined with a stop lamp, the luminous intensity of the stop lamps at each identified test point must be * * *'' Koito claimed that this will clarify that the ratio requirement is always applied between stop and tail lamp intensities on wide vehicles and that wide vehicles do not have the 560 mm and 410 mm classification used for narrow vehicles.

Nissan recommended adding a subject to the sentence in paragraph S8.2.1.5 so that the text reads: ''Application location. Conspicuity systems need not

[11] *http://isearch.nhtsa.gov/aiam/aiam4773.html.*

[12] *http://isearch.nhtsa.gov/files/14307.ztv.html.*

[13] *http://isearch.nhtsa.gov/files/16788.ztv.html.*

be * * *'' Nissan stated that this is consistent with the other paragraphs of that section.

Nissan requested that paragraph S10.1.2 be modified to eliminate the duplicate requirements for motorcycle headlamp systems. Nissan recommended modifying that paragraph to read: ''Each motorcycle must be equipped with a headlighting system conforming to S10.17.'' This modification would eliminate the allowance of a one half headlighting system within paragraph S10.1.2, because that allowance is set forth within paragraph S10.17, thereby removing redundant requirements.

Koito recommended clarifying the requirements for four headlamp systems by modifying paragraph S10.15.1 to read as follows: ''A replaceable bulb headlighting system must consist of either two lamps, each containing either one or two replaceable light sources, or four lamps, each containing a single replaceable light source as specified for the application system in Table II–d. A system must provide in total no more than two upper beams and two lower beams and must incorporate not more than two replaceable light sources in each headlamp.'' Koito claimed that its recommended text will limit the number of light sources in each headlamp of a four headlamp system. Koito claimed, that as currently worded, the final rule will allow two replaceable light sources in each headlamp of a four headlamp system, which it further claimed is not consistent with the intent of the original requirement.

Toyota and Koito both requested a modification to paragraph S10.15.5 which deals with additional light sources in a replaceable bulb headlighting system. They requested the term ''replaceable light sources'' be replaced with the term ''light sources'' in this paragraph. They claimed that this expression should be the same as is used in paragraph S10.14.5 for integral beam headlighting systems. Toyota also recommended including the phrase ''and are replaceable'' to the end of that paragraph. Toyota also noted that this change was discussed in the preamble to the final rule, but was not properly included in the final rule text.

Nissan requested that paragraph S10.18.9.5, which deals with visual/optical aiming headlamp photometry, be removed. Nissan claimed that this entire paragraph is redundant with paragraphs S10.13.3, S10.14.6, S10.15.6, S10.16.2, and Table II. Nissan stated that the requirements should only be stated once in the standard.

Nissan requested that paragraph S13.3, which deals with replaceable headlamp lens markings, be relocated within paragraph S6.5. Nissan stated that the DOT marking requirement in that paragraph is redundant with paragraph S6.5.1. Nissan stated the remaining marking requirements of paragraph S13.3 should be added to a new paragraph enumerated as paragraph S6.5.3.6.

The Associations and SABIC requested a modification to paragraph S14.1.2, which deals with plastic optical materials. The Associations requested that the paragraph be modified to state: ''Plastic optical materials. All plastic material used for optical parts such as lenses and reflex reflectors on lamps, or reflective devices required or allowed by this standard must conform to the material test requirements of S14.4.2, unless they are conspicuity treatments that are in accordance with S8.2.1 or S8.2.2.'' SABIC requested that the paragraph be modified as follows: ''Plastic optical material. All plastic materials used for transparent optical parts such as lenses and reflex reflectors on lamps or reflective devices required or allowed by this standard must conform to the material test requirements of S14.4.2.'' Both petitioners pointed out the distinction between reflex reflectors and reflectors. The Associations further stated that conspicuity treatments were not part of the standard when this original language was placed in the standard.

Nissan requested a modification to paragraph S14.2.4.3, which specifies bulb requirements for DRL photometry testing. Nissan requested that this paragraph be revised to read: ''Bulb requirements of paragraph S14.2.1.6 apply to DRL photometry, except for the need to operate at the rated mean spherical candela.'' Nissan claimed that the text of the final rule, which states that bulbs are to be operated at their rated mean spherical candela, creates a conflict with the requirement in paragraph S14.2.4.1, which requires a fixed 12.8V input be applied to the modules or electrical control units during testing. Nissan stated that it may not be possible to achieve a bulb's mean rated spherical candela at 12.8V.

Koito asked for a clarification of the requirement in paragraph S14.4.2.1.3, which specifies testing for plastic optical materials. Koito noted that test sample thicknesses are stated to be 1.6 mm, 2.3 mm, 3.2 mm, and 6.4 mm. Koito also noted that the color requirement in paragraph S14.4.2.2.4.5 specifies that after completion of the outdoor exposure test, all materials must conform to the standard's color test in the range of thickness stated by the manufacturer. Koito asked if a material thickness of 7 mm can be certified if it was once tested in the four thicknesses stated above, and found satisfactory.

Nissan requested that some information contained in the text of the standard be incorporated into a new table. Nissan requested that the tabulated text in paragraph S14.9.3.11.2.3.1, *Operating Limits,* be titled ''Table XXI'' and relocated with the other tables instead of being located in its current position.

AAM further requested that Table I–a be broken into two tables that separate the requirements of narrow vehicles from those for wide vehicles.

AAM stated that the requirements for DRLs should not be located in Table I–a because the title of the table *Required Lamps and Reflective Devices* may confuse users trying to locate the requirements. AAM stated that Table I–a should contain a pointing statement to allow the user of the standard to locate the requirements for DRLs elsewhere.

Koito requested that the activation specifications for a high mounted stop lamp in Table I–a be changed to ''Steady burning. Must only be activated upon application of the service brakes or may be activated by a device designed to retard the motion of the vehicle.'' Koito claimed this change is necessary because, in its view, ''a high mounted stop lamp is optional on the activation of a device designed to retard the motion of the vehicle.''

AAM requested that the titles of Tables I–a, I–b, and I–c be amended to include the vehicles to which the tables apply. AAM stated that all of the tables having the same title, *Required Lamps and Reflective Devices,* does not improve the clarity of the standard.

The Associations, Grote, and Valeo requested that the maximum allowable photometric intensity in Table XII for backup lamps on vehicles equipped with a single back up lamp be changed from 300 to 300/600. They further requested the addition of a footnote that states; ''the value before the slash (300 cd) applies to each lamp in a multiple lamp system; the value after the slash (600 cd) applies to a single lamp system.'' The petitioners stated that FMVSS No. 108 requires backup lamps on vehicles equipped with a single backup lamp to be tested at twice the candela requirements. Industry believes this applies to maximum as well as minimum values.

Nissan suggested removing the term ''test points'' in footnote 1 of Table XIX, to clarify that all points with the specified boundary must meet the photometric requirements listed in the table. Finally, Nissan requested that all

the tables be presented in a complete manner without splitting a table across multiple pages.

IV. Agency Analysis and Response

A. Definitions

The agency has considered the requests from Nissan and AAM to modify the definition of clearance, identification, and side marker lamps. For each of these lamps, the agency has verified that the definitions were successfully translated from the applicable SAE document referenced in the currently applicable version of the standard. While the agency believes that the modifications requested by Nissan have the potential to further simplify the definitions of these lamps, modifying the definitions may change the meaning of these terms. The agency believes that it would be better to retain sporadic redundancies in the standard than to risk a substantive modification by changing the definitions of these lamps. Further, such a modification would be outside the scope of the administrative rewrite of the standard. Therefore, the agency is denying these requests.

The agency is denying the request by the Associations, Grote, and Valeo to add a definition for the term ''headlamp system.'' Since this definition did not exist in the existing regulation text, nor in the documents incorporated by reference, the agency considers this addition to be a substantive change not within the scope of the administrative rewrite of the standard.

Nissan requested that the agency incorporate a November 3, 1988 interpretation letter to Al Cunningham in order to clarify the definition of a ''multiple compartment lamp.'' The final rule definition of a multiple compartment lamp is a direct carry-over from text in paragraph S4 of the currently applicable version of FMVSS No. 108. In the NPRM, the agency invited input from interested parties regarding additional interpretations that should be considered for inclusion in the final rule, beyond those proposed by the agency. Nissan's petition was not submitted at that time. It is the agency's intention to take caution not to create a substantive change within this technical correction and partial response to petitions for reconsideration, therefore, we are denying this request by Nissan.

The agency is granting the Associations' request to add a definition of a ''combination headlamp.'' They noted that other lamp types regulated within this standard are defined in the definition section, however, a combination headlamp is not defined except in Table II–b. The Associations suggested adding a definition that uses the system composition column descriptions from Table II–b in order to construct the following definition: ''Combination Headlamp System: For a two lamp system, a combination of two different headlamps chosen from: Type F, an integral beam headlamp, or a replaceable bulb headlamp and for a four lamp system, any combination of four different headlamps chosen from: Type F, an integral beam headlamp, or a replaceable bulb headlamp.'' This description is consistent with the existing text of the standard found in paragraphs S7.6.2, and S7.6.3 of the final rule. In order to maintain consistency within the standard, the agency will define a combination headlamp as opposed to a combination headlamp system. The definition is as follows: ''Combination headlamp means a headlamp that is a combination of two different headlamp types chosen from a type F sealed beam headlamp, an integral beam headlamp, or a replaceable bulb headlamp.'' The currently applicable standard does not include a stated definition for the term ''combination headlamp,'' however, the agency agrees that such a definition—limited to a combination headlamp rather than to such a system—does not impose any substantive change to the standard, and provides a more straightforward presentation of the requirements.

The Association's request to define ''combination headlamp'' differs from the request in the petitions from Grote and Valeo to create a definition of ''headlamp system.'' The definition proposed by the Associations does not create new wording within the standard, it uses a description already contained in the standard, and places that description into the definition section. The definition of a ''combination headlamp'' is therefore added within paragraph S4 as requested by the Associations.

The agency is denying Grote and the Associations' request to use the term ''lighted sections'' when referring to lamp sections or compartments. It has been the agency's intent during the rewrite of FMVSS No. 108 not to change the language of the current standard or incorporated documents so as to avoid making unintended changes to the standard. Adopting the term ''lighted sections'' in place of ''lamp sections'' or ''compartments'' would alter the standard in a manner that is inconsistent with the goals of the rewrite.

B. Technical Amendments

The agency has considered and incorporated corrections in response to the requests to remedy typographical errors, or formatting errors found in the final rule. The agency has declined to make several technical corrections that will be discussed in greater detail in this section.

The agency agrees with Nissan that the ASTM C 150–56 specification is missing from paragraph S5. This specification has been added.

The agency has corrected the grammatical error identified by Nissan in paragraph S6.4.4. Paragraph S6.4.4 has been modified to read as published in this final rule.

The agency is denying the request by AAM to move paragraph S6.5.1, which contains the DOT marking requirements for headlamps. While we do note that other headlamp marking requirements are located in paragraphs S6.5.3, priority within organization will be maintained by keeping the three paragraphs, S6.5.1 DOT markings for headlamps, S6.5.1.1 which deals with DOT conspicuity markings, and S6.5.1.2 which describes the general allowance of placing the DOT marking on lamps other than headlamps, together. We believe it would be inappropriate to place the contents of paragraph S6.5.1.1 and paragraph S6.5.1.2 within the paragraphs of S6.5.3, because these paragraphs are not headlamp specific. Therefore, we are maintaining the current paragraph structure.

The paragraph that was mistakenly numbered S6.5.3, *Trademark,* has been corrected to S6.5.3.1, *Trademark.* Paragraph S6.5.3 no longer appears twice.

The agency is granting the AAM request that the format of the text ''SEALED BEAM,'' located in paragraph S6.5.3.3.1, be modified to lowercase letters that match the same text located in Table III. The text for paragraph S6.5.3.3.1 was derived from paragraph 2.1.1 in SAE 1383 APR 1985, *Performance Requirements for Replacement Bulb Motor Vehicle Headlamps.* In the SAE document the text is all lower case, appearing as ''sealed beam.'' The agency agrees that the letter case of the word ''sealed beam'' should be the same in Table III as in paragraph S6.5.3.3.1, therefore, both instances have been changed to the lowercase presentation ''sealed beam.'' The agency does note that in this particular case, we do not feel the actual presentation of lower case or upper case notation of the words ''sealed beam'' is vital to the public's use of the standard,

or to the agency's ability to enforce the existence of the marking.

In response to AAM's request to change the plural term ''compartments'' to the singular term ''compartment,'' the agency has modified paragraph S7.1.1.11. The agency agrees that the singular form of the term is more appropriate. It now states ''S7.1.1.11 Multiple compartment lamps and multiple lamps.''

Based on AAM's request, paragraph S7.1.1.11.1 has been modified to read: ''A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements of a front turn signal lamp *provided the requirements of S6.1.3.2 are met.*'' The agency believes the additional reference to paragraph S6.1.3.2 makes the standard more usable.

As Nissan requested, paragraph S7.1.1.12.4 has been corrected to state: ''* * * the clearance lamp is located below the horizontal and within an area generated by a 1.0 degree radius around * * *'' This modification corrects the missing word ''degree.''

As AAM requested, the agency has changed the marking requirements for lamps other than headlamps to point to the specific subparagraph within paragraph 6.5. The agency has changed the pointing statement in the following paragraphs to provide the specificity requested by AAM: S7.1.1.9, S7.1.2.9, S7.2.9, S7.3.9, S7.4.9, S7.5.9, S7.6.9, S7.7.9, S7.8.9, S7.9.9, S7.11.9 and S8.1.9. The pointing statement for these paragraphs now points to paragraph S6.5.1.2 instead of paragraph S6.5. The agency has not changed the pointing statement in paragraph S7.10.9, which deals with DRL markings, because more than one subparagraph within S6.5 may apply to DRL markings. We believe these modified references will allow the users of the standard to find the paragraph of interest more efficiently.

As AAM requested, the agency has removed the references to Tables I–a, I–b, and I–c from paragraph S7.7.4 which now reads ''No requirement.'' The agency agrees that this construction is more usable, compared to referencing Tables I–a, I–b, and I–c which all state ''No requirement.''

The agency has granted the Associations' request that the paragraph numeration be corrected under paragraph S7.9.14. The structure has been corrected to S7.9.14.1 and S7.9.14.2.

The agency has granted Nissan's request to change paragraph S14.2.1.5.2 to read ''Luminous intensity measurements of multiple compartment lamps or multiple lamp arrangements are made either by:'' in order to maintain consistent language throughout the sentence.

We have modified Paragraph S14.3.1, as requested by Toyota, in order to correctly abbreviate the unit ''inch.'' The abbreviation now includes a period after the letters in.

We have granted GE and the Associations' request to modify paragraph S14.6.9.1.1 in order to correct a temperature conversion error. Paragraph S14.6.9.1.1 now lists 80° C as the metric equivalent of 176° F.

The agency has revised all tables to place requirements in the correct column, remove extraneous billing codes, correct the format of table headings and subheadings, and correct pointing statements as requested by petitioners.

Nissan requested that the agency add English units of measurement to the *Mounting Height* column for lower and upper beam headlamps in Table I–a. AAM also requested that the agency add English units of measurement to Tables I–a, I–b, and I–c. The agency notes that the mounting height requirements for upper and lower beam head lamps are listed in both metric and English units in the currently applicable version of FMVSS No. 108, therefore, adding the English units of measurement does not create a substantive change to the standard. The agency grants Nissan's request and has added the English units of measurement to the *Mounting Height* column of Table I–a for both upper and lower beam headlamps. The agency is also adding English units of measurement to the *Mounting Height* column of Table I–c for both upper and lower beams. The agency is denying AAM's request to list all measurements in Tables I–a, I–b, and I–c in both English and metric units as the measurements are not listed in this manner in the currently applicable version of FMVSS No. 108. As stated in both the NPRM and the preamble to the final rule, the agency is attempting to refrain from making any substantive change to the requirements of the standard during the rewrite process. The agency believes that in the process of converting measurements from metric to English or vice versa it is possible to create a substantive change to the requirements of the standard.

We decline to adopt AAM's proposal to add the word ''Optional'' to the *Markings* column of Table III for *Lamps (Other Than Headlamps), Reflective Devices, and Associated Equipment* because paragraph S6.5.1.2 referenced in that table adequately conveys the installation requirement without redundant wording inside the table. This request is therefore denied.

AAM noted that Table III contained an incorrect reference paragraph for the marking requirements for replaceable bulb headlamps. The agency has changed the reference for replaceable bulb headlamp marking requirements to point to paragraph S6.5.3.4.

We decline to incorporate AAM's request to add marking requirements for replacement lens headlamps to Table III because paragraph S5.8.11 of the existing standard contains requirements for instructions and a replacement seal, neither of which the agency considers appropriate to list among the marking requirements in Table III.

The agency is granting Nissan's request to provide the required visibility measurements in both English and metric units for Table V–a. We have also corrected the alignment of lighting device functions to their corner points in Table V–b.

The agency is granting Nissan's request to replace the word ''zone'' with the word ''group'' in footnote 2 of Tables VIII, XIV, and XV and footnote 4 of Table XII. Nissan also requested that the agency amend footnote 2 of Table XVI to replace the word ''zone'' with the word ''group.'' As neither Tables XVI–a, XVI–b, or XVI–c have a footnote 2, the agency is not in a position to grant this request.

AAM requested that the agency amend footnote 6 of Table IX to clarify that the minimum photometric intensity ratio for stop lamps combined with taillamps on wide vehicles for the H–5L test point was 3:1 not 5:1. The agency agrees that the photometric ratio for the H–5L test point for wide vehicles is 3:1. The agency is granting AAM's request by amending footnote 6 of Table IX to read: ''Values followed by a slash (/) apply only to lamps installed on multipurpose passenger vehicles, trucks, trailers, and buses of 2032 mm or more in overall width.''

The agency has revised Table XV so that the test points are listed as horizontal first and vertical second as requested by Nissan.

The Associations requested that Figure 8 measurement ''A'' be replaced with the term ''Light Center Length.'' This measurement and label ''A'' were directly translated from the text of Figure 8 in the currently applicable version of Standard No. 108. In the currently applicable version of Standard No. 108, the label ''A'' was used, furthermore, this distance is referenced in paragraphs S14.7.1.1.1, S14.7.1.1.2, and S14.7.1.1.3 as distance ''A''. Therefore, the agency is denying this request in order to avoid a potentially substantive change by introducing a new term into Figure 8.

The Associations also requested changes to Figure 14 that include changing the ''Disc. Arm and Brace Clamp'' material from SAE–AA–6961 to SAE–AA–6061. The agency agrees that this was listed incorrectly and has modified Figure 14 accordingly. They also requested that the ''Coil Spring and Level clip'' material be changed to ''Spring Steel SAE 1858—Cadmium Plate.'' The agency does not agree as ''Spring Steel SAE 1050'' is called out in the currently applicable version of this standard. Therefore, we are denying this request. Also, the agency has corrected the value of the bubble movement to 5.08 and changed the screw number to ''TYP #10'' in Figure 14 because these changes are consistent with the currently applicable version of the standard. The dimension of 100.33 was correctly translated from the currently applicable version of the standard so the agency is denying the Associations' request to amend that value to 188.33.

GE noted several corrections in the sealed beam drawings that were moved into the part 564 docket. Corrections to these drawings will be made, and the docket will be updated.

C. Claims of Substantive Amendment

Several of the petitioners claimed that the agency made substantive changes to the requirements of the standard during the rewrite process or requested that the agency clarify portions of the text to ensure that the rewrite did not impose any new requirements. The agency has made all efforts not to impose any new burdens on regulated parties or change the requirements of the standard in any way through the rewrite process. It is the agency's position that the requirements of FMVSS No. 108 have not changed as a result of the rewrite.

In consideration of Valeo's request to change the wording of paragraph S6.1.1.4 in order to make it clear that a DRL may be optically combined with a parking lamp in the final rule, the agency attempted to translate the text of the currently applicable version of FMVSS No. 108 without creating substantive changes. Paragraph S6.1.1.4 is derived from paragraph S5.5.11(a) of the existing standard.

The final rule split paragraph S5.5.11(a) into various parts without changing the activation requirements of DRLs. Some of the text was included in paragraph S6.1.1.4 of the final rule.

Table I–a contains the remaining translation of the text of the currently applicable version of FMVSS No. 108 which states that the activation should be ''Steady burning. Automatically activated as determined by the vehicle manufacturer and automatically deactivated when the headlamp control is in any on position.''

In order to avoid a substantive change to the requirements of FMVSS No. 108, the agency does not believe it is appropriate to incorporate any additional letters of interpretation at this time regarding the permissibility of optically combining parking lamps or fog lamps with DRLs. The agency, however, does understand that the final rule text may provide less clarity than the existing standard. Therefore, in order to more strictly adhere to the language in the existing standard, we are modifying paragraph S6.1.1.4 to retain the language allowing any pair of lamps except parking lamps or fog lamps to be wired as DRLs at the option of the manufacturer.

This modification does create a limited amount of redundant text contained in both paragraph S6.1.1.4 and Table I–a, however, the agency considers this small level of redundancy manageable and preferable, in this situation, in order to avoid unintended confusion due to a change in the language in the final rule.

The agency has considered Calcoast's request to modify paragraph S6.1.3.2, to clarify the requirements of multiple lamp arrangements and multiple compartment rear turns signal, stop lamp, and taillamp combinations. Calcoast stated that this paragraph could be interpreted such as to allow a multiple lighted section lamp that is part of a multiple lamp arrangement and mounted on the fixed portion of the vehicle to meet only the single compartment lamp requirements. Calcoast indicated this situation might occur particularly in a lamp utilizing LED's as the sources. The section of this paragraph under consideration is the phrase ''that portion must meet at least the photometric requirements for the applicable single compartment lamp.''

In developing the NPRM, and ultimately the final rule, the agency relied on a July 12, 2000 interpretation letter to Gary King. The interpretation letter, however, does not specify that a multiple compartment lamp need only meet the single compartment requirements in the multiple lamp arrangement described in that interpretation. Accordingly, the agency believes that paragraph S6.1.3.2 of the final rule could be misinterpreted. Therefore, in response to Calcoast's request, the paragraph has thus been modified to state: ''S6.1.3.2 When multiple lamp arrangements for rear turn signal lamps, stop lamps, or taillamps are used, with only a portion of the lamps installed on a *fixed* part of the vehicle, the lamp or lamps that are installed to the *non-fixed* part of the vehicle will be considered auxiliary lamps.'' The agency believes this modified paragraph adheres to the guidance provided in the King interpretation letter and provides less opportunity for misinterpretation. The revised paragraph S6.1.3.2 also includes the request from Koito to replace the term ''rigid'' with the term ''fixed'' as the agency agrees the term ''fixed'' more appropriately describes the situation discussed in the interpretation letter to Mr. King.

The agency agrees with Harley-Davidson's claim that paragraph S6.2.3.1, which prohibits any styling, ornament or other feature on the front of the headlamp lens when the lamp is activated, does not apply to motorcycles. This paragraph was derived from the existing regulatory text in paragraph S7.8.5, which contains both the prohibition on styling and ornamentation on headlamp lenses and the requirement the headlamps have aiming devices. As Harley-Davidson pointed out, two letters of interpretation, a December 6, 1999 letter to Piaggio & C.S.p.A, and a September 29, 2000 letter to Carter Engineering, confirm that FMVSS No. 108 does not require motorcycle headlamps to have aiming mechanisms. Within the letter to Carter Engineering, NHTSA stated: ''The aiming mechanism requirements of Standard No. 108 are imposed by S7.8, and as indicated previously, we do not intend S7.8.2 to apply to motorcycle headlamps. We intend that the paragraphs of S7.9 Motorcycles and their referenced materials cover motorcycle headlamps.'' This ornament prohibition was first added to the standard in 1989 [14] and at that time was within the same paragraph as aimability requirements. Therefore, we have modified paragraph S6.2.3.1 as follows: ''When activated in the steady burning state, headlamps *(excluding headlamps mounted on motorcycles)* must not have any styling ornament or other feature, such as a translucent cover or grill, in front of the lens.''

AAM requested a change to paragraph S6.5.3.3.1 so that the marking requirements for sealed beam headlamps need not be molded into the lens. We believe that AAM is incorrect in its assertion that the current standard does not require that marking be molded into the lens of sealed beam headlamps. The marking requirements from paragraph S6.5.3.3.1 were derived from current FMVSS No. 108 paragraph S7.3.1 which references SAE J1383

[14] 54 FR 20079, (May 9, 1989).

(APR 1985), *Performance Requirements for Motor Vehicle Headlamps.* SAE J1383 (APR 1985) states, in paragraph S5.4.4, ''Headlamp lenses shall be marked with a three letter code. The marking shall be molded in the lens * * *'' Thus, the requirement that the marking of a sealed beam headlamp be molded into the lens is clearly part of the existing standard. Accordingly, the agency is maintaining the requirements contained in paragraph S6.5.3.3.1 and is denying AAM's request.

Ford and AAM requested that the hazard warning pilot indicator requirements be deleted from paragraph S6.6.2. They stated that the requirement for a hazard warning signal pilot indicator has never been contained in any previous version of FMVSS No. 108. They contended that the presence of paragraph S3.4.7 in the original version of FMVSS No. 108 published in 1967,[15] (paragraph S5.5.6 in the current version of the standard) which contained the requirements for a turn signal pilot indicator, indicates other pilot indicators were not required under the original version of the standard. They asserted that since FMVSS No. 108 specifically references a turn signal pilot indicator in the text of the standard, requirements for other indicators in SAE standards were not intended to be incorporated by reference into FMVSS No. 108.

NHTSA does not agree with AAM's and Ford's argument, a hazard warning signal pilot indicator is required by the current version of FMVSS No. 108 and SAE standards incorporated by reference. Paragraph S5.1.1 of the current standard requires that vehicles shall be equipped with the lamps, reflective devices, and associated equipment specified in Table I and Table III, and that those devices shall be designed to conform to the SAE standards or recommended practices referenced in those tables. Table I lists a vehicle hazard warning signal unit and a vehicle hazard warning signal flasher as required equipment for all vehicles wider than 80 inches, except trailers, and references SAE J910 (JAN 1966), *Hazard Warning Signal Switch,* and SAE J945 (FEB 1966), *Vehicular Hazard Warning Signal Flasher.* Table III lists a vehicle hazard warning signal operating unit and a vehicle hazard warning signal flasher as required equipment for all vehicles narrower than 80 inches, except trailers and motorcycles, and references SAE J910 (JAN 1966) and SAE J945 (FEB 1966). SAE J910 (JAN 1966) states:

> Pilot Indicator Lamps—In vehicles equipped with right- and left-hand turn signal pilot indicators, both pilots and/or a separate pilot shall flash simultaneously while the vehicle hazard operating unit is turned on. In vehicles equipped with a single turn signal pilot indicator, a separate vehicular hazard pilot indicator shall flash and the turn signal pilot may flash while the vehicular hazard operating unit is turned on. If a separate vehicular hazard pilot indicator is used, it shall emit a red color and have a minimum area equivalent to a 0.5 in. diameter circle.

Therefore, Tables I and III, in conjunction with paragraph S5.1.1 of the current standard, require that vehicles equipped with hazard warning signal switches be equipped with a hazard warning signal pilot indicator. We do not agree with the assertion by AAM and Ford that the SAE requirements incorporated by reference for hazard warning lamps do not apply because they were not restated directly in the standard, as was the case with turn signal pilot indicators. Therefore, we are denying this request and retaining the language of paragraph S6.6.2 in its entirety.

The Associations, Ford, and Harley-Davidson requested changes to paragraph S6.6.3, which specifies the orientation of the license plate holder. The agency will address the issue of the applicability of license plate holder requirements in a separate notice.

Ford requested the deletion of paragraphs S7.1.1.10.2, S7.1.1.10.3, S7.1.1.10.4(b), S7.1.1.10.4(c), and S7.1.1.10.4(d) which all deal with the measurement of, and requirements for, front turn signal lamp intensity based on the spatial relationship to any auxiliary lower beam or fog lamp. Ford stated that these requirements, which were derived from the existing standard by way of reference to SAE J588 (NOV 1984) and SAE J1395 (APR 1985), were not previously incorporated fully into the standard by reference. Ford stated that the denial of an SAE petition for rulemaking,[16] which stated, ''NHTSA reference to SAE standards is not always absolute, in that parts of standards are referenced or exceptions are made to specific requirements in SAE standards where different or more stringent performance is necessary for safety purposes,'' demonstrates that it is well and widely understood that not all requirements referenced in SAE standards are intended by the agency to be incorporated into the standard. Ford also cited the final rule preamble that incorporated SAE J588 (NOV 1984) and SAE J1395 (NOV 1984) into FMVSS No. 108. Ford quoted that discussion as stating:

> An additional difference between the new SAE turn signal specification and the ones currently contained in FMVSS No. 108 concerns intensity. If a turn signal lamp is closer than 4 inches (100 mm) to a lower beam headlamp, it must have 2.5 times the intensity otherwise required. The SAE applies the factor of 2.5 only if the turn signal is closer than 60 mm to the lower beam headlamp. NHTSA proposed retention of the current requirement. The SAE specification applies the photometric multiplier in three steps, from 60 mm to 100 mm.[17]

The final statement in that discussion concluded, ''[g]iven the advent and usage of higher intensity headlamps, there appears to be an even greater need than before to preserve the intensity ratio. NHTSA has done so by retaining the existing requirement.''

We do not agree with Ford's position. Ford's argument that NHTSA's incorporation of SAE standards is not always absolute is in reference to cases in which FMVSS No. 108 explicitly states requirements that are different than the SAE documents. In cases where NHTSA does not specifically exclude parts of SAE standards, the entire standard is incorporated by reference. In the rulemaking cited by Ford, neither within the preamble of that final rule, nor in the NPRM was there any discussion of exempting, or applying any intensity multipliers other than those appearing in the SAE document for auxiliary lamps. The key argument for the agency not to adopt the multipliers in the 1984 SAE standards deals with higher intensity headlamps and the spatial relationship of turn signals to those lamps and, thus, is inapplicable to intensity multipliers for turn signals located near auxiliary lamps. As stated in the preamble of the final rule, SAE J588 (NOV 1984) and SAE J1395 (APR 1985) contain additional photometric multiplier requirements beyond those required in paragraph S5.3.1.7 for turn signals located near auxiliary lamps.[18] It is the agency's position that the requirements in paragraph S5.3.1.7 work in conjunction with the requirements in SAE J588 (NOV 1984) and SAE J1395 (APR 1985) and do not preempt them. Therefore, the agency has not removed the paragraphs and denies Ford's requests.

The Associations claimed the text of the currently applicable version of FMVSS No. 108 did not distinguish between non-reflector light sources and reflector light sources for the purposes

[15] 32 FR 18037, (Dec. 16, 1967).

[16] 61 FR 14044, (Mar. 29, 1996).

[17] 55 FR 20158, (May 15, 1990).

[18] 72 FR 68243, (Dec. 4, 2007).

of measuring the distance between a turn signal to a headlamp, or auxiliary lamp. They claimed that paragraph S5.3.1.7 in the existing FMVSS No. 108, which states, ''on a motor vehicle on which the front turn signal lamp is less than 100 mm from the lighted edge of a lower beam headlamp, as measured from the optical center of the turn signal lamps, the multiplier applied to obtain the required minimum luminous intensities shall be 2.5'' supersedes section 5.1.5.4 of SAE J588 (NOV 1984). Therefore, the Associations requested that paragraphs S7.1.1.10.1 through S7.1.1.10.3 of the final rule be replaced with paragraph S5.3.1.7 of the currently-applicable version of FMVSS No. 108.

The agency agrees that the distance between a turn signal lamp and a lower beam headlamp should be measured from the optical center as specified in the text of the currently applicable version of FMVSS No. 108. However, the measurements between a turn signal lamp and an auxiliary lamp are incorporated from SAE J588 (NOV 1984), which included different measurement methods for turn signal lamps that incorporate reflector optics and turn signal lamps that primarily use lens optics. Considering this, paragraph S7.1.1.10.4(a) has been changed to state ''where the spacing measurement as measured from the optical center of the turn signal lamp, to the lighted edge of a lower beam headlamp is less than 100 mm, the photometric multiplier must be 2.5.'' As stated previously, SAE J588 (NOV 1984) contains requirements that are additional to those contained in paragraph S5.3.1.7 of the current standard. Therefore, we refrain from changing the method for measuring the distance between the turn signal and auxiliary lamps for determining the required photometric multiplier.

AAM claimed that the text of the currently applicable version of FMVSS No. 108 does not specify the size and color of turn signal pilot indicators and requested that paragraph S9.3.4 be removed. AAM asserted the two sentences contained within paragraph S5.5.6 of the currently applicable version of FMVSS No. 108 should be considered separately. AAM stated that the first sentence requires a vehicle equipped with a turn signal operating unit to also have an illuminated pilot indicator. Through the second sentence, the paragraph separately requires that the failure of one or more turn signal lamps to operate should be indicated according to the SAE Standard. Therefore, AAM claimed that the SAE standard recommendations for turn signal pilot indicator size and color are not requirements in FMVSS No. 108.

NHTSA finds that paragraph S5.5.6 of the current standard requires that the turn signal pilot indicator comply with all requirements for turn signal pilot indicators specified in SAE J588 (SEP 1970). Paragraph S9.3.4 of the final rule, which states, ''[i]f an indicator is located inside the vehicle it must emit a green colored light and have a minimum area equivalent to a 3/16 in diameter circle,'' was derived from the currently applicable version of the FMVSS No. 108 paragraph S5.5.6, which states that, ''[e]ach vehicle equipped with a turn signal operating unit shall also have an illuminated pilot indicator. Failure of one or more turn signal lamps to operate shall be indicated in accordance with SAE J588 (SEP 1970) * * *'' Furthermore, paragraph 4.5.2 of SAE J588 (SEP 1970) states that, ''if the illuminated indicator is located inside the vehicle, for example in the instrument cluster, it should emit a green colored light and have a minimum area equivalent to a 3/16 in. diameter circle.''

It is the view of the agency that the phrase ''[f]ailure of one or more turn signal lamps to operate shall be indicated in accordance with SAE J588 (SEP 1970),'' requires that the turn signal pilot indicator comply in all respects with SAE J588 (SEP 1970). SAE J588 (SEP 1970) contains requirements for pilot indicators to indicate that the turn signal system is off, size and color requirements for the indicator, and visibility requirements for the indicator based on driver eye position. An indicator of a size and color other than the indicator required in SAE J588 (SEP 1970) would not indicate failure of a turn signal lamp to operate in accordance with SAE J588 (1970) because the indicator would not meet the requirements laid out in that standard for size and color. It is the agency's position that this sentence requires the pilot indicator to indicate that the turn signal is out via an indicator of the size and color and at the eye location specified in the standard. Therefore, no substantive change was imposed by the final rule compared with the existing standard. Accordingly, the agency is denying this request from AAM.

Harley-Davidson requested clarification and confirmation that the headlamp aimability requirements of S10.18 do not apply to motorcycles. As discussed in Harley-Davidson's request to clarify the applicability of the headlamp ornamentation prohibition to motorcycles, two letters of interpretation, a December, 6, 1999 letter to Piaggio & C.S.p.A, and a September 9, 2000 letter to Carter Engineering, confirm that this standard does not require motorcycle headlamps to have aiming mechanisms. Within the letter to Mr. Carter, NHTSA stated, ''The aiming mechanism requirements of Standard No. 108 are imposed by S7.8, and as I indicated previously, we do not intend S7.8.2 to apply to motorcycle headlamps. We intend the paragraphs of S7.9 *Motorcycles* and their referenced materials to cover motorcycle headlamps.'' Accordingly, paragraph S10.18 has been modified to state: ''Headlamp aimability performance requirements (*except for motorcycles*).'' Paragraph S10.2 is modified to state ''Reserved.'' The agency does note that in paragraph S14.2.5.5, *Headlamp photometry measurements,* the procedure does require that the headlamp be aimed during testing. Therefore, although the performance requirements of paragraph S10.18 do not apply to motorcycles, they must have the ability to meet the applicable photometric requirements using the testing procedure described in paragraph S14.2.5.

The Associations, Koito and Calcoast requested that the agency amend paragraph S10.18.9.1.5.1, which required that the cutoff parameter for headlamps be measured from a distance of 10 m from a photosensor with a 10 mm diameter because these requirements were not contained in the current version of the standard. The agency provided the measurement distance of 10 m from the photosensor having a diameter of 10 mm for measuring the cutoff parameter as guidance in a letter of interpretation to Tilman Spingler on April 6, 2000.[19] In the agency guidance letter to Mr. Spingler, the agency stated that it intended to incorporate the guidance provided in the letter into FMVSS No. 108 during the next rulemaking involving the standard. The NPRM to this final rule stated that the agency intended to incorporate the April 6, 2000 letter to Mr. Spingler into the revised version of FMVSS No. 108.[20] We believe it is important to identify how the agency will conduct compliance testing and we did this in the NPRM and again discussed the issue in the final rule. Therefore, paragraph S10.18.9.1.5 has not been modified and the petitions from the Associations, Koito, and Calcoast are denied. However, we do note that regulated parties are able to test at different distances if they choose, although NHTSA compliance tests will be done at 10 m. We note the petitioners may

[19] *http://isearch.nhtsa.gov/files/21406.ztv.html.*

[20] 70 FR 77457, (Dec. 30, 2005).

submit data to support a change in the specified distance in a separate petition.

Nissan requested that the inward force test specified in paragraph S14.6.12 be excluded for VHAD and VOA lamps. Nissan stated that the text of the currently applicable version of FMVSS No. 108 did not require VHAD and VOA lamps to conform to this test. Further supporting Nissan's claim, the preamble to a final rule [21] published May 9, 1989 stated:

> The deletion of inward force and torque deflection is appropriate for headlighting systems which do not use externally applied aimers, since these tests are intended to show resistance to the effects of the weight and application of external aimers * * * NHTSA believes that vehicle manufacturers will be cautious enough to design vehicles to withstand the likelihood of misaim in [the] event [the vehicle is pushed by hand], and, considering the deletion appropriate only for headlamps which do not have aiming pads for external mechanical aimers, has adopted the proposed modification of applicability of inward force and torque deflection tests.

Koito also pointed to the preamble of the May 9, 1989, final rule in arguing that the inward force only applies to headlamps that are capable of being externally aimed.

The agency agrees that the inward force test was only required for headlamps with external aimers in the text of the currently applicable version of FMVSS No. 108, therefore we have made the following modifications to the standard: ''S10.13.4.1 Each sealed beam headlamp must be designed to conform to the performance requirements of the corrosion test, vibration test, inward force test (*for lamps which are externally aimed only*), torque deflection test (*for lamps which are externally aimed only*), headlamp connector test, headlamp wattage test, and aiming adjustment tests of S14.6.'' ''S10.14.7.1 Each integral beam headlamp must be designed to conform to the performance requirements of the corrosion test, temperature cycle test, vibration test, inward force test (*for lamps which are externally aimed only*), headlamp connector test, and aiming adjustment tests of S14.6.'' ''S10.15.7.1 Each replaceable bulb headlamp must be designed to conform to the performance requirements of the corrosion test, corrosion-connector test, dust test, temperature cycle test, humidity test, vibration test, inward force test (*for lamps which are externally aimed only*), headlamp connector test, and aiming adjustment tests of S14.6.''

The Associations and Grote requested that language be added to the standard to allow the use of turn signal and stop lamps designed for use on vehicles 2032 mm or more in overall width, which meet the one lighted section photometric values, on narrow vehicles other than passenger cars. The Associations noted that SAE J1395 (APR 1985), the standard applicable to turn signal lamps on wide vehicles, states that a lamp built to this standard may also be used on a narrow vehicle. The Associations pointed to an August 22, 1990 agency interpretation letter to Hella,[22] that stated ''SAE J1395 also provides that these lamps [turn signal lamps designed for use on vehicles 2032 mm or more in overall width] may be used on vehicles less than this width, except passenger cars,'' to support its position.

We disagree with the interpretation of FMVSS No. 108 put forward by the Associations and Grote. We stated in the preamble of the final rule that there are no provisions in the existing standard that allow the installation of wide vehicle stop and turn signal lamps on narrow vehicles in lieu of the clearly stated requirements for narrow vehicles in Table III of the existing standard. We consider the requirements for stop lamps and turn signal lamps used on narrow vehicles in the currently applicable version of FMVSS No. 108 to be clearly stated. There is no agency guidance stating that manufacturers of narrow vehicles may choose an alternative other than Table III for requirements for stop and turn signal lamps for use on narrow vehicles. Neither Table III, SAE J588 (NOV 84), or SAE J586 (FEB 84), *Stop Lamps for Use on Motor Vehicles Less than 2032 mm in Overall Width,* state that lighting from wide vehicles can also be used on narrow vehicles. For narrow vehicles, a lamp must meet the requirements for narrow vehicles as specified in Table III of the currently applicable version of the standard. Further, the agency stated in a May 22, 2003 letter of interpretation to Panor Corporation [23] that turn signal and stop lamps designed for use on both narrow and wide vehicles must meet the requirements of SAE standards applicable to both narrow and wide vehicles. The letter to Panor stated that stop lamps to be used on both narrow and wide vehicles must meet both SAE J1398 (MAY 1985) and SAE J586 (MAY 1984) and turn signal lamps to be used on both narrow and wide vehicles must meet both SAE J1395 (APR 1985) and SAE J588 (NOV 1984). It is the agency's position that the letter to Panor, not the letter to Hella, states the correct interpretation regarding the use of turn signal and stop lamps designed for wide vehicles on narrow vehicles. Considering these factors, the petitions from the Associations and Grote are denied.

Harley-Davidson requested that the agency amend Table IV-a which contains the requirements for projected luminous lens area to allow a projected luminous lens area of 2200 square mm for multiple compartment stop lamps used on motorcycles. Harley-Davidson stated that an effective projected luminous lens area of 2200 square mm for multiple compartment stops lamps is permitted under the currently applicable version of FMVSS No. 108. The agency agrees that FMVSS No. 108 permits an effective projected luminous lens area of 2200 square mm for multiple compartment stops lamps used on motorcycles. Accordingly, the agency has amended Table IV-a to include a projected luminous lens area of 2200 square mm for multiple compartment stop lamps used on motorcycles.

We are denying Nissan's request to modify the legacy visibility wording for turn, stop, and taillamps within Table V-d because the language suggested by Nissan does not fully correspond with the requirements in the SAE standard referenced by the existing standard. For example, the wording suggested by Nissan might allow for a situation in which visibility, as defined by area, may be compromised within a position less than the required 45 degrees while the area requirement is met at 45 degrees This situation is currently not permitted.

AAM stated that footnotes 1 and 4 of Table VIII, regarding the photometric intensity values between test points and the maximum intensity of taillamps respectively, were not previously incorporated into the current standard. AAM maintained that footnote 1 is not referenced in current version of FMVSS No. 108 or in SAE J585 (AUG 1977), *Tail Lamps (Rear Position Lamps),* and that footnote 4 was preempted by figures contained in the current version of FMVSS No. 108.

We are denying AAM's request to remove footnote 1 and footnote 4 from Table VIII. As stated in the preamble of the final rule, Footnote 1 was added to Table VIII of the rewrite unchanged from the text of SAE J575 (AUG 1970), *Test for Motor Vehicle Lighting Devices and Components,* which was previously incorporated by reference in FMVSS No. 108.[24] The agency, however, is revising

[21] 54 FR 20067, (May 9, 1989).

[22] *http://isearch.nhtsa.gov/aiam/aiam4773.html.*

[23] *http://isearch.nhtsa.gov/files/00473.ztv.html.*

[24] 72 FR 68261, (Dec. 4, 2007).

footnote 4 such that it matches the text in paragraph S5.1.1.6 of the existing standard so as not to make substantive changes to the standard during the rewrite process.

The agency is denying Nissan's request to amend the footnotes to photometric tables containing the requirements for signal lamps. In incorporating third-party documents into the text of the rewrite of the standard, the agency sought not to make any changes to the requirements contained in the third-party documents. We believe that this goal is best accomplished by directly incorporating the text from the third-party documents with minimal changes. While further changes to the standard may improve clarity, the agency believes that these changes are outside the scope of the rewrite.

In the preamble of the final rule the agency explained its views on the subject of grouped compliance.[25] The footnotes to the photometric tables allow the failure of a test point in the group to be offset if other points in the group exceed their minimum by the required margin. The agency does not believe that the footnotes contradict the requirements in the photometric tables and declines to amend the footnotes for the reasons stated in the preamble of the final rule.

Valeo and the Associations requested that the agency reconsider its decision to specify a 90L to 90R horizontal range defined in the area of 10U to 90U in the first row of Table XIX. The agency is denying the petitioner's request. In the NPRM the agency stated that it planned to incorporate a July 2, 1999 letter of interpretation to Tilman Spingler[26] which specified a horizontal range of 90L to 90R in the 10U to 90U area.[27] In this letter the agency stated that:

> Each of the Figures you reference specify a maximum of 125 candela for test points 10U–90U. The Figures do not state where in space from left to right to locate the vertical line, and thus, they do not specify that a line is to be measured. It follows that the only description of a set of test points is that of the entire area from 90L to 90R and 10U to 90U, i.e., an area from the extreme left of the test point grid to the extreme right of the test point grid, with an elevation of from 10U to 90U.

The agency believes that a horizontal zone of 90L to 90R for the 10U to 90U area flows logically from the requirements of Figures 15–1, 15–2, 17–1, 17–2, 28–1, and 28–2 in the current version of FMVSS No. 108. Therefore, the agency is retaining the horizontal range specified in the final rule.

D. Amendments To Improve Clarity

The agency has considered the requests to amend the standard to provide greater clarity or reorganize portions of the standard to improve readability. The agency has made every effort during the rewrite of FMVSS No. 108 to improve usability of the standard. The agency has granted requests to further improve the standard by moving certain language or removing redundant requirements where we felt that the requested changes could be made without substantively altering the requirements of the standard.

We are denying Nissan's request to modify paragraph S6.1.3.4.2 to include language from a February 12, 1998 interpretation letter to Ford Motor Company to clarify the meaning of the phrase ''special tools.'' In response to petitions for reconsideration, we are not adding new interpretation letters beyond those addressed in the NPRM and final rule.

Harley-Davidson requested that the agency clarify that it is permissible to mount dual motorcycle headlamps horizontally. We agree that paragraph S6.1.3.5.1.3 introduces ambiguity to the requirements for when motorcycle headlamps must be mounted vertically. Paragraph S6.1.3.5.1.3 of the rewrite is derived from paragraph S7.9.1(b) of the currently applicable version of FMVSS No. 108. Paragraph S7.9.1(b) states that a motorcycle headlamp system consisting of half of certain automobile headlamp systems must be mounted vertically. The requirement that a motorcycle headlamp system consisting of half an automobile headlamp system be mounted vertically is also contained in paragraph S10.17(a) of the rewrite of FMVSS No. 108. Because the requirements of S6.1.3.5.1.3 are more clearly stated elsewhere in the rewrite, the agency considers paragraph S6.1.3.5.1.3 to be duplicative. Therefore, we are removing paragraph S6.1.3.5.1.3 from the rewrite of FMVSS No. 108.

Koito requested that paragraph S7.3.12.1, which specifies the requirements for the ratio of intensities between a stop lamp and a taillamp, be modified to clarify that SAE J1398 (MAY 1998), applicable to wide vehicles, does not have a 560 mm or 410 mm classification and always applies the ratio requirement when determining the appropriate photometric multiplier. We agree that there was no 560 mm or 410 mm classification for wide vehicles in the text of the currently applicable version of FMVSS No. 108. However, the agency believes that the paragraphs of S7.3.12 are clear as written in the final rule. Because no class restrictions are placed within paragraph S7.3.12.1, the requirements apply to all vehicles regardless of width. While we do not believe that we need to modify this paragraph, we do note that Koito's stated understanding of the issue is correct.

As Nissan requested, paragraph S8.2.1.5 has been modified to add a subject to the sentence. It now reads: ''Application Location. *Conspicuity systems* need not be * * *''

Nissan requested that paragraph S10.1.2 be modified to eliminate the duplicate requirements for motorcycle headlamp systems. Paragraph S10.1.2 states: ''Each motorcycle must be equipped with a headlighting system conforming to S10.17 of this standard or one half of any headlighting system of Table II which provides both a full upper beam and a full lower beam.'' Paragraph S10.17 states: ''* * * a motorcycle headlighting system may consist of: (a) one half of any headlighting system of Table II which provides both a full upper beam and full lower beam, and is designed to conform to the * * *'' The agency agrees that this language is needlessly redundant, and has modified paragraph S10.1.2 by removing the reference to headlighting systems comprising half of Table II headlighting systems. Paragraph S10.1.2 now states: ''Each motorcycle must be equipped with a headlighting system conforming to S10.17 of this standard.''

Koito recommended modifying paragraph S10.15.1, dealing with replaceable bulb headlamp systems, which states: ''Installation * * * A system must provide in total not more than two upper beams and two lower beams and must incorporate not more than two replaceable light sources in each headlamp.'' Koito claimed this text will allow for a four lamp system to contain two replaceable bulbs within each of the four lamps which is not the intention of the original requirement.

The agency believes this paragraph clearly and accurately expresses the text of the currently applicable version of FMVSS No. 108. The text of the paragraph is substantially similar to that of paragraph S7.5(a) of the existing standard. NHTSA does not believe that a change to this paragraph is necessary and is denying this request by Koito.

Koito and Toyota both requested a modification to paragraph S10.15.5 which states: ''Additional light sources. A replaceable bulb headlamp may incorporate replaceable light sources that are used for purposes other than headlighting.'' Both Koito and Toyota requested that the second use of the

[25] 72 FR 68282, (Dec. 4, 2007).

[26] *http://isearch.nhtsa.gov/files/19548.ztv.html.*

[27] 70 FR 77457, (Dec. 30, 2005).

word ''replaceable'' be deleted from this requirement because they believed that the language implied that light sourced used for purposes other than headlighting incorporated into a replaceable bulb headlamp must always be replaceable. The agency believes that the language used in the final rule is consistent with the current standard and clearly describes the requirements of replaceable bulb headlamps that incorporate other light sources. Therefore, the agency is denying this request. Nissan requested that paragraph S10.18.9.5, which contains photometry requirements for visually/optically aimed headlamps, be deleted. Nissan claimed that this paragraph is redundant with paragraphs S10.13.3, S10.14.6, S10.15.6, S10.16.2, and Table II which contain the photometry requirements for all permissible headlamps. Nissan suggested that these requirements should be stated only once in FMVSS No. 108. The agency agrees that the paragraphs are redundant and we believe that a user of this standard could locate the necessary information without this paragraph with the assistance of Table II. However, the redundancy of paragraph S10.18.9.5 may significantly increase the usability of the standard for a particular user interested primarily in finding the requirements of a visually/optically aimable headlamp. Accordingly, we have not modified paragraph S10.18.9.5 and we are denying Nissan's request.

Nissan requested that the agency reorganize paragraph S13.3 containing the marking requirements for replacement lenses. Nissan noted that marking requirements for replacement lenses are already included in paragraph S6.5.1, along with the other headlamp DOT marking requirements. Nissan also requested that the remaining requirements in paragraph S13.3 be moved with a new paragraph number under paragraph S6.5.3.6 in order to consolidate all the requirements in one place. The agency agrees that keeping the marking requirements together is an important factor in meeting the stated goal of making the standard more user-friendly. Therefore, S13.3 has been deleted, and a new paragraph S6.5.3.6 has been added to read as published in this final rule.

The Associations and SABIC requested a modification to paragraph S14.1.2, which contains the testing specifications for all plastic materials used for optical parts on lamps or reflective devices. SABIC requested that the word ''transparent'' be added before ''optical'' and the word ''reflex'' before the word ''reflectors'' to clarify that the requirements of this paragraph do not apply to opaque materials used in light components. The Associations also requested that the word ''reflex'' be added before the word reflector. We note that paragraph S14.1.2 was transposed from paragraph S5.1.2 of the currently-applicable version of FMVSS No. 108 which states: ''Plastic materials used for optical parts such as lenses and reflectors shall conform to SAE Recommended Practice J576 JUL 1991, except that:'' The agency notes that neither the word ''transparent,'' nor the word ''reflex'' was in the text of the currently applicable version of FMVSS No. 108. We believe the word ''transparent'' could be interpreted such that the addition of this word would create a substantive modification to the requirement and that adding the term ''reflex'' would also stray from our intention to transpose existing language without making changes. Therefore, we are denying this request.

Nissan requested a modification to paragraph S14.2.4.3, dealing with DRL bulb photometric testing requirements. Nissan maintained that the requirements of this paragraph create conflict with paragraph S14.2.4.1. Paragraph S14.2.4.3 contains a pointing statement to paragraph S14.2.1.6 which states that bulbs are to be operated at their rated mean spherical candela during testing of DRL photometry requirements. Paragraph S14.2.4.1 requires that the bulbs be operated at a fixed 12.8 V input during DRL photometry testing. This creates a conflict within the regulatory text because a bulb's mean spherical candela may not be achieved at 12.8V. In order to eliminate this apparent contradiction, Nissan suggested modifying S14.2.4.3 to state ''Bulb requirements of S14.2.1.6 apply to DRL photometry, except for the need to operate at the rated mean spherical candela.''

The agency agrees that the last statement in paragraph S14.2.1.6 requiring that bulbs be operated at their mean spherical candela during photometry testing does not apply to DRLs because this requirement is excluded by the ''unless otherwise specified'' clause within SAE J575e (AUG 1970). The requirement that bulbs be operated at their mean spherical candela does not apply to DRLs because of specific voltage callout in paragraph S11 of the currently applicable version of the standard. Accordingly, paragraph S14.2.4.3 has been modified by removing the reference to paragraph S14.2.1.6 and now reads as follows: ''S14.2.4.3 Except for a lamp having a sealed-in bulb, a lamp must meet the applicable requirements of this standard when tested with a bulb whose filament is positioned within ± .010 in. of the nominal design position specified in SAE J573d, *Lamp bulbs and Sealed Units,* December 1968, (incorporated by reference, see 571.108 S5.2 of this title) or specified by the bulb manufacturer.''

Koito requested a clarification of the requirement in S14.4.2.1.3 that specifies testing for plastic optical materials. Koito questioned if a material thickness of 7 mm can be certified if it was once tested in the four thicknesses required by this standard. The agency does not believe it is appropriate to address this interpretive question within this notice. However, we do note that the Koito request will be addressed in the follow-up notice.

Nissan requested that the table under paragraph S14.9.3.11.2.3.1 be given a title and relocated to the table section of the standard and referenced as Table XXI. We are denying this request. The table is part of paragraph S14.9.3.11.2.3.1, *Operating limits*. The agency feels that the requirements specified in the table are most appropriately located with the other requirements applicable to semiautomatic headlamp beam switching device tests.

AAM requested that Table I–a be separated to create two new tables based on overall vehicle width. AAM stated that splitting Table I–a to create separate tables for narrow and wide vehicles would simplify the standard and make it easier to use. The agency is denying AAM's request. We believe that it is appropriate to group the requirements for both wide vehicles and narrow vehicles together based on the commonality of the requirements for both wide and narrow vehicles.

AAM stated that the requirements for DRLs should not be included in Table I–a because DRLs are optional equipment and Table I–a is entitled *Required Lamps and Reflective Devices*. AAM believed that locating the requirements for DRLs in Table I–a detracts from the ease of usability of the standard. We disagree with AAM's argument. The agency believes that Table I–a is the most appropriate location for the requirements for DRLs. Unlike other optional lamps and lighting equipment installed on vehicles, DRLs, when installed, are regulated according to all the categories contained in Table I–a. We believe that final rule clearly indicates that DRLs are optional equipment. Therefore, AAM's request is denied.

Koito requested that the agency amend the device activation requirements for high mounted stop lamps contained in Table I–a. Koito requested that the agency clarify that

activation of the high mounted stop lamp upon application of a device designed to retard the motion of the vehicle is optional. We agree that activation of the high mounted stop lamp is optional upon application of a device designed to retard the motion of the vehicle and have revised Table I–a to note this distinction.

AAM requested that the titles of Tables I–a, I–b, and I–c be changed to include the vehicles to which the tables apply. NHTSA is denying this request. We feel that the subheadings included in the tables clearly indicate the class of vehicles to which the tables apply.

Valeo, Grote, and the Associations requested that the agency modify Table XII to clarify that when a single backup lamp is used on a vehicle the maximum photometric intensity allowed is 600 candela. The agency agrees and has added the 600 candela value to Table XII and a footnote stating: ''the value before the slash applies to each lamp in a multiple lamp system; the value after the slash applies to a single lamp system.''

Nissan requested that the agency modify footnote 1 in Tables XIX–a, XIX–b, and XIX–c to clarify the photometry requirements for the test areas specified in the tables. The agency agrees and is modifying footnote 1 in each of the three tables to read: these test points are boundaries; intensity values within this boundary must meet the listed photometry requirement.

The agency has attempted to format the tables of FMVSS No. 108 in the most user friendly manner. Where the agency was able to avoid splitting tables across multiple pages, the agency has done so. We believe that for some of the larger tables contained in the standard, modifications necessary to fit the tables on to a signal page, such as shrinking the text in the table, would make the tables more difficult to use.

E. Preemptive Effect of FMVSS No. 108

AAJ requested that the agency remove any reference to preemption of state tort law from the preamble of the final rule. AAJ argued that *Geier* v. *American Honda Motor Co.*[28] is an unusual, fact-driven case and does not provide a basis for the agency to claim that all Federal motor vehicle safety standards preempt state tort law. AAJ maintained that FMVSS No. 108 is a minimum safety standard and, thus, is not intended to preempt state tort law. AAJ claimed that it was premature for the agency to speculate about the preemptive effect of a rule before the existence of an actual legal conflict on the record. AAJ further argued that any claim of preemption by the agency is subject to the notice and comment provisions of the *Administrative Procedure Act.*[29]

The agency does not consider AAJ's submission to be a petition for reconsideration, as NHTSA's preemption discussion contained in the preamble is not a rule. Accordingly, we are treating this petition as a simple request to disavow the preemption discussion in the final rule preamble.

We provided the general discussion of implied preemption and *Geier* in accordance with the directive of Executive Order 13132, Federalism, for agencies to analyze the federalism implications of their rulemakings. In that discussion, the agency explained that NHTSA's safety standards can preempt state laws in at least two ways: Either expressly, through the express preemption provision of the Vehicle Safety Act, or impliedly, if State requirements create a conflict and thus stand as an obstacle to the accomplishment and execution of a NHTSA safety standard. The agency would like to note that because most FMVSS are minimum standards, a State common law tort cause of action that seeks to impose a higher standard on motor vehicle manufacturers will generally not be preempted. However, if and when such a conflict does exist—for example, when the standard at issue is both a minimum and a maximum standard—the State common law tort cause of action is impliedly preempted. See *Geier* v. *American Honda Motor Co.,* 529 U.S. 861 (2000).

To this end, the agency has examined the nature (*e.g.,* the language and structure of the regulatory text) and objectives of the final rule, which like many NHTSA rules, prescribes only a minimum safety standard. As such, NHTSA does not intend that this rule preempt state tort law that would effectively impose a higher standard on motor vehicle manufacturers than FMVSS No. 108. Establishment of a higher standard by means of State tort law would not conflict with the minimum standard announced in FMVSS No. 108. Without any conflict, there could not be any implied preemption of a State common law tort cause of action. For the aforementioned reasons, the agency declines to remove the *Geier* language from its discussion of preemption law.

[28] 529 U.S. 861 (2000).

[29] 5 U.S.C. 553.

V. Rulemaking Analyses and Notices

A. Executive Order 12866, Executive Order 13563, and DOT Regulatory Policies and Procedures

NHTSA has considered the impact of this rulemaking action under Executive Order 12866, Executive Order 13563, and the Department of Transportation's regulatory policies and procedures. This rulemaking document was not reviewed by the Office of Management and Budget under E.O. 12866, ''Regulatory Planning and Review.'' It is not considered to be significant under E.O. 12866 or the Department's regulatory policies and procedures. This final rule merely corrects technical and typographical errors in FMVSS No. 108. Today's rule will not have any measurable effect on costs or benefits since the rule merely reorganizes and clarifies existing requirements.

B. Privacy Act

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78) or you may visit *http://docketsinfo.dot.gov/.*

C. Other Rulemaking Analyses and Notices

In the December 2007 final rule, the agency discussed relevant requirements related to the Regulatory Flexibility Act, the National Environmental Policy Act, Executive Order 13132 (Federalism), the Unfunded Mandates Reform Act, Civil Justice Reform, the National Technology Transfer and Advancement Act, the Paperwork Reduction Act, and Executive Order 13045 (Protection of Children from Environmental Health and Safety Risks). Since that final rule was an administrative rewrite of existing requirements and since today's action simply makes technical corrections to that final rule, today's rule does not affect the agency's analyses in those areas.

List of Subjects in 49 CFR Part 571

Imports, Incorporation by reference, Motor vehicle safety, Motor vehicles, and Tires.

In consideration of the foregoing, NHTSA is amending 49 CFR Part 571 as follows:

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

■ 1. The authority citation for Part 571 continues to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117, 30166; delegation of authority at 49 CFR 1.50.

■ 2. Section 571.108 is amended as follows:

■ a. By revising entry 17 in S5.2; paragraphs S6.1.1.4; S6.1.3.2; S6.2.3.1; S6.4.4; S6.5.3; S6.5.3.3.1; S6.5.3.6; S7.1.1.9 ; S7.1.1.10.4(a); S7.1.1.11; S7.1.1.11.1; S7.1.1.12.4; S7.1.2.9; S7.2.9; S7.3.9; S7.4.9; S7.5.9; S7.6.9; S7.7.4; S7.7.9; S7.8.9; S7.9.9; S7.9.14; S7.11.9; S8.1.9; S8.2.1.5; S10.1.2; S10.13.4.1; S10.14.7.1; S10.15.7.1; S10.18; S14.2.1.5.2; S14.2.4.3; S14.3.1; S14.6.9.1.1; Table I–a; Table I–b; Table I–c; Table III; Table IV–a; Table IV–b; Table IV–c; Table V–a; Table V–d; Table VIII; Table IX; Table XII; Table XIV; Table XV; Table XIX–a; Table XIX–b; Table XIX–c;

■ b. By adding a definition of ''Combination headlamp system'' in S4; entry 18 in S5.2; paragraph S6.5.3.1;

■ c. By removing paragraph S6.1.3.5.1.3, removing and reserving paragraph S10.2, and removing paragraph S13.3; and

■ d. By removing paragraphs S7.9.14.1.1 and S7.9.14.1.2, and adding paragraphs S7.9.14.1 and S7.9.14.2 in their place.

The revisions and additions to § 571.108 read as follows:

§ 571.108 Standard No. 108; Lamps, reflective devices, and associated equipment.

* * * * *

S4 *Definitions.*

* * * * *

Combination Headlamp means a headlamp that is a combination of two different headlamp types chosen from a type F sealed beam headlamp, an integral beam headlamp, or a replaceable bulb headlamp.

* * * * *

S5.2 * * *

17. American Society for Testing and Materials (ASTM) C150–56, published 1956, ''Standard Specifications for Portland Cement.'' ASTM International, 100 Barr Harbor Drive, PO Box C700, Conshohocken, PA 19428–2959.

18. Illuminating Engineering Society of North America (IES) LM 45, approved April 1980, ''IES Approved Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps.'' Illuminating Engineering Society of North America, 345 East 47th St., New York, NY 10017.

* * * * *

S6.1.1.4 *Daytime running lamps.* Any pair of lamps on the front of a passenger car, multipurpose passenger vehicle, truck, or bus, whether or not required by this standard, other than parking lamps or fog lamps, may be wired to be automatically activated, as determined by the manufacturer of the vehicle, in a steady burning state as daytime running lamps (DRLs) in accordance with S7.10.5.

* * * * *

S6.1.3.2 When multiple lamp arrangements for rear turn signal lamps, stop lamps, or taillamps are used, with only a portion of the lamps installed on a fixed part of the vehicle, the lamp or lamps that are installed to the non-fixed part of the vehicle will be considered auxiliary lamps.

* * * * *

S6.2.3.1 When activated in the steady burning state, headlamps (excluding headlamps mounted on motorcycles) must not have any styling ornament or other feature, such as a translucent cover or grill, in front of the lens

* * * * *

S6.4.4 *Legacy visibility alternative.* As an alternative to S6.4.3, each passenger car and motorcycle, and each multipurpose passenger vehicle, truck, trailer, and bus that is of less than 2032 mm overall width, that is manufactured on or before September 1, 2011, and each multipurpose passenger vehicle, truck, trailer, and bus that is of 2032 mm or more overall width, that is manufactured on or before September 1, 2014, must have each lamp located so that it meets the visibility requirements specified in Table V–d.

* * * * *

S6.5.3 *Headlamp markings.*

S6.5.3.1 *Trademark.* The lens of each original and replacement equipment headlamp, and of each original and replacement equipment beam contributor must be marked with the name and/or trademark registered with the U.S. Patent and Trademark Office of the manufacturer of such headlamp or beam contributor, of its importer, or any manufacturer of a vehicle equipped with such headlamp or beam contributor. Nothing in this standard authorizes the marking of any such name and/or trademark by one who is not the owner, unless the owner has consented to it.

* * * * *

S6.5.3.3.1 Each sealed beam headlamp lens must be molded with ''sealed beam'' and the appropriate designation code as shown in Table II in characters no less than 6.35 mm in size.

* * * * *

S6.5.3.6 Each replacement headlamp lens must also be marked with the manufacturer and the part or trade number of the headlamp for which it is intended, and with the name and/or trademark of the lens manufacturer or importer that is registered with the U.S. Patent and Trademark Office. Nothing in this standard authorizes the marking of any such name and/or trademark by one who is not the owner, unless the owner has consented to it.

* * * * *

S7.1.1.9 *Markings.* See S6.5.1.2.

* * * * *

S7.1.1.10.4 *Spacing based photometric multipliers.*

(a) where the spacing measurement as measured from the optical center of the turn signal lamp, to the lighted edge of a lower beam headlamp is less than 100 mm the photometric multiplier must be 2.5.

* * * * *

S7.1.1.11 *Multiple compartment lamps and multiple lamps.*

S7.1.1.11.1 A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements of a front turn signal lamp provided the requirements of S6.1.3.2 are met.

* * * * *

S7.1.1.12.4 Where the clearance lamp is combined with the turn signal lamp, and the maximum luminous intensity of the clearance lamp 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 clearance lamp luminous intensity within the generated area.

* * * * *

S7.1.2.9 *Markings.* See S6.5.1.2.

* * * * *

S7.2.9 *Markings.* See S6.5.1.2.

* * * * *

S7.3.9 *Markings.* See S6.5.1.2.

* * * * *

S7.4.9 *Markings.* See S6.5.1.2.

* * * * *

S7.5.9 *Markings.* See S6.5.1.2.

* * * * *

S7.6.9 *Markings.* See. S6.5.1.2.

* * * * *

S7.7.4 *Mounting height.* No requirement.

* * * * *

S7.7.9 *Markings.* See. S6.5.1.2.

* * * * *

S7.8.9 *Markings.* See. S6.5.1.2.

* * * * *

S7.9.9 *Markings.* See. S6.5.1.2.

* * * * *

S7.9.14 *Physical tests.*

S7.9.14.1 Each high-mounted stop lamp must be designed to conform to

the performance requirements of the vibration test of S14.5, and the color test and plastic optical material test of S14.4.

S7.9.14.2 Each high-mounted stop lamp that is not mounted inside the vehicle must be designed to conform to the performance requirements of the moisture test, dust test, and corrosion test of S14.5.

* * * * *

S7.11.9 *Markings.* See. S6.5.1.2.

* * * * *

S8.1.9 *Markings.* See. S6.5.1.2.

* * * * *

S8.2.1.5 *Application location.* Conspicuity systems need not be installed, as illustrated in Figure 12–2, on discontinuous surfaces such as outside ribs, stake post pickets on platform trailers, and external protruding beams, or to items of equipment such as door hinges and lamp bodies on trailers and body joints, stiffening beads, drip rails, and rolled surfaces on truck tractors.

* * * * *

S10.1.2 Each motorcycle must be equipped with a headlighting system conforming to S10.17 of this standard.

S10.2 [Reserved]

* * * * *

S10.13.4.1 Each sealed beam headlamp must be designed to conform to the performance requirements of the corrosion test, vibration test, inward force test (for lamps which are externally aimed only), torque deflection test (for lamps which are externally aimed only), headlamp connector test, headlamp wattage test, and aiming adjustment tests of S14.6.

* * * * *

S10.14.7.1 Each integral beam headlamp must be designed to conform to the performance requirements of the corrosion test, temperature cycle test, vibration test, inward force test (for lamps which are externally aimed only), headlamp connector test, and aiming adjustment tests of S14.6.

* * * * *

S10.15.7.1 Each replaceable bulb headlamp must be designed to conform to the performance requirements of the corrosion test, corrosion-connector test, dust test, temperature cycle test, humidity test, vibration test, inward force test (for lamps which are externally aimed only), headlamp connector test, and aiming adjustment tests of S14.6.

* * * * *

S10.18 *Headlamp aimability performance requirements* (*except for motorcycles*)

* * * * *

S14.2.1.5.2 Luminous intensity measurements of multiple compartment lamps or multiple lamp arrangements are made either by:

(a) Measuring all compartments together, provided that a line from the optical axis of each compartment or lamp to the center of the photometer sensing device does not make an angle more than 0.6° with the H–V axis, or

(b) Measuring each compartment or lamp separately by aligning its optical axis with the photometer and adding the value at each test point.

* * * * *

S14.2.4.3 Except for a lamp having a sealed-in bulb, a lamp must meet the applicable requirements of this standard when tested with a bulb whose filament is positioned within ± .010 in. of the nominal design position specified in SAE J573d, Lamp bulbs and Sealed Units, December 1968, (incorporated by reference, paragraph S5.2 of this section) or specified by the bulb manufacturer.

* * * * *

S14.3.1 *Procedure.* The sample device must be tested for photometry using bulbs having each of four out-of-focus filament positions. Where conventional bulbs with two pin bayonet bases are used, tests must be made with the light source 0.060 in. above, below, ahead, and behind the designated position. If prefocused bulbs are used, the limiting positions at which tests are made must be 0.020 in. above, below, ahead, and behind the designated position. The sample device may be reaimed for each of the out-of-focus positions of the light source.

* * * * *

S14.6.9.1.1 An unfixtured sample headlamp in its design mounting position is placed in water at a temperature of 176° ± 5° F (80° ± 3° C) for one hour. The headlamp is energized in its highest wattage mode, with the test voltage at 12.8 ± 0.1 V during immersion.

* * * * *

TABLE I–a—REQUIRED LAMPS AND REFLECTIVE DEVICES

Lighting device	Number and color	Mounting location	Mounting height	Device activation
All Passenger Cars, Multipurpose Passenger Vehicles (MPV), Trucks, and Buses				
Lower Beam Headlamps.	White, of a headlighting system listed in Table II.	On the front, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 22 inches (55.9 cm) nor more than 54 inches (137.2 cm).	The wiring harness or connector assembly of each headlighting system must be designed so that only those light sources intended for meeting lower beam photometrics are energized when the beam selector switch is in the lower beam position, and that only those light sources intended for meeting upper beam photometrics are energized when the beam selector switch is in the upper beam position, except for certain systems listed in Table II. Steady burning, except that may be flashed for signaling purposes.
Upper Beam Headlamps.	White, of a headlighting system listed in Table II.	On the front, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 22 inches (55.9 cm) nor more than 54 inches (137.2 cm).	

TABLE I–a—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
Turn Signal Lamps	2 Amber	At or near the front, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 15 inches, nor more than 83 inches.	Flash when the turn signal flasher is actuated by the turn signal operating unit.
	2 Amber or red Truck tractor exception, see S6.1.1.3.	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable.		
Taillamps	2 Red	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.	Steady burning. Must be activated when the headlamps are activated in a steady burning state or the parking lamps on passenger cars and MPVs, trucks, and buses less than 80 inches in overall width are activated. May be activated when the headlamps are activated at less than full intensity as Daytime Running Lamps (DRL).
Stop Lamps	2 Red	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.	Steady burning. Must be activated upon application of the service brakes. When optically combined with a turn signal lamp, the circuit must be such that the stop signal cannot be activated if the turn signal lamp is flashing. May also be activated by a device designed to retard the motion of the vehicle.
Side Marker Lamps ...	2 Amber	On each side as far to the front as practicable.	Not less than 15 inches.	Steady burning except may be flashed for signaling purposes. Must be activated when the headlamps are activated in a steady burning state or the parking lamps on passenger cars and MPVs, trucks, and buses less than 80 inches in overall width are activated.
	2 Red (not required on truck tractor).	On each side as far to the rear as practicable.		
Reflex Reflectors	2 Amber	On each side as far to the front as practicable.	Not less than 15 inches, nor more than 60 inches.	Not applicable.
	2 Red (not required on truck tractor)..	On each side as far to the rear as practicable.		
	2 Red	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable. On a truck tractor may be mounted on the back of the cab not less than 4 inches above the height of the rear tires.		
Backup Lamp	1 White Additional lamps permitted to meet requirements.	On the rear	No requirement	Steady burning. Must be activated when the ignition switch is energized and reverse gear is engaged. Must not be energized when the vehicle is in forward motion.
License Plate Lamp ...	1 White Additional lamps permitted to meet requirements.	On the rear to illuminate license plate from top or sides.	No requirement	Steady burning. Must be activated when the headlamps are activated in a steady burning state or when the parking lamps on passenger cars and MPVs, trucks, and buses less than 80 inches in overall width are activated.

TABLE I–a—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
Additional Lamps Required on All Passenger Cars, and on Multipurpose Passenger Vehicles (MPV), Trucks, and Buses, Less Than 2032 MM in Overall Width				
Parking lamps	2 Amber or white	On the front, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.	Steady burning. Must be activated when the headlamps are activated in a steady burning state.
Additional Lamp(s) Required on All Passenger Cars, and on Multipurpose Passenger Vehicles (MPV), Trucks, and Buses, Less Than 2032 MM in Overall Width and With a GVWR of 10,000 Lbs or Less				
High mounted stop lamp.	1 Red, or 2 red where exceptions apply. See Section 6.1.1.2.	On the rear including glazing, with the lamp center on the vertical centerline as viewed from the rear.	Not less than 34 inches except for passenger cars. See Section 6.1.4.1.	Steady burning. Must only be activated upon application of the service brakes or may be activated by a device designed to retard the motion of the vehicle.
Additional Lamps and Reflective Devices Required on All Passenger Cars, Multipurpose Passenger Vehicles (MPV), Trucks, and Buses, 30 Feet or Longer				
Intermediate side marker lamps.	2 Amber	On each side located at or near the midpoint between the front and rear side marker lamps.	Not less than 15 inches.	Steady burning except may be flashed for signaling purposes. Must be activated when the headlamps are activated in a steady burning state or when the parking lamps on passenger cars and MPVs, trucks, and buses less than 80 inches in overall width are activated.
Intermediate side reflex reflectors.	2 Amber	On each side located at or near the midpoint between the front and rear side reflex reflectors.	Not less than 15 inches, nor more than 60 inches.	Not applicable.
Additional Lamps Required on All Multipurpose Passenger Vehicles (MPV), Trucks, and Buses, 2032 MM or More in Overall Width				
Clearance lamps	2 Amber	On the front to indicate the overall width of the vehicle, or width of cab on truck tractor, at the same height, symmetrically about the vertical centerline. May be located at a location other than the front if necessary to indicate the overall width of the vehicle, or for protection from damage during normal operation of the vehicle.	As near the top as practicable.	Steady burning.

TABLE I–a—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
	2 Red ..... (not required on truck tractor).	On the rear to indicate the overall width of the vehicle, at the same height, symmetrically about the vertical centerline. May be located at a location other than the rear if necessary to indicate the overall width of the vehicle, or for protection from damage during normal operation of the vehicle.	As near the top as practicable, except where the rear identification lamps are mounted at the extreme height of the vehicle.. Practicability of locating lamps on the vehicle header is presumed when the header extends at least 25 mm (1 inch) above the rear doors.	Steady burning.
Identification lamps	3 Amber	On the front, at the same height, as close as practicable to the vertical centerline, with lamp centers spaced not less than 6 inches or more than 12 inches apart.	As near the top of the vehicle or top of the cab as practicable.	Steady burning.
	3 Red (not required on truck tractor).	On the rear, at the same height, as close as practicable to the vertical centerline, with lamp centers spaced not less than 6 inches or more than 12 inches apart.	As near the top as practicable. Practicability of locating lamps on the vehicle header is presumed when the header extends at least 25 mm (1 inch) above the rear doors.	Steady burning.
Additional Lamps Required on All School Buses Except Multifunction School Activity Buses				
Signal warning lamps	2 Red plus 2 amber optional.	On the front of the cab as far apart as practicable, but in no case shall the spacing between lamps be less than 40 inches. Amber lamps, when installed, at the same height as and just inboard of the red lamp.	As high as practicable but at least above the windshield.	Flashing alternately between 60 to 120 cycles per minute, with an activation period sufficient to allow the lamp to reach full brightness, when actuated by a manual switch. Amber lamps, when installed, may only be activated by manual or foot operation, and must be automatically deactivated and the red lamps must be automatically activated when the bus entrance door is opened.
	2 Red plus 2 amber optional.	On the rear cab as far apart as practicable, but in no case shall the spacing between lamps be less than 40 inches. Amber lamps, when installed, at the same height as and just inboard of the red lamp.	As high as practicable but at least above the top of any side window opening.	Flashing alternately between 60 to 120 cycles per minute, with an activation period sufficient to allow the lamp to reach full brightness, when actuated by a manual switch. Amber lamps, when installed, may only be activated by manual or foot operation, and must be automatically deactivated and the red lamps must be automatically activated when the bus entrance door is opened.

TABLE I–a—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
Daytime Running Lamps Permitted But Not Required on Passenger Cars, Multipurpose Passenger Vehicles (MPV), Trucks, and Buses				
Daytime running lamp (DRL).	2 identically colored either white, white to yellow, white to selective yellow, selective yellow, or yellow.	On the front, symmetrically disposed about the vertical centerline if not a pair of lamps required by this standard or if not optically combined with a pair of lamps required by this standard.	Not more than 1.067 meters above the road surface if not a pair of lamps required by this standard or if not optically combined with a pair of lamps required by this standard. See S7.10.13(b) for additional height limitation.	Steady burning. Automatically activated as determined by the vehicle manufacturer and automatically deactivated when the headlamp control is in any ''on'' position. Each DRL optically combined with a turn signal lamp must be automatically deactivated as a DRL when the turn signal lamp or hazard warning lamp is activated, and automatically reactivated as a DRL when the turn signal lamp or hazard warning lamp is deactivated. See S7.10.10.1(c) for additional activation requirements when mounted close to, or combined with, a turn signal lamp.

TABLE I–b—REQUIRED LAMPS AND REFLECTIVE DEVICES

Lighting device	Number and color	Mounting location	Mounting height	Device activation
ALL TRAILERS				
Turn Signal Lamps	2 Red or amber	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable.	Not less than 15 inches, nor more than 83 inches.	Flash when the turn signal flasher is actuated by the turn signal operating unit.
Taillamps	2 Red or 1 red on trailers less than 30 inches wide.	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable. When a single lamp is installed it must be mounted at or near the vertical centerline.	Not less than 15 inches, nor more than 72 inches.	Steady burning.
Stop Lamps	2 Red, or 1 red on trailers less than 30 inches wide.	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable. When a single lamp is installed it must be mounted at or near the vertical centerline.	Not less than 15 inches, nor more than 72 inches.	Steady burning. Must be activated upon application of the service brakes. When optically combined with a turn signal lamp, the circuit must be such that the stop signal cannot be activated if the turn signal lamp is flashing. May also be activated by a device designed to retard the motion of the vehicle.
Side Marker Lamps ...	2 Amber ..... None required on trailers less than 1829 mm [6 ft] in overall length including the trailer tongue.	On each side as far to the front as practicable exclusive of the trailer tongue.	Not less than 15 inches.	Steady burning except may be flashed for signaling purposes.
	2 Red	On each side as far to the rear as practicable.	Not less than 15 inches. Not more than 60 inches on trailers 2032 mm or more in overall width.	

TABLE I–b—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
Reflex Reflectors. A trailer equipped with a conspicuity treatment in conformance with S8.2 of this standard need not be equipped with reflex reflectors if the conspicuity material is placed at the locations of the required reflex reflectors.	2 Amber ..... None required on trailers less than 1829 mm [6 ft] in overall length including the trailer tongue.	On each side as far to the front as practicable exclusive of the trailer tongue.	Not less than 15 inches, nor more than 60 inches.	Not applicable.
	2 Red	On each side as far to the rear as practicable.		
	2 Red or 1 red on trailers less than 30 inches wide.	On the rear, at the same height, symmetrically about the vertical centerline, as far apart as practicable. When a single reflector is installed it must be mounted at or near the vertical centerline..		
License Plate Lamp ...	1 White ..... Additional lamps permitted to meet requirements.	On the rear to illuminate license plate from top or sides.	No requirement	Steady burning.
Additional Lamps and Reflective Devices Required on all Trailers 30 Feet or Longer				
Intermediate side marker lamps.	2 Amber	On each side located at or near the midpoint between the front and rear side marker lamps.	Not less than 15 inches.	Steady burning except may be flashed for signaling purposes.
Intermediate side reflex reflectors. A trailer equipped with a conspicuity treatment in conformance with S8.2 of this standard need not be equipped with reflex reflectors if the conspicuity material is placed at the locations of the required reflex reflectors.	2 Amber	On each side located at or near the midpoint between the front and rear side reflex reflectors.	Not less than 15 inches, nor more than 60 inches.	Not applicable.
Additional Lamps Required on all Trailers 2032 MM or More in Overall Width				
Clearance lamps	2 Amber	On the front to indicate the overall width of the vehicle, at the same height, symmetrically about the vertical centerline. May be located at a location other than the front if necessary to indicate the overall width of the vehicle, or for protection from damage during normal operation of the vehicle.	As near the top as practicable.	Steady burning.
	2 Red	On the rear to indicate the overall width of the vehicle, at the same height, symmetrically about the vertical centerline. May be located at a location other than the rear if necessary to indicate the overall width of the vehicle, or for protection from damage during normal operation of the vehicle.	As near the top as practicable, except where the rear identification lamps are mounted at the extreme height of the vehicle. Practicability of locating lamps on the vehicle header is presumed when the header extends at least 25 mm (1 inch) above the rear doors.	Steady burning.

TABLE I–b—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
	2 Amber to front and red to rear.	On a boat trailer the requirement for front and rear clearance lamps may be met by installation at or near the midpoint on each side of a dual facing lamp so as to indicate the extreme width. May be located at a location other than the front and the rear if necessary to indicate the overall width of the vehicle, or for protection from damage during normal operation of the vehicle.	As near the top as practicable.	Steady burning.
Identification lamps	3 Red	On the rear, at the same height, as close as practicable to the vertical centerline, with lamp centers spaced not less than 6 inches or more than 12 inches apart.	As near the top as practicable. Practicability of locating lamps on the vehicle header is presumed when the header extends at least 25 mm (1 inch) above the rear doors.	Steady burning.

TABLE I–c—REQUIRED LAMPS AND REFLECTIVE DEVICES

Lighting device	Number and color	Mounting location	Mounting height	Device activation
		All Motorcycles		
Lower Beam Headlamps.	White, of a headlighting system listed in S10.17.	On the front, at the same height, symmetrically about the vertical centerline, as far apart as practicable. See additional requirements in S10.17.1.1, S10.17.1.2, and S10.17.1.3.	Not less than 22 inches (55.9 cm) nor more than 54 inches (137.2 cm).	The wiring harness or connector assembly of each headlighting system must be designed so that only those light sources intended for meeting lower beam photometrics are energized when the beam selector switch is in the lower beam position, and that only those light sources intended for meeting upper beam photometrics are energized when the beam selector switch is in the upper beam position, except for certain systems listed in Table II.
Upper Beam Headlamps.	White, of a headlighting system listed in S10.17.	On the front, at the same height, symmetrically about the vertical centerline, as far apart as practicable. See additional requirements in S10.17.1.1, S10.17.1.2, and S10.17.1.3.	Not less than 22 inches (55.9 cm) nor more than 54 inches (137.2 cm).	Steady burning, except that may be flashed for signaling purposes. The upper beam or the lower beam, but not both, may be wired to modulate from a higher intensity to a lower intensity in accordance with S10.17.5
Turn Signal Lamps	2 Amber. None required on a motor driven cycle whose speed attainable in 1 mile is 30 mph or less.	At or near the front, at the same height, symmetrically about the vertical centerline, and having a minimum horizontal separation distance (centerline of lamps) of 16 inches. Minimum edge to edge separation distance between a turn signal lamp and headlamp is 4 inches.	Not less than 15 inches, nor more than 83 inches.	Flash when the turn signal flasher is actuated by the turn signal operating unit.

TABLE I–c—REQUIRED LAMPS AND REFLECTIVE DEVICES—Continued

Lighting device	Number and color	Mounting location	Mounting height	Device activation
	2 Amber or red. None required on a motor driven cycle whose speed attainable in 1 mile is 30 mph or less.	At or near the rear, at the same height, symmetrically about the vertical centerline, and having a minimum horizontal separation distance (centerline to centerline of lamps) of 9 inches. Minimum edge to edge separation distance between the turn signal lamp and the taillamp or stop lamp is 4 inches, when a single stop and taillamp is installed on the vertical centerline and the turn signal lamps are red.		
Taillamps	1 Red	On the rear, on the vertical centerline except that if two are used, they must be symmetrically disposed about the vertical centerline.	Not less than 15 inches, nor more than 72 inches.	Steady burning.
				Must be activated when the headlamps are activated in a steady burning state.
Stop Lamps	1 Red	On the rear, on the vertical centerline except that if two are used, they must be symmetrically disposed about the vertical centerline.	Not less than 15 inches, nor more than 72 inches.	Steady burning.
				Must be activated upon application of the service brakes. When optically combined with a turn signal lamp, the circuit must be such that the stop signal cannot be activated if the turn signal lamp is flashing. May also be activated by a device designed to retard the motion of the vehicle.
Reflex Reflectors	2 Amber	On each side as far to the front as practicable.	Not less than 15 inches, nor more than 60 inches.	Not applicable.
	2 Red	On each side as far to the rear as practicable.		
	1 Red	On the rear, on the vertical centerline except that, if two are used on the rear, they must be symmetrically disposed about the vertical centerline.		
License Plate Lamp	1 White	On the rear to illuminate license plate.	No requirement	Steady burning.
	Additional lamps permitted to meet requirements.			Must be activated when the headlamps are activated in a steady burning state.

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TABLE III—MARKING REQUIREMENTS LOCATION

Lamp, reflective device, or other component	Marking	Marking location	Requirement
HEADLAMPS, BEAM CONTRIBUTORS, OR HEADLAMP REPLACEABLE LENS.			
	"DOT"	Lens	S6.5.1
	Optical axis marking	See requirement	S10.18.5
	Manufacturer name and/or trademark	Lens	S6.5.3
	Voltage	See requirement	S6.5.3
	Part number or trade number	See requirement	S6.5.3
HEADLAMP REPLACEABLE LENS	Manufacturer identification	Lens	S6.5.3
	Headlamp identification.		
REPLACEABLE BULB HEADLAMPS	"U" or "L" (4 lamp system)	Lens	S10.15.4
	Replaceable bulb type	Lens	S6.5.3.4
SEALED BEAM HEADLAMPS	"sealed beam"	Lens	S6.5.3.3
	Type designation	See requirements	S6.5.3.3
INTEGRAL BEAM HEADLAMPS	"U" or "L" (4 lamp system)	Lens	S10.14.4
MOTORCYCLE REPLACEABLE BULB HEADLAMPS.	"motorcycle"	Lens	S10.17.2
VISUALLY/OPTICALLY AIMED HEADLAMPS.	"VOR" or "VOL" or "VO"	Lens	S10.18.9.6
EXTERNALLY AIMED HEADLAMPS	Aim pad location & "H" or "V"	Lens	S10.18.7.1
VEHICLE HEADLAMP AIMING DEVICES (VHAD).	Aiming scale(s)	See requirement	S10.18.8
(HEADLAMP) REPLACEABLE LIGHT SOURCES.	"DOT"	See requirement	S11.1
	Replaceable light source designation	See requirement.	
	Manufacturer name and/or trademark	See requirement.	
REPLACEABLE LIGHT SOURCE BALLASTS.	Manufacturer name or logo	See requirement	S11.2
	Part number.		
	Light source identification.		
	Rated laboratory life.		
	High voltage warning.		
	Output in watts and volts.		
	"DOT".		
LAMPS (OTHER THAN HEADLAMPS), REFLECTIVE DEVICES, AND ASSOCIATED EQUIPMENT.	"DOT"	See requirement	S6.5.1.2
DAYTIME RUNNING LAMPS (DRL)	"DRL"	Lens	S6.5.2
CONSPICUITY REFLEX REFLECTORS	"DOT–C"	Exposed surface	S8.2.2.1
RETROREFLECTIVE SHEETING	"DOT–C2" or "DOT–C3" or "DOT–C4"	Exposed surface	S8.2.1.3

TABLE IV–a—EFFECTIVE PROJECTED LUMINOUS LENS AREA REQUIREMENTS

Lighting device	Passenger cars, multipurpose passenger vehicles, trucks, trailers, and buses of less than 2032 mm in overall width minimum effective projected luminous lens area (sq mm)			Multipurpose passenger vehicles, trucks, trailers, and buses 2032 mm or more in overall width minimum effective projected luminous lens area each lamp (sq mm)	Motorcycles minimum effective projected luminous lens area (sq mm)	
		Multiple compartment lamp or multiple lamps			Multiple compartment lamp or multiple lamps	
	Single compartment lamp	Each compartment or lamp	Combined compartments or lamps		Each compartment or lamp	Single or combined compartments or lamps
Front turn signal lamp	2200	.....	2200	7500	2200	2258
Rear turn signal lamp	5000	2200	5000	7500	2200	2258
Stop lamp	5000	2200	5000	7500	2200	[1] 5000

[1] A motor driven cycle whose speed attainable in 1 mile is 30 mph or less may be equipped with a stop lamp whose minimum effective projected luminous lens area is not less than 2258 sq mm.

TABLE IV–b—EFFECTIVE PROJECTED LUMINOUS LENS AREA REQUIREMENTS

Lighting device	Passenger cars, multipurpose passenger vehicles, trucks, and buses of less than 2032 mm in overall width and with a GVWR of 10,000 lbs or less using a single lamp minimum effective projected luminous lens area (sq mm)	Multipurpose passenger vehicles, trucks, and buses of less than 2032 mm in overall width and with a GVWR of 10,000 lbs or less using dual lamps of identical size and shape minimum effective projected luminous lens area each lamp (sq mm)
High-mounted stop lamp	2903	1452

TABLE IV–c—EFFECTIVE PROJECTED LUMINOUS LENS AREA REQUIREMENTS

Lighting device	School bus minimum effective projected luminous lens area each lamp (sq mm)
School bus signal lamp	12,258

TABLE V–a—VISIBILITY REQUIREMENTS OF INSTALLED LIGHTING DEVICES

Lighting device	Required visibility
Backup lamp	Lamps must be mounted so that the optical center of at least one lamp is visible from any eye point elevation from at least 1828 mm (6 ft) to 610 mm (2 ft) above the horizontal plane on which the vehicle is standing; and from any position in the area, rearward of a vertical plane perpendicular to the longitudinal axis of the vehicle, 914 mm (3 ft), to the rear of the vehicle and extending 914 mm (3 ft) beyond each side of the vehicle.
High-mounted stop lamp	Signal must be visible to the rear through a horizontal angle from 45° to the left to 45° to the right of the longitudinal axis of the vehicle. (Single lamp or two lamps together where required by S6.1.1.2 of this standard).
School bus signal lamp	Signal of front lamps to the front and rear lamps to the rear must be unobstructed within area bounded by 5° up to 10° down and 30° left to 30° right.

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TABLE V–d—VISIBILITY REQUIREMENTS OF INSTALLED LIGHTING DEVICES (LEGACY VISIBILITY ALTERNATIVE)

Lighting device		Required visibility [1]
Turn signal lamp	All passenger cars, multipurpose passenger vehicles, trucks, buses, motorcycles, and trailers of less than 2032 mm overall width.	Unobstructed minimum effective projected luminous lens area of 1250 sq mm through horizontal angle of H–V to H–45° OB.
	All multipurpose passenger vehicles, trucks, buses, and trailers of 2032 mm or more overall width.	Unobstructed minimum effective projected luminous lens area of 1300 sq mm through horizontal angle of H–V to H–45° OB. Where more than one lamp or optical area is lighted on each side of the vehicle, only one such area on each side need comply.
Stop lamp		Unobstructed minimum effective projected luminous lens area of 1250 sq mm through horizontal angle of H–45° IB to H–45° OB. Where more than one lamp or optical area is lighted on each side of the vehicle, only one such area on each side need comply.
Taillamp		Unobstructed minimum effective projected luminous lens area of 2 sq in through horizontal angle of H–45° IB to H–45° OB. Where more than one lamp or optical area is lighted on each side of the vehicle, only one such area on each side need comply.

[1] IB indicates an inboard direction (toward the vehicle's longitudinal centerline) and OB indicates an outboard direction.

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TABLE VIII: TAILLAMP PHOTOMETRY REQUIREMENTS

GROUP NUMBER	TEST POINT (degrees)		PHOTOMETRIC INTENSITY[1][2][4] (cd)						GROUP MINIMUM PHOTOMETRIC INTENSITY[1][2] (cd)		
			Lighted Sections						Lighted Sections		
			1		2		3		1	2	3
			MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM			
1	20L	5U	0.3	18	0.5	20	0.7	25	1.4	2.4	3.5
		5D	0.3	-	0.5	-	0.7	-			
	5L	10U	0.4	18	0.7	20	1.0	25			
		10D[3]	0.4	-	0.7	-	1.0	-			
2	10L	5U	0.8	18	1.4	20	2.0	25	2.4	4.2	6.0
		H	0.8	18	1.4	20	2.0	25			
		5D	0.8	-	1.4	-	2.0	-			
3	V	5U	1.8	18	3.1	20	4.5	25	9.6	16.8	24.0
	5L	H	2.0	18	3.5	20	5.0	25			
	V		2.0	18	3.5	20	5.0	25			
	5R		2.0	18	3.5	20	5.0	25			
	V	5D	1.8	-	3.1	-	4.5	-			
4	10R	5U	0.8	18	1.4	20	2.0	25	2.4	4.2	6.0
		H	0.8	18	1.4	20	2.0	25			
		5D	0.8	-	1.4	-	2.0	-			
5	5R	10U	0.4	18	0.7	20	1.0	25	1.4	2.4	3.5
		10D[3]	0.4	-	0.7	-	1.0	-			
	20R	5U	0.3	18	0.5	20	0.7	25			
		5D	0.3	-	0.5	-	0.7	-			

(1) The photometric intensity values between test points must not be less than the lower specified minimum value of the two closest adjacent test points on a horizontal or vertical line.

(2) If the sum of intensity values for all points in the group is not less than the specified total value for the group, the measured intensity value for each individual test point is not required to meet the minimum value.

(3) Where taillamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5º down may be met at 5º down rather than at the specified required downward angle.

(4) A taillamp shall not exceed the maximum intensity at H or above.

TABLE IX: STOP LAMP PHOTOMETRY REQUIREMENTS

GROUP NUMBER	TEST POINT (degrees)		MINIMUM PHOTOMETRIC INTENSITY RATIO WHERE COMBINED WITH A TAIL LAMP[5]	MINIMUM PHOTOMETRIC INTENSITY[1][2] (cd)			GROUP MINIMUM PHOTOMETRIC INTENSITY (cd)		
				Lighted Sections			Lighted Sections		
				1	2	3	1	2	3
1	20L	5U	3	10	12	15	50	60	70
		5D	3	10	12	15			
	5L	10U	3	16	19	22			
		10D[4]	3	16	19	22			
2	10L	5U	3	30	35	40	100	115	135
		H	3	40	47	55			
		5D	3	30	35	40			
3	V	5U	5	70	82	95	380	445	520
	5L	H	3/5[6]	80	95	110			
	V		5	80	95	110			
	5R		5	80	95	110			
	V	5D	3	70	82	95			
4	10R	5U	3	30	35	40	100	115	135
		H	3	40	47	55			
		5D	3	30	35	40			
5	5R	10U	3	16	19	22	50	60	70
		10D[4]	3	16	19	22			
	20R	5U	3	10	12	15			
		5D	3	10	12	15			
MAXIMUM PHOTOMETRIC INTENSITY[3]				300	360	420			

[1] The measured values at each test point must not be less than 60% of the minimum value.
[2] The photometric intensity values between test points must not be less than the lower specified minimum value of the two closest adjacent test points on a horizontal or vertical line.
[3] The maximum photometric intensity must not occur over any area larger than that generated by a 0.5º radius within a solid angle defined by the test point range

(4) Where stop lamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5º down may be met at 5º down rather than at the specified required downward angle.

(5) When a taillamp is combined with a stop lamp and the maximum luminous intensity of the taillamp is located below horizontal and within an area generated by a 0.5° radius around a test point (1.0° radius on lamps installed on a vehicle 2032 mm or more in overall width), the ratio for the test point may be computed by using the lowest value of the taillamp luminous intensity within the generated area.

(6) Values followed by a slash (/) apply only to lamps installed on multipurpose passenger vehicles, trucks, trailers, and buses of 2032 mm or more in overall width.

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TABLE XII: BACKUP LAMP PHOTOMETRY REQUIREMENTS

GROUP NUMBER	TEST POINT (degrees)		MAXIMUM PHOTOMETRIC INTENSITY (cd) ANY SINGLE LAMP	TWO LAMP SYSTEMS – EACH LAMP		SINGLE LAMP SYSTEM	
				MINIMUM PHOTOMETRIC INTENSITY (cd)[(1)(4)]	GROUP MINIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)[(1)(4)]	GROUP MINIMUM PHOTOMETRIC INTENSITY (cd)
1[(2)(3)]	45L	5U	300/600[(5)]	15	45	30	90
		H	300/600[(5)]	15		30	
		5D	-	15		30	
2[(2)(3)]	30L	H	300/600[(5)]	25	50	50	100
		5D	-	25		50	
3	10L	10U	300/600[(5)]	10	100	20	200
		5U	300/600[(5)]	20		40	
	V	10U	300/600[(5)]	15		30	
		5U	300/600[(5)]	25		50	
	10R	10U	300/600[(5)]	10		20	
		5U	300/600[(5)]	20		40	
4	10L	H	300/600[(5)]	50	360	100	720
		5D	-	50		100	
	V	H	300/600[(5)]	80		160	
		5D	-	80		160	
	10R	H	300/600[(5)]	50		100	
		5D	-	50		100	
5[(2)(3)]	30R	H	300/600[(5)]	25	50	50	100
		5D	-	25		50	
6[(2)(3)]	45R	5U	300/600[(5)]	15	45	30	90
		H	300/600[(5)]	15		30	
		5D	-	15		30	

(1) The photometric intensity values between test points must not be less than the lower specified minimum value of the two closest adjacent test points on a horizontal or vertical line.

(2) When two lamps of the same or symmetrically opposite design are used, the tested photometric values along the vertical axis and the averages of the tested photometric values for the same horizontal test point left and right of vertical for one lamp must be used to determine compliance with the requirements.

(3) When two lamps of differing designs are used, they must be tested individually and the tested photometric values added to determine the combined units compliance with twice the stated requirements.

(4) If the sum of intensity values for all points in the group is not less than the specified total value for the group, the measured intensity value for each individual test point is not required to meet the minimum value.

(5) The value before the slash applies to each lamp in a multiple lamp system; the value after the slash applies to a single lamp system.

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TABLE XIV: PARKING LAMP PHOTOMETRY REQUIREMENTS					
GROUP NUMBER	**TEST POINT (degrees)**		**MINIMUM PHOTOMETRIC INTENSITY[(1)(2)] (cd)**	**MAXIMUM PHOTOMETRIC INTENSITY (cd)**	**GROUP MINIMUM PHOTOMETRIC INTENSITY (cd)**
1	20L	5U	0.4	125	2.4
		5D	0.4	250	
	5L	10U	0.8	125	
		10D[(3)]	0.8	250	
2	10L	5U	0.8	125	3.0
		H	1.4	125	
		5D	0.8	250	
3	V	5U	2.8	125	16.8
	5L	H	3.6	125	
	V		4.0	125	
	5R		3.6	125	
	V	5D	2.8	250	
4	10R	5U	0.8	125	3.0
		H	1.4	125	
		5D	0.8	250	
5	5R	10U	0.8	125	2.4
		10D[(3)]	0.8	250	
	20R	5U	0.4	125	
		5D	0.4	250	

[(1)] The photometric intensity values between test points must not be less than the lower specified minimum value of the two closest adjacent test points on a horizontal or vertical line.

[(2)] If the sum of intensity values for all points in the group is not less than the specified total value for the group, the measured intensity value for each individual test point is not required to meet the minimum value.

[(3)] Where parking lamps are mounted with their axis of reference less than 750 mm above the road surface, photometry requirements below 5º down may be met at 5º down rather than at the specified required downward angle.

TABLE XV: HIGH-MOUNTED STOP LAMP PHOTOMETRY REQUIREMENTS				
GROUP NUMBER	**TEST POINT (degrees)**		**MINIMUM PHOTOMETRIC INTENSITY[(1)(2)(3)] (cd)**	**GROUP MINIMUM PHOTOMETRIC INTENSITY[(3)] (cd)**
1	V	5U	25	125
	5L	H	25	
	V	H	25	
	5R	H	25	
	V	5D	25	
2	5R	5U	25	98
	10R	5U	16	
	10R	H	16	
	10R	5D	16	
	5R	5D	25	
3	5L	5U	25	98
	10L	5U	16	
	10L	H	16	
	10L	5D	16	
	5L	5D	25	
4	10L	10U	8	32
	V	10U	16	
	10R	10U	8	
MAXIMUM PHOTOMETRIC INTENSITY[(4)]			160	

(1) The photometric intensity values between test points must not be less than the lower specified minimum value of the two closest adjacent test points on a horizontal or vertical line.

(2) The photometric intensity at each test point must not be less than 60% of the specified minimum value when considering overall group photometry tables.

(3) Where a pair of lamps identical in size and shape are used due to vehicle construction, they together must meet photometric requirements.

(4) The maximum photometric intensity must not occur over any area larger than that generated by a 0.25º radius within a solid cone angle within the rectangle bounded by test points 10U-10L, 10U-10R, 5D-10L, and 5D-10R.

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TABLE XIX-a: HEADLAMP LOWER BEAM PHOTOMETRY REQUIREMENTS

TEST POINT (degrees)		LOWER BEAM # 1M (LB1M)		LOWER BEAM # 1V (LB1V)		LOWER BEAM # 2M (LB2M)		LOWER BEAM # 2V (LB2V)	
		MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)	MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)	MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)	MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)
[1] 10U to 90U	[1] 90L to 90R	125	-	125	-	125	-	125	
4U	8L & 8R	-	64	-	64	-	64	--	64
2U	4L	-	135	-	135	-	135	-	135
1.5U	1R to 3R	-	200	-	200	-	200	-	200
1.5U	1R to R	1,400	-	1,400	-	1,400	-	1,400	-
1U	1.5L to L	700	-	700	-	700	-	700	-
0.5U	1.5L to L	1,000	-	1,000	-	1,000	-	1,000	-
0.5U	1R to 3R	2,700	500	2,700	500	2,700	500	2,700	500
H	V	5,000	-	5,000	-	-	-	-	-
H	4L	-	135	-	135	-	135	-	135
H	8L	-	64	-	64	-	64	-	64
0.5D	1.5L to L	3,000	-	-	-	3,000	-	-	-
0.5D	1.5R	20,000	10,000	-	-	20,000	10,000	-	-
0.6D	1.3R	-	-	-	10,000	-	-	-	10,000
0.86D	V	-	-	-	4,500	-	-	-	4,500
0.86D	3.5L	-	-	12,000	1,800	-	-	12,000	1,800
1D	6L	-	1,000	-	-	-	1,000	-	-
1.5D	2R	-	15,000	-	15,000	-	15,000	-	15,000
1.5D	9L & 9R	-	1,000	-	-	-	1,000	-	-
2D	9L & 9R	-	-	-	1,250	-	-	-	1,250
2D	15L & 15R	-	850	-	1,000	-	850	-	1,000
2.5D	V	-	-	-	-	-		-	-
2.5D	12L & 12R	-	-	-	-	-	-	-	-
4D	V	7,000	-	10,000	-	-	-	-	-
4D	4R	12,500	-	12,500	-	12,500	-	12,500	-
4D	20L & 20R	-	-	-	300	-	-	-	300

[1] These test points are boundaries, intensity values within this boundary must meet the listed photometry requirement.

TABLE XIX-b: HEADLAMP LOWER BEAM PHOTOMETRY REQUIREMENTS

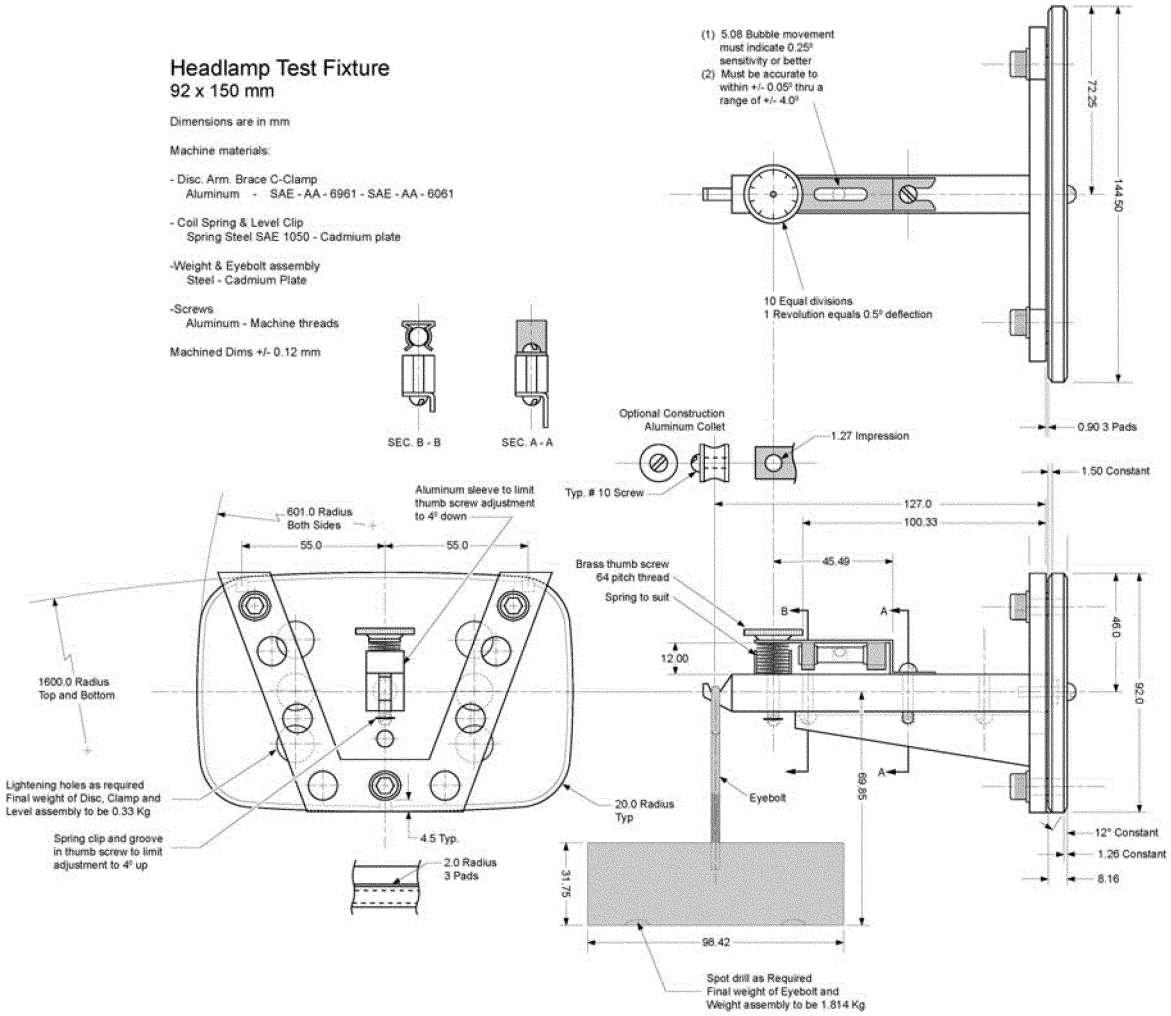
TEST POINT (degrees)		LOWER BEAM #3 M (LB3M)		LOWER BEAM # 3V (LB3V)		LOWER BEAM # 4M (LB4M)		LOWER BEAM # 5M (LB5M)	
		MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)	MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)	MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)	MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)
[(1)] 10U to 90U	[(1)] 90L to 90R	125	-	125	-	125	-	125	-
4U	8L & 8R	-	64	-	64	-	64	-	64
2U	4L	-	135	-	135	-	135	-	135
1.5U	1R to 3R	-	200	-	200	-	200	-	200
1.5U	1R to R	1,400	-	1,400	-	1,400	-	1,400	--
1U	1.5L to L	700	-	700	-	700	-	700	-
0.5U	1.5L to L	1,000	-	1,000	-	1,000	-	1,000	-
0.5U	1R to 3R	2,700	500	2,700	500	2,700	500	2,700	500
H	V	-	-	-	-	-	-	5,000	-
H	4L	-	135	-	135	-	135	-	135
H	8L	-	64	-	64	-	64	-	64
0.5D	1.5L to L	2,500	-	-	-	2500	-	3,000	-
0.5D	1.5R	20,000	8,000	-	-	20,000	8,000	20,000	10,000
0.6D	1.3R	-		-	10,000	-	-	-	-
0.86D	V	-	--	-	4,500	-	-	-	-
0.86D	3.5L	-	-	12,000	1,800	-	-	-	-
1D	6L	-	750	-	-	-	750	-	1,000
1.5D	2R	-	15,000	-	15,000	-	15,000	-	15,000
1.5D	9L & 9R	-	750	-	-	-	750	-	1,000
2D	9L & 9R	-	-	-	1,250	-	-	-	-
2D	15L & 15R	-	700	-	1,000	-	700	-	850
2.5D	V	-	-	-	-	-	-	-	2,500
2.5D	12L & 12R	-	-	-	-	-	-	-	1,000
4D	V	-	-	-	-	-	-	7,000	-
4D	4R	12,500	-	12,500	-	12,500	-	12,500	-
4D	20L & 20R	-	-	-	300	-	-	-	-

[(1)] These test points are boundaries, intensity values within this boundary must meet the listed photometry requirement.

* * * * *

TABLE XIX-c: HEADLAMP LOWER BEAM PHOTOMETRY REQUIREMENTS			
TEST POINT (degrees)		LOWER BEAM # 4 V (LB4V)	
		MAXIMUM PHOTOMETRIC INTENSITY (cd)	MINIMUM PHOTOMETRIC INTENSITY (cd)
[(1)] 10U to 90U	[(1)] 90L to 90R	125	-
4U	8L & 8R	-	64
2U	4L	-	135
1.5U	1R to 3R	-	200
1.5U	1R to R	1,400	-
1U	1.5L to L	700	-
0.5U	1.5L to L	1,000	-
0.5U	1R to 3R	2,700	500
H	V	5,000	-
H	4L	-	135
H	8L	-	64
0.5D	1.5L to L	-	-
0.5D	1.5R	-	-
0.6D	1.3R	-	10,000
0.86D	V	-	4,500
0.86D	3.5L	12,000	1,800
1D	6L	-	-
1.5D	2R	-	15,000
1.5D	9L & 9R	--	-
2D	9L & 9R	-	1,250
2D	15L & 15R	-	1,000
2.5D	V	-	2,500
2.5D	12L & 12R	-	1,000
4D	V	10,000	-
4D	4R	12,500	-
4D	20L & 20R	-	300

[(1)] These test points are boundaries, intensity values within this boundary must meet the listed photometry requirement.



92 x 150 mm HEADLAMP AIM DEFLECTION TEST SETUP

FIGURE 14

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David L. Strickland,

Administrator.

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