

(53rd GRE, 4-8 October 2004, agenda item 15.)  
(transmitted by the expert from the United States of America)

Apple .....	0.01	05/31/06
Grape .....	0.01	05/31/06
Kiwifruit ...	0.01	05/31/06
Olive .....	0.01	05/31/06
Pear .....	0.01	05/31/06
Plum (fresh) ..	0.01	05/31/06

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BILLING CODE 6560-50-S

**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 571**

[Docket No. NHTSA-2004-18794]

RIN 2127-AF75

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

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), DOT.  
**ACTION:** Final rule.

**SUMMARY:** This document amends the Federal lighting standard for motor vehicle turn signal lamps, stop lamps, taillamps, and parking lamps to increase compatibility with the requirements of the Economic Commission for Europe (ECE) and to improve visibility of these lamps. Manufacturers will be permitted to comply with either the existing requirements or the new requirements for a period of between seven to 10 years, depending on vehicle type, at which time they will be required to comply with the new requirements. This action completes rulemaking that implemented the grant of a petition for rulemaking submitted by the Groupe de Travail Bruxelles 1952.

**DATES:** *Effective date:* The final rule is effective September 10, 2004. Petitions for reconsideration. Petitions for reconsideration of the final rule must be received not later than September 27, 2004.

**ADDRESSES:** Any petitions for reconsideration should refer to the docket number of this document and be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

Order 12898, entitled *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629, February 16, 1994); or OMB review or any Agency action under Executive Order 13045, entitled *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997). This action does not involve any technical standards that would require Agency consideration of voluntary consensus standards pursuant to section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104-113, section 12(d) (15 U.S.C. 272 note). Since tolerances and exemptions that are established on the basis of a petition under section 408(d) of the FFDCA, such as the tolerance in this final rule, do not require the issuance of a proposed rule, the requirements of the Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) do not apply. In addition, the Agency has determined that this action will not have a substantial direct effect on States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999). Executive Order 13132 requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.” This final rule directly regulates growers, food processors, food handlers and food retailers, not States. This action does not alter the relationships or distribution of power and responsibilities established by Congress in the preemption provisions of section 408(n)(4) of the FFDCA. For these same reasons, the Agency has determined that this rule does not have any “tribal implications” as described in Executive Order 13175, entitled *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249, November 6, 2000). Executive Order 13175, requires EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of

regulatory policies that have tribal implications.” “Policies that have tribal implications” is defined in the Executive Order to include regulations that have “substantial direct effects on one or more Indian tribes, on the relationship between the Federal Government and the Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes.” This rule will not have substantial direct effects on tribal governments, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this rule.

**VIII. Congressional Review Act**

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of this final rule in the **Federal Register**. This final rule is not a “major rule” as defined by 5 U.S.C. 804(2).

**List of Subjects in 40 CFR Part 180**

Environmental protection, Administrative practice and procedure, Agricultural commodities, Pesticides and pests, Reporting and recordkeeping requirements.

Dated: July 29, 2004.

**Betty Shackelford,**  
*Acting Director, Registration Division, Office of Pesticide Programs.*

■ Therefore, 40 CFR chapter I is amended as follows:

**PART 180—[AMENDED]**

■ 1. The authority citation for part 180 continues to read as follows:

**Authority:** 21 U.S.C. 321(q), 346a and 371.

■ 2. Section 180.569 is amended by revising the table in paragraph (a) to read as follows:

**§ 180.569 Forchlorfenuron; tolerances for residues.**

(a) \* \* \*

**FOR FURTHER INFORMATION CONTACT:** For non-legal issues, contact Rich Van Iderstine, Office of Safety Performance Standards, NHTSA (Phone: 202-366-5275; FAX: 202-366-4329). For legal issues, contact George Feygin, Office of Chief Counsel (Phone: 202-366-2992).

**SUPPLEMENTARY INFORMATION:**

**Executive Summary**

Federal Motor Vehicle Safety Standard (FMVSS) No. 108, *Lamps, Reflective Devices and Associated Equipment*, establishes requirements for original and replacement lighting equipment on motor vehicles manufactured for sale in the United States. The purpose of the standard, as set forth in paragraph S2 of FMVSS No. 108, is “to reduce traffic accidents and deaths and injuries resulting from traffic accidents.” One of the ways in which this safety purpose is accomplished is through “enhancing the conspicuity of motor vehicles on the public roads so that their presence is perceived and their signals understood.”

This final rule amends FMVSS No. 108 in order to harmonize and improve the visibility requirements of the motor vehicle turn signal lamps, stop lamps, taillamps, and parking lamps.<sup>1</sup> Specifically, this rulemaking will enhance conspicuity of motor vehicles by improving the ability of other motorists to see these lamps from wider angles to the front, side, and rear of the vehicle. In addition to enhancing conspicuity, this rule will improve compatibility of our lighting requirements with those of the Economic Commission for Europe (ECE), as well as the industry consensus standards of the Society of Automotive Engineers (SAE).<sup>2</sup> Consequently, this rule will reduce lighting variations between motor vehicles produced in various world markets, resulting in lower production costs.

By way of background, in 1994, the Groupe De Travail “Bruxelles 1952” (GTB), composed of representatives from European, Japanese, and American motor vehicle and lighting manufacturers, petitioned NHTSA to “harmonize” the visibility requirements of FMVSS No. 108 with those in effect for vehicles manufactured for sale in Europe. At the same time, GTB submitted a similar petition to the

Meeting of Experts on Lighting and Light Signaling (GRE)<sup>3</sup> and the Working Party on the Construction of Motor Vehicles (WP29),<sup>4</sup> the two groups responsible for amending the Economic Commission for Europe (ECE) Regulation No. 48 *Uniform Provisions Concerning the Approval of Vehicles With Regard to the Installation of Lighting and Light-Signaling Devices* (ECE R48), specifically ECE R48.01.

We granted GTB’s petition and published a notice of proposed rulemaking (NPRM)<sup>5</sup> that would adopt much of what GTB had asked. To the extent practicable, we proposed changes that would be alternative to the existing requirements of FMVSS No. 108, and asked for comments for an appropriate date on which we would mandate compliance of all passenger cars with the new, more compatible requirements.

In response to comments to the NPRM, we published a supplementary notice of proposed rulemaking (SNPRM)<sup>6</sup> proposing to adopt either the measurement methods specified by the ECE or the Society of Automotive Engineers (SAE). Additionally, we proposed to apply the new requirements to all vehicles regulated by FMVSS No. 108, as opposed to only passenger cars, as originally contemplated in the NPRM.

The applicable requirements and measurement methods of the ECE and SAE are very similar. However, the ECE performance standards make lamps subject to the ECE requirements slightly more visible than lamps subject to the applicable SAE requirements. As explained below, we have decided to adopt the ECE-derived specifications in preference to those of the SAE because harmonization of the visibility requirements with those in ECE would provide a larger field of visibility, improve conspicuity, and ease compliance burdens on the manufacturers of vehicles for world markets.

Each of the ECE-derived specifications incorporates requirements based on either minimum intensity values or minimum lens areas, and a range of directions for measuring visibility. Each manufacturer will be able to choose either the intensity or the area requirement for the lamps.

The final rule allows vehicle manufacturers to continue to comply with the current visibility specifications

of FMVSS No. 108 for some years to come, but they must eventually design their vehicles to comply with one of the two new ECE-derived specifications. Specifically, passenger cars, motorcycles, multipurpose passenger vehicles, trucks, buses, and trailers of less than 2032 mm. (80 in.) in overall width manufactured on and after September 1, 2011, must then comply with one of the two new ECE-derived specifications. Multipurpose passenger vehicles, trucks, buses, and trailers whose overall width is 2032 mm (80 in.) or more must comply with one of these specifications as of September 1, 2014.

We anticipate that this rulemaking will have a positive impact on motor vehicle safety because the new requirements increase the range of angles through which the lighting equipment will be visible to other motorists. Additionally, this rulemaking will ensure conspicuity between this new range of angles. In sum, there is a greater probability that an observer would see the lamp anywhere within the lamp’s field of visibility. While we cannot precisely quantify the safety benefit of this increase in conspicuity, previous research of heavy duty trailer conspicuity indicates significant safety benefits associated with conspicuity improvements.<sup>7</sup> Nevertheless, we are providing an extended lead-time in order to ensure that any economic impact upon vehicle redesign is minimal.

**How the ECE Visibility Requirements Differ From the Current Requirements of FMVSS No. 108.**

The ECE R48 requirements for visibility of lamps and reflective devices differ from the current requirements in FMVSS No. 108 because: (1) ECE R48 contains a definition for “angles of geometric visibility;” (2) ECE R48 allows compliance with applicable requirements by measuring luminous intensity, as an alternative to minimum lens area measurement; (3) the ECE luminous intensity compliance method requires larger angles of measurement than the “area method” of current FMVSS No. 108; (4) ECE R48 requires that the entire “solid angle” complies with applicable requirements as opposed to requiring compliance with only specific test points; and (5) ECE R48 requirements apply to additional lamps and devices not covered by FMVSS No. 108 and vice versa;<sup>8</sup> (6)

<sup>1</sup> “Visibility” is not a defined term in FMVSS No. 108 or by the ECE, but in the context of motor vehicle lighting, it refers to the opportunity afforded to an observer to detect a lamp or the light emitted by a signal or a presence lamp.

<sup>2</sup> The SAE is an engineering body that establishes, inter alia, standardized test procedures, design and installation requirements, and guidelines, for motor vehicle lighting equipment.

<sup>3</sup> Since renamed to Working Party on Lighting and Light-Signalling.

<sup>4</sup> Since renamed to World Forum for Harmonization of Vehicle Regulations.

<sup>5</sup> See 60 FR 54833, October 26, 1995.

<sup>6</sup> See 63 FR 68233, December 10, 1998.

<sup>7</sup> See <http://www.nhtsa.dot.gov/cars/rules/regrev/evaluate/809222.html>.

<sup>8</sup> FMVSS No. 108 does not contain visibility requirements for parking lamps. ECE R48 does not contain lens area measurement requirements for a stop lamps.

ECE R48 requires a minimum area of 12.5 square centimeters for all applicable lighting devices where FMVSS No. 108 specifies minimum area depending on the lamp type and application; (7) ECE 48 limits the downward angle performance requirements to 5 degrees for lamps mounted at or below 750 mm.

With respect to the lens area method of compliance, ECE R48 specifies a wider range of angles than those specified in FMVSS No. 108. For instance, turn signals, parking lamps, and taillamps, include vertical angles of -15 degrees to +15 degrees in the lens area method. In addition, the lens area method angular range in the horizontal direction is larger in the inboard direction for turn signals, from 45 degrees (ECE) compared with 0 degrees (FMVSS No. 108).

Both, lens area and luminous intensity compliance methods in the ECE, establish a minimum solid angle in which the apparent surface of the lamp must be visible. By contrast, FMVSS No. 108 requires only that visibility be measured along the horizontal and vertical planes of the lighting device.

Finally, certain ECE requirements apply differently to lamps mounted below 750 mm from the ground. Specifically, lamps mounted below 750 mm above ground need not comply with the 15-degree downward visibility angle. Instead they must comply with a 5-degree downward visibility angle. Low-mounted lamps are treated differently because they cannot be observed at the downward angle of 15 degrees in normal circumstances. A 15-degree downward visibility angle would actually place the potential observer below the surface of the roadway at any distance more than about 3 meters away from the side of the vehicle.

In sum, the visibility requirements of ECE and FMVSS No. 108 currently differ in a variety of ways. This rulemaking seeks to improve compatibility of our lighting requirements with those of the ECE, and enhance the conspicuity of vehicles on U.S. highways.

#### **How the ECE Visibility Requirements Differ From the SAE Visibility Requirements**

The ECE visibility requirements have a larger range of angles for the area measurement method in comparison to those specified in the latest SAE standards. For instance, turn signals, parking lamps, and tail lamps, include vertical angles of -15 degrees to +15 degrees for the area method. In addition, the area method includes larger horizontal angles of 45 degrees in the

inboard direction for turn signals, compared to 0 degrees (FMVSS No. 108) and 20 degrees (latest SAE). Finally, the ECE area method angular range for a parking lamp has an inboard requirement of 45 degrees horizontal compared to the latest SAE requirement of 20 degrees.

ECE area and intensity methods establish a minimum solid angle in which the apparent surface of the lamp must be visible. The minimum solid angle is similar to the latest SAE intensity method which bounds the area by four corner points established by the angles of visibility. The ECE standards require a slightly smaller minimum area of 12.5 cm<sup>2</sup> for all applicable lamps, where the latest SAE standards require 13 cm<sup>2</sup> for all lamps, and FMVSS No. 108 requires a minimum area of 12.5 to 13 cm<sup>2</sup> depending on the lamp type and application. Nevertheless, the ECE method achieves a greater probability that an observer would be able to see the lamp because of the larger overall visibility field.

#### **Comments Received in Response to the SNPRM**

We received seventeen comments in response to the SNPRM, submitted by 12 lamp and vehicle manufacturers, four manufacturer associations, and one employee of a lamp manufacturer. The commenters were: Ichikoh Industries, LTD (Ichikoh), Truck Manufacturers Association (TMA), Nissan North America, Inc. (Nissan), Guide Lamp (Guide), Aprilia USA, Inc. (Aprilia), Peterson Manufacturing Company (Peterson), National Truck Equipment Association (NTEA), Mitsubishi Motors (Mitsubishi), Transportation Safety Equipment Institute (TSEI), Volvo, the Alliance of Automobile Manufacturers (the Alliance), Volkswagen, Paul DeStefano, Navistar International (Navistar), International Truck and Engine Corporation (International), and Paccar. A summary and analysis of each issue is provided below.

##### *a. Proposal To Extend ECE-Derived Passenger Visibility Requirements to Multipurpose Passenger Vehicles, Trucks, Trailers, and Buses of 2032 mm. or More Overall Width*

GTB's petition requested harmonization of the visibility requirements only for passenger cars. However, unlike Europe, which has different visibility requirements for different classes of vehicles, FMVSS No. 108 establishes one set of visibility requirements for all vehicle types. Accordingly, the SNPRM proposed to apply the ECE-derived passenger vehicle visibility requirements to all

vehicle regulated by FMVSS No. 108, including those whose overall width is 2032 mm or more.

Four comments were received on this issue, from TMA, Navistar, NTEA and TSEI. In general, all supported harmonization.

TSEI concurred with the proposal that the visibility requirements apply to wider vehicles provided that they received an extended lead-time to account for longer design cycles that are typical in the large-vehicle industry. As noted elsewhere, we are providing an extended lead time of approximately 10 years for large vehicles to comply with the new visibility requirements.

NTEA commented that extending the rule's applicability to medium and heavy-duty trucks was not part of the original NPRM and that the agency should further study this issue before proceeding. Although we did not propose inclusion of vehicles other than passenger cars in the NPRM, we subsequently re-examined the issue of applicability proposed to expand the application of the new visibility requirements to all vehicles subject to FMVSS No. 108 in the SNPRM. As stated in the SNPRM, there is neither safety benefits nor costs savings associated with different visibility requirements based on the vehicle's overall width. In our view, vehicles other than passenger cars should be afforded the same safety and harmonization benefits afforded to passenger vehicles upon completion of this rulemaking. A uniform requirement for the visibility of lighting devices installed on all vehicles should enhance safety and simplify the compliance responsibility for manufacturers.

TMA members include all the major U.S. and Canadian manufacturers of medium and heavy-duty trucks. TMA stated that it had always supported harmonization but that harmonization appeared to be the only basis for the SNPRM. Supported by Navistar, TMA questioned the agency's statement that " \* \* \* wider vehicles should be afforded the same safety and harmonization benefits that passenger car-like vehicles will have upon completion of this rulemaking." TMA asserted that one might intuitively feel that improved visibility results in increased safety, but that neither the agency nor the industry has the crash data necessary to either support or refute this perception.

The final rule adopts the ECE-derived passenger vehicle visibility requirements for all vehicles subject to the requirements of FMVSS No. 108. The new requirements will increase the range of angles over which visibility is

measured for turn signal lamps, parking lamps, stop lamps and taillamps. We believe that increasing the angles of visibility in these lamps will increase conspicuity, which will in turn reduce crashes on U.S. highways. A NHTSA-sponsored test program (*The Effectiveness of Retroreflective Tape on Heavy Trailers*, March 2001) which studied the use of conspicuity tape on trailers 2032 mm. or more in overall width indicates that side and rear crashes involving these trailers decreased by 29% compared with trailers not equipped with such tape.<sup>9</sup> These results indicate that increased conspicuity of motor vehicles results in increased safety.

Although we do not anticipate a 29% percent decrease in crashes, the agency expects that the ECE-derived visibility requirements will contribute to the reduction of crashes involving vehicles subject to the new requirements. However, unlike the trailer conspicuity requirements, which mandated reflective tape where none was previously required, this change in visibility requirements is incremental, and it is impossible to accurately calculate benefits resulting from this final rule. Nevertheless, we believe that the new visibility requirements will reduce crashes at negligible cost.

*b. Proposal To Adopt Either the ECE or Revised SAE Requirements for Visibility*

The SNPRM proposed to update current visibility requirements of FMVSS No. 108 by adopting one of two alternative specifications for visibility. We proposed to adopt either the ECE specifications based on lens area or luminous intensity, or the SAE specifications based on lens area or luminous intensity. As previously stated, the applicable requirements of the ECE and SAE are virtually identical. The equipment covered by the SNPRM included front and rear turn signal lamps (collectively referred to as "turn signal lamps"), stop lamps, taillamps, parking lamps, rear fog lamps, side marker lamps, daytime running lamps (DRLs), the center highmounted stop lamp (CHMSL), and reflex reflectors.

Eleven commenters supported the ECE specifications while four were in favor of the SAE requirements (these commenters were a motorcycle manufacturer and vehicle and lamp manufacturers that predominantly develop products for the domestic trucking industry). After considering the comments, we are adopting the ECE-

derived lens area and luminous intensity requirements for visibility.

The Alliance members consist of BMW, DaimlerChrysler, Ford, General Motors, Mazda, Nissan, Toyota, Volkswagen and Volvo. The Alliance recommended that the ECE-derived requirements be adopted to more closely align the requirements of Europe and the United States. However, the Alliance also recommended that the amendments clarify that reflex reflectors and side markers lamps have no minimum area requirements, and that they only need to be visible from any point in the indicated field of view. Ichikoh's comments were similar to that of the Alliance.

Under the proposed ECE-derived requirements for visibility, "some portion of" a front side marker lamp "shall be visible" for compliance with the minimum area, or have a minimum luminous intensity of 0.6 candela. Given a choice of compliance methods for any particular lamp function, a vehicle manufacturer would likely certify to the less stringent and less costly one which, in this case, would appear to be the one for minimum lens area rather than minimum luminous intensity. Similarly, in addition to having "some portion of" a front side marker lamp being "visible," under the SAE-derived visibility requirements for either the area or intensity methods, the lamps must comply with the photometric requirements as installed. Thus, a side marker lamp could be certified to "be visible" and meet the photometry requirements (SAE) or simply "be visible" (ECE) depending on whether it was certified to either the SAE or ECE-derived specification. Thus, the inclusion of side marker lamps in final rule appears redundant, and therefore side markers will not be subject to the ECE-derived visibility specifications. In addition, the visibility requirements for CHMSLs will remain unchanged except for its location within the standard, as discussed below. This is necessary to avoid the elimination of an existing visibility requirement (considering that a CHMSL does not have a luminous intensity requirement other than to meet photometry), and to account for a CHMSL that uses more than one lamp.

In sum, the visibility requirements for side marker lamps, reflex reflectors, DRLs, and CHMSLs remain unchanged by the final rule, and their requirements remain the same.

As discussed above, the new visibility requirements of this final rule apply only to stop, turn, parking, and tail lamps. In addition to the visibility requirements, the SNPRM proposed to adopt an ECE 5-degree downward

visibility provision for lamps mounted less than 750 mm above ground.<sup>10</sup> This ECE provision allows stop, turn, parking, tail and other lamps mounted below 750 mm above ground to comply with a 5-degree downward visibility angle instead of the 15-degree downward visibility angle. The downward visibility requirement can be reduced because low-mounted lamps usually cannot be observed at the downward angle of 15 degrees. A 15-degree downward visibility angle would actually place a potential observer below the surface of the roadway at any distance more than about 3 meters away from the side of the vehicle.

Since we are not adopting the ECE visibility requirements for all lamps listed in the NPRM, some lamps, e.g. side-marker lamps, would not be subject to the 5-degree provision described above. Because this provision will reduce a restriction on vehicle manufacturers without reducing motor vehicle safety, we decided to adopt this 5-degree provision and extend it to other lamps not subject to the visibility requirements of this final rule. Because we are reducing a restriction on vehicle manufacturers, this provision will become effective 30 days after the publication of this final rule.

Accordingly, stop, turn, parking, tail and all other lamps and reflective devices subject to FMVSS No. 108 mounted less than 750 mm above the ground, as measured to the lamp axis of reference, must meet the 5-degree or greater downward angle visibility or photometric performance requirements at 5 degrees downward. For example, a reflective device, clearance lamp, side marker lamp, low mounted stop lamp, tail lamp, turn signal lamp or identification lamp may meet the 10-degree downward visibility requirements at 5 degrees downward angle.

Because lighting devices other than stop, turn, parking, and tail lamps are not subject to the visibility requirements of this final rule, the regulatory text contains a separate paragraph pertaining to lighting mounted less than 750 mm above the ground. The requirements for stop, turn, parking, and tail lamps subject to this final rule are listed in Table 19 and Table 20.

Ichikoh, an automotive lamp manufacturer, commented that ECE regulations do not have area requirements for signal lamps and that it hoped that NHTSA will not add an

<sup>9</sup> See <http://www.nhtsa.dot.gov/cars/rules/regrev/evaluate/809222.html>.

<sup>10</sup> See footnote 1 of Table V, and footnote 1 of Table VI of the SNPRM. This is not a separate provision, but an integral part of the ECE visibility requirement.

area requirement for signal lamps in the new visibility requirements. Ichikoh's comment on lens area related to proposed paragraph S5.1.1.30(d)<sup>11</sup> which would require that "not less than 12.5 square centimeters of [a] lamp's effective projected luminous lens area shall be visible" under specified conditions. We note that since Ichikoh submitted its comment, ECE has in fact incorporated this area measurement. Thus, our inclusion of the lens-area specification is part of harmonizing FMVSS No. 108 with the ECE requirements.

Ichikoh also commented that small color changes might occur around the visibility boundary that would not have any disadvantage on safety, and requested that NHTSA explicitly permit this. In our view, the color specifications of FMVSS No. 108 apply to the overall color of light emitted by the beam of a lamp and not to the color of the light emitted from any small area of the lens or outside the periphery of a lamp's visibility boundaries.

For continuity and clarity, Guide suggested incorporating all requirements for visibility in one paragraph, including those lamps that were not covered by this rulemaking, in particular, the requirements for a back up lamp (referenced in SAE J593c (February 1968)), the text from paragraph S5.3.1.5, and the requirements of paragraph S5.3.1.1. We agree with the suggestion to consolidate all the visibility requirements, and have done so in new paragraph, S5.3.2. Paragraph S5.3.2(e) incorporates the visibility language from SAE J593c (Feb 68) including the phrase "center of the lens" currently defined in paragraph S5.3.1.5 as the optical center. With the incorporation of the phrase into paragraph S5.3.2(e), existing paragraph S5.3.1.5 becomes moot and we are deleting it. We are also moving the visibility requirements for a CHMSL from S5.1.1.27(a)(2) and S5.1.1.27(b)(2) to paragraphs S5.3.2(c) and S5.3.2(d).

Guide also requested that additional or auxiliary devices not used to meet the certification requirements of the vehicle be excluded from the visibility requirements. Further, it argued that it is inappropriate to specify visibility requirements for a rear fog lamp considering that it is an auxiliary lamp that is not otherwise regulated by the standard. Guide's first comment is inapposite. No performance requirements, including visibility, are prescribed for supplemental lighting equipment, and none were proposed, except for rear fog lamps. Supplemental

or auxiliary lamps may be used on motor vehicles subject only to the prohibition that they not impair the effectiveness of the lighting equipment that is required by FMVSS No. 108. We agree that it is not appropriate to specify visibility requirements for a rear fog lamp in this rulemaking because it is not a specifically regulated lamp.

Mitsubishi supported adoption of the ECE R48 visibility standard. In its view, this action will allow unified design and testing of lamp equipment for vehicles destined for different markets, a significant merit for manufacturers. We agree that the harmonization of the standard with ECE R48 would ease burdens on manufacturers.

The four comments supporting SAE-derived visibility standards were varied. Aprilia commented that ECE R48 was not intended to cover vehicles with less than four wheels and that the visibility requirements for two-wheeled vehicles is specified in EEC 93/92/EEC. Aprilia asserted that mandating visibility values for motorcycles that are applicable only to four-wheeled vehicles (in Europe) would create confusion and unnecessary and impractical restrictions for motorcycle manufacturers. In its opinion, the proposed SAE-derived amendments include values similar to EEC 93/92/EEC and would allow NHTSA to achieve its goal of harmonizing the signal lamp and reflector standards of the United States with those of Europe. Accordingly, Aprilia supported the adoption of proposed tables based on the SAE requirements for visibility.

We disagree. EEC 93/92/EEC is the European Union's (EU) directive for motorcycle lamp installation, but it differs from the UN's ECE regulation covering the same subject. EU directives are compulsory for members; other countries are not required to meet them. In contrast, many countries outside Europe have adopted the ECE regulations and, from an international harmonization perspective, the ECE regulations are a more widely recognized source for requirements that could be harmonized. Although Aprilia commented that the proposed SAE-derived amendments would harmonize the U.S. and European standards, EEC 93/92/EEC appears to only specify a luminous intensity measurement method for visibility. Otherwise, the EEC luminous intensity levels and angular ranges for turn signals, stop lamps, and taillamps are identical to those contained in both the ECE and SAE-derived tables used in the SNPRM. We believe that adoption of the luminous intensity measurement method derived from the ECE

regulations will harmonize with EEC 93/92/EEC for motorcycles. Furthermore, motorcycle manufacturers for the domestic and certain foreign (ECE) markets will also be able to certify compliance using the ECE's lens area measurement method for visibility. However, we must ensure that a motorcycle equipped with a single taillamp satisfies visibility for both sides (left and right). This will be accomplished by adding a footnote to the new luminous intensity method Figure (Figure 20) that specifies that the horizontal angles for motorcycles with a single taillamp shall be -80 degrees to +80 degrees.

Peterson, TSEI, and NAL also supported the adoption of the SAE-derived requirements. Peterson and TSEI appeared to agree with NHTSA's SNPRM comparison of the SAE and ECE methods and the "advantage" of the "SAE area method" of determining compliance from computer designs or drawings before substantial capital is invested in tooling and equipment. Peterson further commented that prototyped tooling frequently is insufficient to prove photometric and visibility requirements based on intensity (especially lenses). This can result in expensive tooling modifications after production tooling is complete. TSEI stated that the advantage to manufacturers to use computer generated drawings to determine compliance cannot be overemphasized, especially for those that design "catalog" items for unknown vehicle types.

We believe that the benefits of the "area method" are retained regardless of whether the final rule adopts ECE or SAE derived visibility specifications. Specifically, a manufacturer is also able to rely on computer-generated drawings under the ECE specifications, and adoption of the ECE instead of SAE method will not necessitate additional cost expenditures.

In addition, TSEI argued that the ECE inboard test angles for parking and turn signal lamps are design restrictive and do not appear to provide any demonstrated safety benefit. TSEI asserted that the inboard angles for parking and turn signal lamp visibility requirements should be limited to 20 degrees (SAE) instead of the proposed 45 degrees (ECE), in order to better facilitate the design of aerodynamic vehicles to improve fuel mileage.

The 45-degree inboard visibility requirement for parking lamps and front and rear turn signal lamps has existed in the ECE regulations for many years with the test of compliance being 0.05 (parking lamp) and 0.3 candela per lamp

<sup>11</sup> See 63 FR 68233 (December 10, 1998).

(turn signal lamps) respectively. Because the vehicles sold in Europe and Asia have been meeting the ECE 45-degree requirement, we believe that this requirement is not unnecessarily design restrictive.

We further note that the adoption of the ECE-derived luminous intensity specification may be a significant advantage to manufacturers of aerodynamic vehicles. This method allows the installation of lamps with considerably smaller area in the direction of wider angles. This substantially reduces the constraint on styling for aerodynamic purposes.

Peterson and TSEI also asserted that the ECE visibility requirements for reflex reflectors are outside the useful range of operation of a reflector, and that the reflected output beyond 20 degrees falls off dramatically. As noted above, we are not including reflex reflectors in the final rule.

#### *c. Irrevocable Choice of Compliance Method*

In the SNPRM, we proposed a new paragraph S5.1.1.30(f) for ECE-derived requirements (and the alternative paragraph S5.1.1.31(f) for the current SAE-derived requirements) that "The manufacturer of a vehicle shall certify to only one of the compliance options \* \* \* and it may not thereafter choose a different option for that vehicle." Were we to test a lamp for compliance to the manufacturer's selected option and find a failure, the manufacturer would be precluded from contesting the test failure on the basis that the lamp nevertheless complied with the alternative visibility requirements specified in the standard.

Five comments were received concerning this issue, one from a vehicle manufacturer and the remainder from lamp manufacturers. In general, lamp manufacturers such as Guide and Peterson argued that the proposed irrevocability requirement would be overly restrictive given the fact that the options proposed in the SNPRM were, in their opinion, safety neutral. TSEI indicated that many of its members use catalog devices and may choose different methods for certification depending on application. In its view, it would be frustrating for a vehicle manufacturer to use the same method forever for a particular vehicle model. Mr. DeStefano requested clarification on whether each function of a multi-function lamp would be allowed to utilize different methods for compliance with the visibility requirements.

We continue to believe that when a vehicle manufacturer has certified that the vehicle will meet a visibility

requirement with a lamp installed and tested according to a chosen compliance method, the method chosen should be used to determine compliance of that vehicle with the visibility requirements applicable to that lamp. This provision is needed for the agency to efficiently carry out its enforcement responsibilities. The agency wants to avoid the situation of a manufacturer confronted with an apparent noncompliance (based on a compliance test) with the option it has selected responding to that noncompliance by maintaining that its products comply with a different option for which the agency has not conducted a compliance test. To ensure that the agency will not be asked to conduct multiple compliance tests, first for one compliance option, then for another, this rule requires the vehicle manufacturer to select the option by the time it certifies the vehicle and prohibits it from thereafter selecting a different option.

In response to Mr. DeStefano, we wish to clarify that a manufacturer need not certify a vehicle to any one of the new visibility requirements. Instead, a vehicle manufacturer may choose one of the compliance options listed in S5.3.2(b) for each particular type of lamp. This means that, on a hypothetical passenger car, the final rule allows the parking lamps to meet the ECE-derived luminous intensity requirements, the front turn signal lamps the ECE-derived lens area requirements, and the rear turn signal lamps to meet the present SAE-based standard (until that alternative is phased out). This is consistent with the practice of both the latest SAE standards and ECE requirements, and the regulatory text clarifies this. However, each lamp in a multiple-lamp system as discussed above must be certified to the same visibility option (*e.g.*, a left and right stop lamps would need to be certified to the same option, but a left stop lamp and left taillamp would not). Further, a manufacturer can elect to certify all the lamps on the vehicle to the existing visibility requirements referenced in the applicable SAE Standards until such time as this alternative is phased out (*see* S5.3.2.4.)

#### *d. Lead-Time*

In response to comments to the NPRM, which proposed a mandatory compliance date of two years after issuance of the final rule, agency proposed a longer time in the SNPRM, *i.e.*, the fifth September 1 following issuance of the final rule.

Twelve comments were received concerning this issue. Primarily, the

passenger car manufacturers recommended lead-times between five and nine years, and manufacturers in the trucking industry requested lead-times of 10 to 20 years due to the longer design cycles for this type of vehicle. Many commenters also requested that manufacturers be allowed to comply with the new or old requirements during the phase-in of the new rule.

Specifically, TMA, Peterson, NTEA, TSEI, and Navistar requested that the lead-time for large vehicles of 2032 mm. or more overall width be 15 years. All appeared to agree that the typical life cycles of medium and heavy-duty truck designs were in the 15–20 year range. Furthermore, TMA also suggested that this industry is principally domestic, and that only 10 percent, or less, of production is exported, and that the economic impact on the truck manufacturers/suppliers would not be justifiable on a harmonization basis if the lead-time is less than 15 years. International and Paccar had similar arguments; however, they requested lead-times of only 10 years. NAL commented that the proposed 5-year lead-time would be difficult to meet by manufacturers of vehicles larger than 2032 mm. in overall width.

We agree that life cycles for medium and heavy-duty trucks are typically longer than that for passenger cars; however, a lead-time of 15 years is excessive. There appear to be three primary differences between the ECE lens area method and the current regulations for visibility: (1) The field of view in the vertical direction for turn signals and taillamps is increased from 0 degrees to +/-15 degrees; (2) the inboard field of view is increased from 0 degrees to 45 degrees for turn signals; and (3) the minimum required area for turn signals is reduced from 13cm<sup>2</sup> to 12.5cm<sup>2</sup>. Due to the aerodynamic design of current large trucks, we believe that the increase in the front turn signal inboard field of view is industry's primary concern. Even with current trucks an existing lamp that cannot comply as installed can be redesigned with a different lens in order to resolve the visibility issue without changing the vehicle's design. Nevertheless, in an effort to ease the perceived difficulty in incorporating front turn signal lamps that comply with the new requirements on multipurpose passenger vehicles, trucks, trailers, and buses, of 2032 mm. or more overall width, we have decided that only one front turn signal lamp area on each side need comply when more than one lamp or optical area is lighted on each side of the vehicle. Though this exclusion does not exist in the ECE visibility requirements, it is consistent

with the current FMVSS No. 108 requirements. This will allow the use of a second turn signal lamp to be mounted further inboard to accommodate the increased visibility angles in this direction. Considering this, we believe that such exclusion would enable large truck manufacturers to incorporate inexpensive solutions if compliance with the recommended amendments is required prior to a major redesign cycle. We believe that most large vehicles will be redesigned within the next ten years, and we are establishing a mandatory compliance date for vehicles 2032 mm. or more in overall width of approximately ten years, September 1, 2014.

As for passenger cars, motorcycles, and other vehicles with an overall width of less than 2032 mm, the Alliance requested a lead-time of seven to nine years. In addition, it supported the proposal that manufacturers be allowed to comply with the proposed or existing requirements during the transition period. Nissan, Volvo, VW, and NAL concurred with the SNPRM's proposed five-year lead-time. After consideration of these comments, we are requiring these vehicles to comply with the new requirements on a mandatory basis no later than September 1, 2011, a lead time of approximately seven years. By adopting an effective date for these amendments of 30 days following publication of the final rule, a manufacturer will be able to avail itself at the earliest opportunity of compliance with an ECE-derived specification if it wishes to do so.

#### e. Costs

Eight comments were received on our request to address potential compliance costs, primarily from the large vehicle industry. The commenters were unanimous in their opinion that the cost to the trucking industry would be high to conform to the ECE-derived visibility requirements. Though all commenters supported harmonization, they reported that long lead-times would be required in order to amortize the costs, and to coordinate design changes into the normal design cycle of the vehicles. Some believed that the economic impact on the trucking industry would not be justifiable based on harmonization.

We recognize that vehicle design changes implemented outside the normal design cycle of a vehicle result in higher costs. We note, however, that vehicle designs need not be changed for compliance. Lamps may be redesigned at a fraction of the costs claimed. However, in an effort to minimize the impact on the large vehicle industry, an extended lead-time of approximately 10

years has been adopted for vehicles of 2032 mm. or more overall width. In addition, we have provided an alternative for front turn signals on wider vehicles: if more than one lamp or optical area is lighted on each side of the vehicle, only one lamp or area need comply with the visibility requirements. This, for example, would enable a truck manufacturer to add a second turn signal to the front of a truck tractor that complies with the visibility requirements until such time that a single lamp can be incorporated during the normal design cycle of the vehicle. Finally, manufacturers will not have to meet new visibility requirements for reflex reflectors and side marker lamps; they are not included in the final rule.

#### f. Definitions

The SNPRM proposed definitions for "effective light emitting surface" and "effective projected luminous lens area." Four comments were received on this issue.

Under the SNPRM, "effective light-emitting surface" would be defined as follows:

Effective light-emitting surface means that portion of the light-emitting surface of a lamp that directs light to the photometric test pattern, and does not include mounting hole bosses, reflex reflector area, beads or rims that may glow or produce small areas of increased intensity as a result of uncontrolled light from an area of 1/2 degree radius around a test point.

Ichikoh commented that the definition would not cover signal lamps using LED or miniature bulb light sources. We do not agree; the proposed definition covers every lamp regardless of light source. However, a manufacturer of these lamp types could encounter difficulty if it chooses to utilize LED light sources behind a transparent lens. In order for a single stop lamp to comply with the current FMVSS No. 108 visibility requirements, the stop lamp must have 12.5 square centimeters of effective projected luminous lens area throughout a horizontal field of view from -45 degrees to +45 degrees. If the stop lamp incorporated LED light sources and a *transparent* outer lens, the lamp manufacturer would need to ensure that the total cumulative area of all the individual LED "lenses" satisfied these requirements. Other lamp designs (such as the stop lamps used on certain models of Cadillac) incorporate what appear to be *translucent* outer lenses (Cadillac appears to use some type of optics in the outer lens), in combination with LED light sources. In this case, the translucent lens can be included in the calculations of effective projected

luminous lens area. However, with the adoption of a luminous intensity method for measuring visibility, this issue relating to LEDs and visibility appears to be moot.

We are adopting the definition as we proposed it. However, we note that transparent lenses cannot be included in the determination of the effective light-emitting surface. The agency has previously addressed this issue in an interpretation letter to Shigeyoshi Aihara on June 14, 2000.

TSEI submitted the following comment:

The SNPRM contains a modification for the definition of "effective projected luminous lens area." It appears that there is no substantive change in the method of determining "effective" or "useful" lens area. We do note that most lenses have area(s) that contribute light toward the recording photoreceptor, even if it is "uncontrolled." Some lenses do not have fresnels or optics for such control as a matter of design. In addition, lenses often employ deliberate methods to scatter the light such as frosting or stipple. The new definition appears to confirm that any illuminated lens area that *contributes light toward satisfying the photometric requirements* qualifies as effective lens surface area.

We concur that there does not appear to be any substantive change in determining the effective projected luminous lens area. However, the proposed definition clearly stated that only the portion of the lamp that directs light to the photometric test pattern may be included in the determination of the effective light-emitting surface. Similar to our discussion above, we believe that *transparent* lenses do not direct light to the photometric test pattern and may not be included in the calculation. However, portions of *translucent* lenses intended to deliberately scatter the beam pattern within the allowable photometry (e.g., frosted or stippled lenses), are permissible as part of the effective projected luminous lens area.

Guide suggested that it would be appropriate to add the definition of "light-emitting surface" from ECE Regulation 48 since the term is not defined in FMVSS No. 108. Our proposed definition of "effective light-emitting surface" was taken directly from the existing definition of "effective projected luminous lens area." It was considered necessary, in combination with the proposed definition of "effective projected luminous lens area," to clarify the parts of a lamp that constitute its measurable surface and how the area of that surface is specified. It is clear from Guide's comment that further clarification of the phrase "light-emitting surface" may be required. However, we have concluded that the



term "light-emitting surface," has no significance within the definition. Elimination of the term will enhance clarity and will not result in a substantive change. Thus, we are adopting the definition of "Effective light-emitting surface" as proposed but deleting the internal phrase "light-emitting surface."

Peterson recommended that the agency review the proposed definition for "effective projected luminous lens area" to determine whether it is the same as the previous definition. The proposed definition was:

Effective projected luminous lens area means the area of the projection of the effective light-emitting surface of a lamp on a plane specified to define the functional lighted lens area or the geometric visibility of the lamp. The "plane" is not clearly defined in the SAE standards referenced in FMVSS No. 108.

Peterson also noted that the reference to "functional lighted lens area" may be confusing, considering that it is intended to be equivalent to the "effective projected luminous lens area" as indicated in paragraph S6.3.

In light of harmonization concerns, we reviewed the ECE regulations to establish compatibilities between the ECE defined "apparent surface" and the current FMVSS No. 108 definition of "effective projected luminous lens area." The first difference is that the ECE specifies an "orthogonal projection" whereas FMVSS No. 108 simply states "projection." Though we believe that these two phrases have the same meaning in the two regulations, the term "orthogonal projection" has greater clarity; it is defined in a common dictionary as "a two-dimensional graphic representation of an object in which the projecting lines are at right angles to the plane of projection." The use of the simpler term "projection" may actually increase the opportunity for misinterpretation as there is no definition that clearly defines "projection" in the context of motor vehicle visibility. Therefore, we are adopting the phrase "orthogonal projection" within the definition in order to achieve greater clarity, to improve harmonization with the ECE regulations, and to reduce the incidence of misinterpretation. We discuss "orthogonal projection" in more detail below.

Another difference is that ECE R48 specifies the projection plane as "a plane perpendicular to the direction of observation and tangential to the most exterior point of the lens \* \* \*." This phrase is very similar to the current FMVSS No. 108 definition which includes the phrase "a plane

perpendicular to the lamp axis." The term "lamp axis" is not defined in FMVSS No. 108, nor is it defined in SAE J387—Nov 87, *Terminology—Motor Vehicle Lighting*. However, in the September 1995 revision of SAE J387, the definition of "effective projected luminous area" contains the statement that "the axis of the lamp corresponds to the H-V axis used for photometric requirements." We believe that this is the understood meaning of "lamp axis" in industry; however, clarification of this term should be beneficial to preventing misinterpretations and confusion. We are therefore adding the following definition of "axis of reference" which is nearly identical to that of the ECE regulations:

Axis of reference means the characteristic axis of the lamp for use as the direction of reference ( $H=0^\circ$ ,  $V=0^\circ$ ) for angles of field for photometric measurements and for installing the lamp on the vehicle.

We are also more fully defining the projection plane in the definition of "effective projected luminous lens area." Incorporating all of the above changes, the definition that we have adopted in the final rule reads as follows:

Effective projected luminous lens area means the area of the orthogonal projection of the effective light-emitting surface of a lamp on a plane perpendicular to a defined direction relative to the axis of reference. Unless otherwise specified, the direction is coincident with the axis of reference.

The area of the orthogonal projection is formed by projecting the effective light-emitting surface along parallel lines that are perpendicular to the projection plane and in a defined direction that is either parallel to the axis of reference or, for measuring visibility, in any direction throughout the pattern defined by the corner points specified in new Figure 19, which represents the ECE-derived visibility specifications. This definition should achieve greater clarity, improve harmonization with the ECE regulations, and reduce the incidence of misinterpretation, when compared to the definition proposed in the SNPRM. There is no substantive change from the meaning of the phrase as defined in the current FMVSS No. 108.

Paragraph S6.3 is amended without substantive change to reflect the fact that the term "effective projected luminous lens area" is now utilized in FMVSS No. 108.

For consistency, we are amending paragraphs S5.1.1.12, S5.1.1.25, S5.1.1.26(a) and (b), S5.1.1.27(a)(1) and (b)(1), and S5.8.3(a) to substitute the term "effective projected luminous lens

area" in place of terms that have the same meaning: "effective projected lens area" and "functional lighted lens area."

As indicated above, we are centralizing both the existing and new visibility requirements in the new paragraph, S5.3.2. We are also simplifying the regulatory language that we have previously used. Currently, the visibility of lighting devices is addressed in paragraph S5.3.1.1.

The first sentence of paragraph S5.3.1.1 states that:

\* \* \* each lamp and reflective device shall be located so that it meets the visibility requirements specified in any applicable SAE Standard or Recommended Practice.

The SAE materials for many lamps and reflective devices include a section called "Installation requirements." This section specifies that visibility of lamps and reflective devices is determined throughout a range of directions, defined by angles, from left to right (horizontal), and from up to down (vertical), with reference to the lens' centerpoint (e.g., from 45 degrees left to 45 degrees right and from 15 degrees up to 15 degrees down). To be considered "visible," each lamp or reflective device must provide an unobstructed view of a specified minimum area of the outer lens surface determined, generally, by geometric means. The CHMSL is an exception to compliance with SAE materials; paragraph S5.1.1.27 requires CHMSLs to have a "signal visible to the rear" throughout defined angles (In addition, the SAE requirements for stop lamps, taillamps, and turn signal lamps for vehicles over 2032mm in overall width contain an exception: when more than one lamp or optical area is lighted on each side of the vehicle, only one such area on each side need comply).

We are retaining this SAE-based requirements previously listed in S5.3.1.1 as an alternative to the new, ECE-derived visibility requirements until the end of the phase-in period. However, for clarification purposes, S5.3.1.1 is eliminated, and the requirements in S5.3.1.1 are now contained in several paragraphs. S5.3.2.4 contains the first sentence of previous S5.3.1.1 and reads as follows:

S5.3.2.4 As an alternative to S5.3.2(b), each passenger car and motorcycle, and each multipurpose passenger vehicle, truck, trailer and bus that is of less than 2032 mm overall width, that are manufactured on or before September 1, 2011, and each multipurpose passenger vehicle, truck, trailer and bus 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 any applicable SAE Standard or Recommended Practice.



The second sentence of previous paragraph S5.3.1.1 provides that:

\* \* \* no part of the vehicle shall prevent a parking lamp, taillamp, stop lamp, turn signal lamp, or backup lamp from meeting its photometric output at any applicable group of test points specified in Figures 1c and 2, or prevent any other lamp from meeting the photometric output at any test point specified in any applicable SAE Standard or Recommended Practice.

We have clarified and moved this sentence to S5.3.2(a), without making any substantive changes:

Each lamp and reflective device must be installed in a location where it complies with all applicable photometric requirements and visibility requirements, with all obstructions (e.g., mirrors, snow plows, wrecker booms, backhoes, and winches) installed on the vehicle.

This revised sentence is a permanent requirement and is not affected by the phase in.

The third sentence of the previous S5.3.1.1 establishes an exception to the second sentence. It reads:

However, if motor vehicle equipment (e.g., mirrors, snow plows, wrecker booms, backhoes, and winches) prevents compliance with this paragraph by any required lamp or reflective devices, an auxiliary lamp or device meeting the requirements of this paragraph shall be provided.

This sentence expresses the exception referred to in new S5.3.2(a), and we have rewritten it as new S5.3.2.2, to read as follows:

If any required lamp or reflective device is obstructed by motor vehicle equipment (e.g., mirrors, snow plows, wrecker booms, backhoes, winches, etc.) and cannot meet requirements of S5.3.2, the vehicle must be equipped with an additional lamp or device of the same type which meet all applicable requirements of this standard, including S5.3.2.

We are retaining the basic lamp location specifications in S5.3. However, the reference to S5.3.2 is substituted for reference to S5.3.1 because S5.3.1 is removed. Paragraph S5.3 now reads:

*Location of required equipment.* Except as provided in paragraphs S5.3.2, S5.7, and S7, each lamp, reflective device, and item of associated equipment shall be securely mounted on a rigid part of the vehicle other than glazing that is not designed to be removed except for repair, in accordance with the requirements of Table I and Table III, as applicable, and in the location specified in Table II (multipurpose passenger vehicles, trucks, trailers, and buses 80 or more inches in overall width) or Table IV (all passenger cars, and motorcycles, and multipurpose passenger vehicles, truck, trailers and buses less than 80 inches in overall width), as applicable.

Finally, in S5.1.1.12, we eliminated two commas to clarify the meaning of the paragraph. This clarification makes no substantive changes to the requirements contained in that paragraph.

#### **Effective Date**

Because the final rule affords an option to existing requirements, it is hereby determined for good cause shown that an effective date earlier than 180 days after publication of the final rule is in the public interest, and the overall effective date is 30 days after publication.

Passenger cars and motorcycles, and multipurpose passenger vehicles, trucks, buses, and trailers with an overall width less than 2032mm, manufactured on and after September 1, 2011, must comply with the harmonized requirements. Multipurpose passenger vehicles, trucks, buses, and trailers with an overall width of 2032mm or more, manufactured on or after September 1, 2014, must comply with the harmonized requirements. It is likely that many of the harmonized specifications are already being met by manufacturers selling in world markets.

#### **Regulatory Analyses and Notices**

##### *A. Executive Order 12866 and DOT Regulatory Policies and Procedures*

This rulemaking action was not reviewed under Executive Order 12866. Further, it has been determined that the rulemaking action is not significant under Department of Transportation regulatory policies and procedures. The purpose of the rulemaking action is to clarify existing requirements and to harmonize Federal regulations with those of the ECE. The costs of the final rule are so minimal as not to warrant preparation of a full regulatory evaluation. We believe that vehicles presently selling in world markets already comply with this final rule. However, the agency provided a 7 to 10 year leadtime to ensure that all vehicles that currently do not comply with the new requirements are brought to compliance within the normal design cycles.

##### *B. National Environmental Policy Act*

NHTSA has analyzed this rulemaking action for the purposes of the National Environmental Policy Act. It is not anticipated that the final rule will have a significant effect upon the environment. The composition of lighting equipment will not change from those presently in production.

##### *C. Regulatory Flexibility Act*

The agency has also considered the impacts of this rulemaking action in relation to the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) I certify that this rulemaking action will not have a significant economic impact upon a substantial number of small entities.

The following is NHTSA's statement providing the factual basis for the certification (5 U.S.C. 605(b)). The final rule primarily affects manufacturers of motor vehicles. Based on production volume, manufacturers of motor vehicles are generally not small businesses within the meaning of the Regulatory Flexibility Act.

The Small Business Administration's regulations define a small business in part as a business entity which operates primarily within the United States (13 CFR 121.105(a)). SBA's size standards are organized according to Standard Industrial Classification Codes (SIC), SIC Code 3711, "Motor Vehicles and Passenger Car Bodies" has a small business size standard of 1,000 employees or fewer. Truck trailer and travel trailer manufacturers are considered small businesses with 500 employees or fewer.

This Final Rule will not have any significant economic impact on a small business because it makes no significant substantive change to the requirements specified in FMVSS No. 108. Instead, this rulemaking clarifies and harmonizes visibility requirements with those of ECE. Small organizations and governmental jurisdictions that purchase motor vehicles will not be significantly affected because this rulemaking will not cause price increases. Accordingly, we have not prepared a Regulatory Flexibility Analysis.

##### *D. Federalism*

E.O. 13132 requires NHTSA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." E.O. 13132 defines the term "Policies that have federalism implications" to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under E.O. 13132, NHTSA may not issue a regulation that has federalism implication, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal

government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or NHTSA consults with State and local officials early in the process of developing the proposed regulation.

This final rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government as specified in E.O. 13132. Thus, the requirements of section 6 of the Executive Order do not apply to this rule.

*E. Executive Order 12778 (Civil Justice Reform)*

The final rule does not have any retroactive effect. Under 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a state may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard. 49 U.S.C. 30161 sets forth a procedure for judicial review of final rules establishing, amending or revoking Federal motor vehicle safety standards. That section does not require submission of a petition for reconsideration or other administrative proceedings before parties may file suit in court.

*F. Unfunded Mandates Reform Act of 1995*

The Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4) requires agencies to prepare a written assessment of the cost, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than \$100 million annually. Because this final rule will not have a \$100 million effect, no Unfunded Mandates assessment has been prepared.

*G. National Technology Transfer and Advancement Act of 1995*

Section 12(d) of the National Technology Transfer and Advancement Act (NTTAA) (Pub. L. 104-113, 15 U.S.C. 272) directs us to use voluntary consensus standards in our regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of

Automotive Engineers (SAE). The NTTAA directs us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

This agency considered adopting an SAE voluntary consensus standard. However, it was decided that adopting the SAE standard instead of the ECE R48 would be inconsistent with harmonization.

*H. Paperwork Reduction Act*

There are no information collection requirements in this rule.

*I. Regulation Identifier Number (RIN)*

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

*J. 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://dms.dot.gov>.

**List of Subjects in 49 CFR Part 571**

Imports, Motor vehicle safety, Motor vehicles.

■ In consideration of the foregoing, 49 CFR Part 571 is amended 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 and 30166; delegation of authority at 49 CFR 1.50.

■ 2. Section 571.108 is amended by:

■ a. adding to paragraph S4, in alphabetical order, new definitions of "Axis of reference," and "Effective light-emitting surface," and revising the definition of "Effective projected luminous lens area" to read as follows;

■ b. revising paragraphs S5.1.1.12, S5.1.1.25, S5.1.1.26(a), S5.1.1.26(b), S5.1.1.27 (a)(1) and (a)(2), and

S5.1.1.27(b)(1) and (b)(2) to read as follows;

■ c. removing and reserving paragraph S5.1.1.28;

■ d. revising paragraph S5.3 to read as follows;

■ e. removing and reserving paragraphs S5.3.1, S5.3.1.1, S5.3.1.1.1, and S5.3.1.5;

■ f. adding new paragraph S5.3.2 to read as follows;

■ g. adding new paragraphs S5.3.2.1 through S5.3.2.4 to read as follows;

■ h. revising the third and fourth sentences of paragraph S5.8.3(a) to read as follows;

■ i. revising paragraph S6.3 to read as follows; and

■ j. adding new Figures 19 and 20 following the text of the standard.

The additions and revisions read as follows.

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

\* \* \* \* \*  
S4. Definitions.  
\* \* \* \* \*

*Axis of reference* means the characteristic axis of the lamp for use as the direction of reference (H = 0°, V = 0°) for angles of field for photometric measurements and for installing the lamp on the vehicle.

\* \* \* \* \*

*Effective light-emitting surface* means that portion of a lamp that directs light to the photometric test pattern, and does not include transparent lenses, mounting hole bosses, reflex reflector area, beads or rims that may glow or produce small areas of increased intensity as a result of uncontrolled light from an area of 1/2 degree radius around a test point.

*Effective projected luminous lens area* means the area of the orthogonal projection of the effective light-emitting surface of a lamp on a plane perpendicular to a defined direction relative to the axis of reference. Unless otherwise specified, the direction is coincident with the axis of reference.

\* \* \* \* \*

S5.1.1.12 On a motor vehicle, except a passenger car, whose overall width is 2032 mm. (80 inches) or more, measurements of the effective projected luminous lens area, and of the photometrics of a multiple compartment stop lamp and a multiple compartment turn signal lamp, shall be made for the entire lamp and not for the individual compartments.

\* \* \* \* \*

S5.1.1.25 Each turn signal lamp on a motorcycle shall have an effective projected luminous lens area of not less

than 2258 square mm. (3½ square inches).

\* \* \* \* \*

S5.1.1.26 \* \* \*

(a) The effective projected luminous lens area of a single compartment stop lamp, and a single compartment rear turn signal lamp, shall be not less than 50 square centimeters (7¾ square inches).

(b) If a multiple compartment lamp or multiple lamps are used to meet the photometric requirements for stop lamps and rear turn signal lamps, the effective projected luminous lens area of each compartment or lamp shall be at least 22 square centimeters, provided the combined area is at least 50 square centimeters (7¾ square inches).

S5.1.1.27(a) \* \* \*

(1) Shall have an effective projected luminous lens area not less than 2903 square mm. (4½ square inches).

(2) Shall meet the visibility requirements specified in S5.3.2(c).

\* \* \* \* \*

(b) \* \* \*

(1) Are identical in size and shape and have an effective projected luminous lens area not less than 1452 square mm. (2¼ square inches) each.

(2) Shall meet the visibility requirements specified in S5.3.2(d).

\* \* \* \* \*

S5.1.1.28 [Reserved].

\* \* \* \* \*

S5.3 Location of required equipment. Except as provided in paragraphs S5.3.2, S5.7, and S7, each lamp, reflective device, and item of associated equipment shall be securely mounted on a rigid part of the vehicle other than glazing that is not designed to be removed except for repair, in accordance with the requirements of Table I and Table III, as applicable, and in the location specified in Table II (multipurpose passenger vehicles, trucks, trailers, and buses 80 or more inches in overall width) or Table IV (all passenger cars, and motorcycles, and multipurpose passenger vehicles, truck, trailers and buses less than 80 inches in overall width), as applicable.

S5.3.1 [Reserved].

S5.3.1.1 [Reserved].

S5.3.1.1.1 [Reserved].

\* \* \* \* \*

S5.3.1.5 [Reserved].

\* \* \* \* \*

S5.3.2 Except as provided in S5.3.2.1 through S5.3.2.4 and in paragraphs S5.7 and S7, each vehicle must conform to the following requirements:

(a) Each lamp and reflective device must be installed in a location where it complies with all applicable photometric requirements and visibility requirements, with all obstructions (e.g., mirrors, snow plows, wrecker booms, backhoes, and winches) installed on the vehicle.

(b) A manufacturer must certify compliance of each lamp to one of the following visibility requirement options, and it may not thereafter choose a different option for that vehicle:

(1) When a vehicle is equipped with any lamp listed in Figure 19 of this standard, each such lamp must provide not less than 12.5 square centimeters of unobstructed effective projected luminous lens area in any direction throughout the pattern defined by the corner points specified in Figure 19 for each such lamp; or

(2) When a vehicle is equipped with any lamp listed in Figure 20 of this standard, each such lamp must provide a luminous intensity not less than that specified in Figure 20 in any direction throughout the pattern defined by the corner points specified in Figure 20 for each such lamp. The luminous intensity must be measured in accordance with the photometry test requirements of the applicable SAE Standards and Recommended Practices incorporated by reference or subreference in this standard.

(c) A high mounted stop lamp must have a signal visible to the rear through a horizontal angle from 45 degrees to the left to 45 degrees to the right of the longitudinal axis of the vehicle.

(d) High mounted stop lamps required to comply with S5.1.1.27(b) must together have a signal to the rear as specified in S5.3.2(c).

(e) Backup lamps must be mounted on the rear 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.

S5.3.2.1 Clearance lamps may be located at a location other than on the front and rear if necessary to indicate the overall width of a vehicle, or for protection from damage during normal operation of the vehicle, and at such a location they need not meet the

photometric output at any test point that is 45 degrees inboard.

S5.3.2.2 If any required lamp or reflective device is obstructed by motor vehicle equipment (e.g., mirrors, snow plows, wrecker booms, backhoes, winches, etc.), and cannot meet requirements of S5.3.2, the vehicle must be equipped with an additional lamp or device of the same type which meet all applicable requirements of this standard, including S5.3.2.

S5.3.2.3 For signal lamps and reflective devices mounted less than 750 mm above the road surface as measured to the lamp axis of reference, the vertical test point angles located below the horizontal plane subject to photometric and visibility requirements of this standard may be reduced to 5 degrees.

S5.3.2.4 As an alternative to S5.3.2(b), each passenger car and motorcycle, and each multipurpose passenger vehicle, truck, trailer and bus that is of less than 2032 mm overall width, that are manufactured on or before September 1, 2011, and each multipurpose passenger vehicle, truck, trailer and bus 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 any applicable SAE Standard or Recommended Practice.

\* \* \* \* \*

S5.8.3(a) \* \* \* Each such lamp manufactured for use on a passenger car and on a multipurpose passenger vehicle, truck, trailer or bus less than 2032 mm. (80 inches) in overall width shall have an effective projected luminous lens area not less than 2258 square mm. (3½ square inches). If multiple compartment lamps or multiple lamps are used, the effective projected luminous lens area of each compartment or lamp shall be not less than 2258 square mm. (3½ square inches); however, the photometric requirements may be met by a combination of compartments or lamps.

\* \* \* \* \*

S6.3 The term “functional lighted lens area” in any SAE Standard or Recommended Practice incorporated by reference or by subreference in this standard, has the same meaning as the term “effective projected luminous lens area.”

\* \* \* \* \*

**FIGURE 19**

Visibility of Installed Lighting Devices

(Lens Area Measurement Method)

ITEM	CORNER POINTS <sup>1</sup> (degrees)
Front Turn Signal Lamp <sup>2</sup>	(15U,-45H), (15U,+45H), (15D,-45H), (15D,+45H)
Rear Turn Signal Lamp	(15U,-45H), (15U,+45H), (15D,-45H), (15D,+45H)
Stop Lamp	(15U,-45H), (15U,+45H), (15D,-45H), (15D,+45H)
Parking Lamp	(15U,-45H), (15U,+45H), (15D <sup>3</sup> ,-45H), (15D <sup>3</sup> ,+45H)
Taillamp	(15U,-45H), (15U,+45H), (15D,-45H), (15D,+45H)

<sup>1</sup> In the horizontal (H) direction, a minus (-) sign indicates an inwards direction (toward the vehicle's longitudinal centerline) and a plus (+) sign indicates an outwards direction.

<sup>2</sup> Where more than one lamp or optical area is lighted at the front on each side of a multipurpose passenger vehicle, truck, trailer, or bus, of 2032 mm. or more overall width, only one such area need comply.

**FIGURE 20**

Visibility of Installed Lighting Devices  
(Luminous Intensity Measurement Method)

ITEM	CORNER POINTS <sup>1</sup> (degrees)	MINIMUM LUMINOUS INTENSITY (candela)
Front Turn Signal Lamp	(15U, -45H), (15U, +80H), (15D, -45H), (15D, +80H)	0.3
Rear Turn Signal Lamp	(15U, -45H), (15U, +80H), (15D, -45H), (15D, +80H)	0.3
Stop Lamp	(15U, -45H), (15U, +45H), (15D, -45H), (15D, +45H)	0.3
Front Parking Lamp	(15U, -45H), (15U, +80H), (15D, -45H), (15D, +80H)	0.05
Taillamp	(15U, -45H), (15U, +80H), (15D, -45H <sup>2</sup> ), (15D, +80H)	0.05

<sup>1</sup> In the horizontal (H) direction, a minus (-) sign indicates an inwards direction (toward the vehicle's longitudinal centerline) and a plus (+) sign indicates an outwards direction.

<sup>2</sup> -80H° for motorcycles incorporating a single lamp.

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