

(b) \* \* \*  
(23) \* \* \*

(Authority: 10 U.S.C. 16131(a), (c); 38 U.S.C. 3002, 3452)

\* \* \* \* \*

15. In § 21.7635, paragraph (y) is redesignated as paragraph (z); and a new paragraph (y) is added, to read as follows:

**§ 21.7635 Discontinuance dates.**

\* \* \* \* \*

(y) *Election to receive educational assistance under 38 U.S.C. chapter 30.* VA shall terminate educational assistance effective the first date for which the reservist received educational assistance when—

(1) The service that formed a basis for establishing eligibility for educational assistance under 10 U.S.C. chapter 1606 included a period of active duty as described in § 21.7020(b)(1)(iv); and

(2) The reservist subsequently made an election, as described in § 21.7042(a)(7) or (b)(10), to become entitled to basic educational assistance under 38 U.S.C. chapter 30.

(Authority: Sec. 107, Pub. L. 104-275, 110 Stat. 3329-3330)

\* \* \* \* \*

[FR Doc. 98-30287 Filed 11-10-98; 8:45 am]

BILLING CODE 8320-01-P

## FEDERAL COMMUNICATIONS COMMISSION

### 47 CFR Part 25

[DA 98-2231; IB Docket No. 98-172; RM-9005, RM-9118]

### Redesignation of the 18 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the Ka-band, and the Allocation of Additional Spectrum for Broadcast Satellite Service Use

**AGENCY:** Federal Communications Commission.

**ACTION:** Proposed rule; extension of time.

**SUMMARY:** The Notice of Proposed Rulemaking in this proceeding set due dates for filing comments and reply comments. At the request of several parties to this proceeding, those due dates are hereby extended.

**DATES:** Comments due November 19, 1998; reply comments due December 21, 1998.

**ADDRESSES:** All filings must be sent to the Commission's Secretary, Magalie Roman Salas, Office of the Secretary, Federal Communications Commission, 445 Twelfth Street, SW, TW-A325, Washington, DC 20554.

**FOR FURTHER INFORMATION CONTACT:** Chuck Magnuson, FCC International Bureau, Planning and Negotiations Division, at (202) 418-2159.

**SUPPLEMENTARY INFORMATION:** This proposed rulemaking, 63 FR 54100, October 8, 1998, concerns redesignation of the 17.7-19.7 GHz frequency band, blanket licensing of satellite earth stations in the 17.7-20.2GHz and 27.5-30.0 GHz frequency bands, and the allocation of additional spectrum in the 17.3-17.8 and 24.75-25.25 GHz frequency bands for broadcast satellite service use.

Federal Communications Commission.

**Magalie Roman Salas,**

*Secretary.*

[FR Doc. 98-30219 Filed 11-10-98; 8:45 am]

BILLING CODE 6712-01-P

## DEPARTMENT OF TRANSPORTATION

### National Highway Traffic Safety Administration

#### 49 CFR Part 571

[Docket No. NHTSA 98-4673; Notice 1]

RIN 2127-AG87

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

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

**ACTION:** Notice of proposed rulemaking.

**SUMMARY:** This document proposes to amend the Federal motor vehicle safety standard on lighting to reorganize the sections relating to headlighting. A notice proposing reorganization of the sections relating to other lamps is planned for later in 1998. This action is taken to remove inconsistencies and to facilitate reference to the standard in an effort to improve its comprehensibility.

**DATES:** Comments are due on the proposal February 10, 1999.

**ADDRESSES:** Comments should refer to the docket number and notice number, and be submitted to: Docket Management, Room PL-401, 400 Seventh Street, S.W., Washington, D.C. 20590 (Docket hours are from 10:00 a.m. to 5:00 p.m.)

**FOR FURTHER INFORMATION CONTACT:** Patrick Boyd, Office of Safety Performance Standards (202-366-6346).

#### SUPPLEMENTARY INFORMATION:

##### I. The Reason for This Rulemaking

Federal Motor Vehicle Safety Standard No. 108 specifies performance

requirements for lamps, reflective devices and associated equipment on new motor vehicles, as well as their location. The standard also covers replacement lighting equipment. Its present version represents 31 years of accumulated amendments and the incorporation of numerous industry consensus standards. In many cases, the incorporated versions are no longer in print. Requirements concerning a particular lighting device are sometimes found at different places within the standard or are partially contained in SAE standards which are themselves incorporated by reference. As printed at 49 CFR 571.108, revised as of October 1, 1997, Standard No. 108 occupies 73 pages, by far the longest of the Federal motor vehicle safety standards. The agency responds to approximately 150 letters annually from domestic and foreign manufacturers of vehicles and equipment, state agencies, vehicle owners, and inventors of lighting devices asking for interpretations of Standard No. 108, and even more inquiries by telephone. The agency believes that this heavy demand may be due in part to difficulties that interested parties may have in finding the applicable provisions in the standard and in gaining confidence that they are aware of all requirements.

Therefore, NHTSA has decided to issue two notices proposing amendments intended to make the standard easier to understand. The amendments are not intended to change the requirements of the standard, except in a few minor instances which will be clearly identified in this preamble and the preamble of the second proposal. This NPRM proposes amendments to only those sections of Standard No. 108 applying to headlamp systems. Revised regulatory language for other lamps will be proposed for amendment in a future notice. The principal change in the organization of headlamp requirements is the elimination of the separate section devoted to sealed beam headlamps. They are treated in this proposal as a type of integral beam headlamp which have additional requirements to assure interchangeability.

##### II Drafting Guidelines

The following drafting guidelines have been followed in this proposal and will be followed in the subsequent proposal to the extent possible where the agency believes that adherence to them improves the clarity of the standard:

(a) All requirements directly affecting a specific type of lamp or reflector will be consolidated in the same section to avoid scattered requirements. Requirements common to more than one lamp or reflector will be repeated in each lamp or reflector section if they are brief, or they will be referenced in subsequent sections if they are too lengthy.

(b) Lighting requirements should be contained within the text of Standard No. 108 rather than incorporated by reference. Users should be relieved of the burden of searching incorporated SAE standards for the possibility of additional requirements. Ideally, the required performance of a lamp or reflector would be described fully within the text of Standard No. 108, but the details of the test method would be specified by incorporation of industry standard test methods developed by SAE and other consensus bodies. In other instances where lighting requirements are unavoidably established by incorporation of an industry standard, the citation should include mention of the types of requirements found in the standard. A reader of Standard No. 108 should be able to determine at least the existence of all lighting requirements without prior knowledge of the content of industry standards incorporated by reference.

(c) Titles will be used for subparagraphs and higher level paragraphs. Subparagraph titles will form an index to this lengthy standard in the manner of the proposed interim index of headlamp requirements attached to S7. Paragraph names will impose a logical order on the requirements that will assist writers of future amendments in preserving the value of the index and assist readers in locating provisions of interest.

(d) In general, the existing wording of requirements will be preserved to avoid unintended effects on regulatory burdens, but the desire for clarity will call for occasional edits. A review of past interpretation letters will be used to identify particular instances where editing may be beneficial.

(e) References to SAE standards will be updated to current versions unless a revision would result in significant burden without compensatory safety benefits or unless NHTSA believes that the older version is better for motor vehicle safety.

(f) Two different numbering systems are used within the existing paragraphs of the standard. In the most frequently used system, letters and numbers follow a prescribed hierarchy. This has led to some unwieldy constructions where it is

difficult to identify and cite a specific requirement. For example, in the requirements for replaceable bulb headlamp systems, Standard No. 108 presently contains a paragraph S7.5(d)(2)(i)(A)(1). The second system is similar to SAE practice in which subparagraphs are given numbers. For example, the subparagraphs of S7.8.5 are S7.8.5.1, S7.8.5.2, and S7.8.5.3 rather than S7.8.5(a), (b), and (c). Even in this instance, the first system is followed thereafter in these subparagraphs, such as S7.8.5.2(a)(1)(i). One way to address the problem is to rewrite and simplify the text to minimize the number of subparagraphs, which NHTSA has done. After this point, the clearest system appears to be one that uses a numerical hierarchy for all paragraphs above the lowest level and reserves the lowest level for letters (e.g., S7.4.1.1(a)). The NPRM contains no subparagraphs beyond this initial alphabetical level.

(g) References to past effective dates of provisions will be eliminated. They have been kept until now as a guide to compliance with replacement equipment specifications.

### III. Amendments Proposed for Specific Parts of Standard No. 108

*S4 Definitions.* The definition of "integral beam headlamp" would be expanded to include sealed beam headlamps. The definitions of both integral and "replaceable bulb headlamps" would be edited to state expressly that headlamps that are visually/optically aimable or that incorporate a vehicle headlamp aiming device may be designed for removable lenses. The definition of "replaceable light source headlamps" would be amended to delete an unnecessary restriction on the number of light sources in a headlamp of that type.

Definitions of "two-headlamp systems" and "four-headlamp systems" would be added.

*S7 Headlighting requirements.* All subparagraphs and most of the lower level paragraphs in S7 would be given titles, and the provisions of the proposed regulatory language would be rearranged as required to conform to the structure imposed by the paragraph titles. An index of all headlamp provisions now contained in Paragraphs 7, 8, 9 and 10 of the present standard has been added. When the rest of Standard No. 108 is reorganized, this partial index would become part of an index of the whole standard to be located at the beginning.

*S7.1.* The mounting location requirements of Tables II and IV would be added to the text of the standard. The

language prohibiting grills, covers and other headlamp obscurations would be moved from S7.8.5 to this paragraph. References to past effective dates would be eliminated.

*S7.2.* This paragraph would be devoted to general requirements involving headlamp lens marking and replaceable lenses. Present S7.2.1(d), dealing with photometric test procedure, would be moved to S7.4.2 and S7.5.2 where other photometric test requirements are contained. The text of S5.8.2 and S5.8.11, dealing with replacement lenses and lens marking of certain replacement headlamps, would be moved to S7.2.

*S7.3.* The present S7.3 specifying sealed beam headlamp performance would be eliminated. Sealed beam headlamps would be regulated as a type of integral beam headlamp with photometric limitations in some instances to preserve their interchangeability. In many four headlamp systems, the upper beam is produced by the combined operation of the upper beam lamp and one or more filaments in the lower beam lamp. The standard recognizes several photometry options developed for sealed beam headlamps in which the dual headlamps of each side of a vehicle combine their light output in different ways to achieve an upper beam. Manufacturers would be required to continue the use of the present beam patterns for the various types of interchangeable sealed beam headlamps so that the intended upper beam pattern is maintained when the consumer replaces a single lamp. Systems using only two headlamps do not pose a similar concern. Accordingly, no extra limitations would be placed on sealed beam headlamps in two headlamp systems.

Present S7.9 containing motorcycle headlamp requirements would be moved to S7.3 with several amendments. The incorporation by reference of SAE J584 would continue to be the source of several requirements for motorcycle headlamps, but a parenthetical note would be added telling the reader what types of requirements are to be found in SAE J584. The incorporated version of SAE J584 would remain that of 1964 because the agency concluded in a recent rulemaking (61 FR 6616) that it would be inappropriate to use the 1993 version of the standard in its entirety. Instead, only the photometric performance and the aiming method of the newer version of J584 were included. The reference in the present text to SAE J566 1960 would be eliminated by including its brief provisions directly in S7.3.

S7.4. The present requirements for integral beam lamps would be used also to regulate sealed beam headlamps with a few special provisions. Since integral beam headlamps are those without replaceable light sources, sealed beam headlamps are simply a category of integral beam headlamps designed to interchangeability standards rather than particular to a given vehicle model. Paragraph S7.4 would restrict standard sealed beam headlamps, designated by SAE types, to the beam patterns presently specified for those types and to the visually/optically aimable version of those beam patterns. However, the visually/optically aimable versions would be required to retain the aiming pads specified by the SAE standards for the attachment of external aimers. This would be required because it is necessary to mount external aimers on both sides of a vehicle even if only one headlamp requires external aiming.

References to SAE J1383, regarding specifications of sealed beam headlamp types and photometric test procedure, have been updated to the DEC96 version. The incorporated provisions of the updated SAE J1383 appear to be substantially identical to those of the presently cited APR85 version, except with respect to photometric performance in the region of the beam pattern above 10 degrees up. The latest SAE revision measures only the area 45 degrees to the right and left of the driver (rather than  $\pm 90$  degrees), and small regions of brightness exceeding the regional maximum of 175 cd. would be permitted if confined to a 2-degree conical angle. This requirement protects drivers from annoying reflections of headlamp light in rain and snow, while recognizing that stray light beams of insignificant breadth do not pose a problem. Paragraph S7.4.2 of the proposed revision would adopt the approach taken by SAE J1383 DEC96 to the beam pattern above 10 degrees.

The photometric requirements for lamps comprised of multiple beam contributors, presently in S7.4(a)(3), would be restated in terms of beam contributors per beam rather than beam contributors per vehicle to improve clarity. Present S7.4(b) and (c) would be combined in S7.4.5 and simplified in expression. The provision that visually/optically aimable headlamps and headlamps with VHADs may be designed with replaceable lenses has been moved into S7.4 and S7.5 rather than being conveyed only by the definitions of integral beam and replaceable bulb headlamps. In this way, the definitions are provided only to clarify the terms used in the requirements, not to become additional

sources of regulatory provisions where they may escape the user's notice.

Currently Standard No. 108 requires the lower beam in a four-lamp headlighting system to be provided by the uppermost lamp (if the lamps are arranged vertically), or outermost (if they are arranged horizontally). This presupposes that the two headlamps on a side share a common vertical or horizontal axis. With the advent of projector beam headlamps, there may be no common axis of light sources within a headlamp.

The proposed language of S7.4.5 and S7.5.3 establishes that the most important safety aspect of headlamp arrangement is the marking of the full width of the vehicle by the operation of the lower beam. It would set a priority of outermost over uppermost for lower beam headlamps, reflectors or light sources, and it would permit arrangements in which the uppermost headlamps are upper beams as long as the outermost headlamps are lower beams. It would permit the arrangement of upper and lower beams in a two headlamp system to be based on either the locations of the outer lighted edges of separate upper and lower beam reflectors or the position of the light sources. Only where the outer edges of headlamps or headlamp reflectors or light sources in a two headlamp system are arranged exactly vertically (i.e., in the same vertical longitudinal plane) would the lower beam be required to be the uppermost lamp.

The proposed language of S7.4.5 and S7.5.3 also anticipates future headlamp designs with an array of light sources or remote light sources with multiple light paths to the headlamp reflector. It would require only that the outermost light source be activated on the lower beam to mark the full width of the vehicle, rather than to "provide" the lower beam, and it would view the outermost light path of a remote light source as equivalent to the outermost light source of a conventional design in regard to marking vehicle width.

Proposed S7.4.8.8 *Exposure resistance* would apply to plastic material for headlamp lenses the requirements of SAE J576 JUL91 Plastic materials for use in optical parts such as lenses and reflectors of motor vehicle lighting devices, which would be incorporated by reference. This amendment would clarify the agency's intent that Standard No. 108 and SAE J576 JUL91 require the same level of haze resistance for materials for headlamp lenses, namely that they show no deterioration in a visual inspection after a three-year outdoor exposure test. The amendment would supersede a statement in a

previous interpretation (sent on December 7, 1994, to Brian J. Williams) applying a 30 percent haze limit after the outdoor exposure test to plastic materials for headlamp lenses. The statement was a literal interpretation of the word "lamp" in S5.1.2. However, the reasons for the agency's establishment in 1975 of the 30 percent haze limit for material for "lamp" lenses were applicable only for signal and license plate lamps. In 1975, the only lamps known to use plastic materials were signal lamps and license plate lamps. Headlamps at that time were required to be sealed beams with glass lenses.

By way of explanation, originally, Standard No. 108 cited SAE J576b (1966) which required that "exposed samples, when compared with the unexposed control samples, shall not show . . . haze." The requirement referred to an inspection with the naked eye of plastic samples after outdoor exposure tests in Florida and Arizona. In 1974, General Electric (GE) petitioned the agency to relax the haze requirement for signal lamp lenses, but not for reflex reflectors. GE provided a large body of data on various signal lamps with a degree of surface haze representative of highly weathered polycarbonate plastic lenses without protective coatings. It concluded that haze did not make signal lamps less visible, although it altered the distribution of light output among the photometric test points for the various lamps and could actually have the effect of causing the lamp to appear larger. The agency agreed with GE and amended the standard to include as an exception to J576 (which was updated to J576c May 1970 at that time) the following:

After the outdoor exposure test, the haze and loss of surface luster of plastic materials used for lamp lenses shall not be greater than 30 percent as measured by ASTM 1003-61

\* \* \*

The reason given by the agency for proposing the amendment (39 FR 35179) was:

In GE's view, deglossing to haze levels of 50 percent does not appear to significantly affect the overall photometric performance and *signaling* effectiveness of the lamp. The effect of haze is to scatter light from the point of maximum intensity to the wider angle test points, resulting in a diminution of light output at the former, and an increase at the latter. In accordance with GE's test data and suggestion, the NHTSA is proposing that haze levels should not exceed 30 percent. [italic added]

NHTSA believes that it is clear from the original petition that the only lenses to which a haze limit as high as 30 percent should apply were those on

signal and license plate lamps. To repeat, at the time of that rulemaking, all headlamps manufactured for sale in the United States were sealed beams with glass lenses. None of the information and assertions in GE's petition pertained to lenses for headlamps, and the agency's stated conclusion in that rulemaking about the effect of haze on lamp lenses shows that haze is antithetical to the objectives of headlamp design. Headlamps are designed to maintain a difficult balance between providing enough light to guide the driver and limiting light that causes glare for other drivers. A hazed headlamp lens both diminishes the light needed by the driver and simultaneously increases the glare to other drivers. While the effect of haze is insignificant for signal lamps, the same is not true for headlamps.

When Standard No. 108 was amended to allow plastic headlamp lenses, the lenses were required to demonstrate resistance to abrasion. Compliance was achieved through coatings. In a 1993 NPRM (58 FR 13042) proposing a haze limit of 7 percent for reflex reflector material, NHTSA asked for comments on whether all abrasion-resistant coatings also prevented haze on headlamp lenses exceeding 7 percent (the approximate equivalent of haze just discernable to the naked eye). Ford Motor Company commented that, in its experience with plastic headlamp lenses, all such coatings would prevent haze exceeding 7 percent. NHTSA is concerned that some contemporary hard coatings may no longer provide this level of haze protection though capable of providing sufficient abrasion resistance. A final rule based on this proposal would successfully address this possibility.

The provision of J576 allowing a 25-percent reduction in luminous transmittance of plastic material as a result of outdoor exposure is specifically excluded from application to headlamp lenses in SAE J1383 Performance Requirements for Motor Vehicle Headlamps, but that part of SAE J1383 has not been incorporated in Standard No. 108. The agency agrees with SAE that the 25-percent loss in transmittance permitted by SAE J576 is another provision suitable for signal lamp lenses rather than headlamp lenses, but it would prefer to adopt a more appropriate transmittance-loss limit for headlamp lens material rather than simply to eliminate the reference. The agency believes that suitable hard coatings which protect against abrasion and haze currently limit transmittance loss to much less than 25 percent.

Accordingly, NHTSA asks readers to comment on the actual performance of coated plastic samples of current headlamp lens materials in the J576 outdoor exposure tests.

Paragraph S5.1.2 contains other potential ambiguities that will be addressed when the requirements for signal lamps and reflex reflectors are reorganized in a future notice. For example, the measured haze limits for reflex reflectors and signal lamps are listed in paragraphs introduced as exceptions to J576 JUL91. However, the haze limits are the same as those in J576 JUL91; the exception is that Standard No. 108 cites a more recent update of the ASTM haze measurement method than does J576 JUL91.

The reference to SAE J580 Sealed Beam Headlamp Assembly would be eliminated from the present S7.4(g) and the remaining text designated S7.4.9. The SAE canceled SAE J580 in 1992 and its pertinent provisions were moved to SAE J1383. However, the connector resistance test of SAE J580, which was referenced in S7.4(g), was rejected by SAE for inclusion in J1383. The rationale given by SAE was that the connector resistance is not important because the photometric performance requirement assures correct current flow at the headlamp terminal and connector, and the resistance requirement would not permit the use of stainless steel and other higher resistance material for terminals. The agency agrees that the design resistance of a new headlamp terminal and connector is not important if it provides complying photometric performance, but it believes that Standard No. 108 should continue to require that the resistance of terminals not be subject to significant degradation as a consequence of corrosion. Therefore, the corrosion resistance requirement for terminals of S7.4(h)(3) would be retained in S7.4.8.3. A new Figure 11, illustrating the measurement of current flow at headlamp terminals, would be added to Standard No. 108 and referenced in S9.4 of the new text to eliminate a reference to a figure in SAE J580.

S7.5. The present text concerning replaceable bulb headlamps is very difficult to follow, due in part to the need for many paragraphs and the lack of paragraph titles. The proposed text is extensively rewritten to parallel the simpler organization of S7.4. Paragraph S7.5 would be renamed "Replaceable light source headlamps" because replaceable light sources other than incandescent bulbs have been permitted. The adoption of the proposed text would have no effect on the

requirements for replaceable light source headlamps with one exception.

The present text requires a lens marking for replaceable bulb headlamps identifying the type of replaceable light source, unless it uses a type HB1 bulb. The exception for type HB1 bulbs has been removed from the proposed text. At an earlier time when only one or two types of bulbs were in use, it may have been acceptable to designate one type with the absence of a mark. But it no longer appears to be a reasonable practice, now that a large number of types of replaceable light sources are in use. The agency believes that type HB1 bulbs are not used on vehicles in current production, and therefore no burdens would be imposed by the change. However, if future vehicles were to be produced using type HB1 bulbs, their headlamps would require the same kind of marking as required for all other types of replaceable light sources. The purpose of the mark is to assist the vehicle owner in choosing the correct light source with which to repair a burned out headlamp.

Finally, a headlamp system using replaceable light sources would be allowed to combine them with fixed light sources (such as high intensity discharge sources (HIDs)), while adhering to the same beam patterns and requirements of replaceable light source headlamps.

S7.6. The present S7.6 on combination headlighting systems would be eliminated. Its purpose was to address headlamps combining HID light sources and replaceable bulbs. Formerly, HID light sources were permitted only in the form of integral beam headlamps (which are integrated from the 12.8 volt receptical inward), so that their use in combination with a replaceable bulb created a distinct class of headlamp. Now, HID light sources may be used in a replaceable form, and the resulting headlamps are simply the replaceable light source headlamps covered in S7.5. Paragraph S7.5 would also be amended to recognize a headlamp system using standardized replaceable light sources (e.g., HB3, HB4) combined with fixed light sources which need not be standardized, including high voltage HID light sources.

The text presently contained in S7.7 Replaceable light sources would be moved to S7.6. The text would be given paragraph titles and arranged in a different order but otherwise remain unchanged. The present S9 Deflection test for replaceable light sources would be moved to S7.6.3 to make the light source section self-contained.

S7.7. The special wiring requirement paragraphs pertaining to headlamp systems would be moved from S5.5 to S7.7 in the interest of consolidating the headlamp requirements. The brief manual headlamp beam switching requirements of J564a would be written directly in the text rather than continuing to be incorporated by reference to a 1964 document. A switch without "dead spots" as expressed in the 1964 standard is clarified as a switch of the make-before-break type.

The agency proposes to update SAE J565 Semi-automatic headlamp beam switching from the 1969 version to the most recent revision of 1989. It is unknown if the update would impose new burdens, but it seems unlikely that a 1969 standard continues to have relevance in the area of automatic controls which has since been revolutionized by electronic technology. In the case of SAE J565 JUN89, it would not be necessary to place its requirements directly in Standard No. 108 because it represents a self-contained treatment of a distinct wiring option which is sufficiently identified by its title.

The language of S7.7.4 would be amended to add an exception to the prohibition in S7.7.3 against simultaneous activation of upper and lower headlamp beams. The purpose of this requirement is to prevent glare. Ford Motor Company wrote NHTSA asking for an interpretation that this provision would not apply to its Auto Low Beam backup system, intended for a two-headlamp system. Under Ford's system, if an upper beam fails, the lamp automatically switches to the lower beam for use as a reserve upper beam headlamp. The agency has informed Ford that the extinction of an upper beam results in a noncomplying headlamp system, and that there is no prohibition against use of the remaining beam in the headlamp to supplement the other headlamp. Because of the potential for glare, however, the agency has not extended this interpretation to the converse, that is, allowing an upper beam to substitute for a lower beam when the lower beam has become inoperative. In NHTSA's view, this would be an instance in which a manufacturer "made inoperative" the glare protection provisions of Standard No. 108, within the meaning of 49 U.S.C. 30122. A reduced intensity upper beam is a possible solution as a backup for an extinguished lower beam but NHTSA would not propose to permit it until researching the glare issue.

The rest of the provisions are unchanged, except for paragraph titles and some rearrangement of sentence

order. S5.5.10 (b) and (c) were repeated in S7.7.5 and S7.7.6, rather than moved, because S5.5.10 seen in its entirety is an important example of agency policy on flashing lamps—namely, that no required or auxiliary lamps other than those listed in S5.5.10 are permitted to flash.

S8. The text of the present S8 would be moved to S9 (vacated by the move of the light source deflection test to S7.6), and the new S8 would be dedicated to the present text of S7.8 Aimability performance requirements. With the recent addition of a visual/optical aim option, the aimability material has become much lengthier than other areas of the standard. Further, the subject is sufficiently self-contained to form a complete entity. The reduction of paragraph levels accomplished by the move and the increased use of paragraph titles in the proposed text would improve clarity.

S8.2. This paragraph would be the same as the present S7.8.1 with the addition of a title and an updated reference to SAE J1383, consistent with references in the proposed S7 text.

S8.3. This paragraph would contain the present text of S7.8.2 through S7.8.4, with paragraph titles and some reordering of paragraph levels. Part of the present S7.8.5 would be included as an introductory sentence in S8, and the part dealing with headlamp covers and obstructions would be moved to general installation requirements that would be contained in S7.1.

S8.4. Paragraph S8.3 would contain the present text of S7.8.5.1 on external aim, reducing by two the levels of paragraph numbering. The reference to SAE J602 would be updated to the DEC89 version which includes specifications for an additional 92 x 150 mm locating plate for the external headlamp aiming device, permitting deletion of Figure 16. A sentence informing the reader of the purpose of the torque deflection and inward force tests would be added. The text of S8.3.1 would be amended to define that the torque value specified in the test is that measured with respect to a horizontal axis in the aiming reference plane. The present omission of a torque reference axis was the subject of an interpretation (letter to Tolley, June 8, 1995). A sentence would also be added stating that sealed beam headlamp mounts would be tested with the standard deflectometers and adaptors specified in SAE J1383 DEC96. In addition, paragraph titles would be added.

S8.5. The text of S7.8.5.2 on vehicle headlamp aiming devices (VHADs) would be moved to S8.4 unchanged

except for the order of a few phrases and shorter paragraph numbers.

S8.6. The text of S7.8.5.3 on visual/optical aim, added in 1997, would be moved to S8.5 with references to SAE J1383 and J575 updated.

S8.7. This would be a new paragraph setting aiming system requirements for replacement headlamps. It assures that all combinations of original and replacement headlamps are aimable.

S9. The agency considered the alternative of citing various SAE headlamp test procedures rather than maintaining detailed test procedures in Standard No. 108. However, the alternative was not consistent with the goal of making the present requirements of the standard more accessible to the reader. Some of the SAE test procedures require reference to multiple SAE standards which does not favor accessibility. Also, the applicable SAE test procedures are not identical to the procedures of the standard.

Some of the differences in test procedures are clearly significant. For example, the SAE abrasion test is a test of materials, while the abrasion test of Standard No. 108 is a test of headlamps. Also, the SAE corrosion test does not include tests of the reflector and electrical connector as does Standard No. 108. Other SAE test procedures contain differences whose effects are uncertain, such as differences in the amount of light blockage during the internal heat test and differences in the humidity cycle and soak time in the humidity test. While there may be merit in adopting some test procedures in the most current SAE form, the changes would be considered for technical reasons, rather than to reduce the size of paragraphs in the standard. Since the clarity of Standard No. 108 would suffer from references to the SAE test procedures accompanied by exceptions, the present brief test procedures are retained in the text of paragraph S9.

A new Figure 11, illustrating the measurement of current flow at headlamp terminals, would be included in Standard No. 108 and referenced in S9.4 of the new text to eliminate a reference to a figure in obsolete SAE J580.

Standard No. 108 has maintained a reference to the 1970 version of SAE J575 for the vibration test because the agency believed the vibration test of later versions of SAE J575 was insufficient. However, it is undesirable to cite two versions of an SAE standard, especially when one is so old that it may be hard to locate. The current SAE standard for tests of heavy truck lamps, SAE J2139 JAN94, uses the same vibration test as the 1970 SAE J575.

Therefore, SAE J2139 JAN94 would be substituted for SAE 575e to describe the vibration test of S9.8.

*S10.* The general requirements in the present text of S10 concerning simultaneous aim photometry tests of integral beam headlamps would be moved to S7.4.4, and the material particular to type F sealed beams would be eliminated. The present text of S12 on headlamp concealment devices would be redesignated as S10 so that all headlamp material would appear in contiguous sections.

*S11.* The title of S11 would be changed to clarify that it pertains to daytime running lights (DRLs) rather than to headlamps. It should be moved into a section devoted to DRLs when the requirements for other lamps are reorganized.

#### **Request for Comments**

Interested persons are invited to submit comments on the proposal. It is requested but not required that 10 copies be submitted.

All comments must not exceed 15 pages in length (49 CFR 553.21). Necessary attachments may be appended to these submissions without regard to the 15-page limit. This limitation is intended to encourage commenters to detail their primary arguments in a concise fashion.

If a commenter wishes to submit certain information under a claim of confidentiality, three copies of the complete submission, including purportedly confidential business information, should be submitted to the Chief Counsel, NHTSA, at the street address given above, and seven copies from which the purportedly confidential information has been deleted should be submitted to the Docket Section. A request for confidentiality should be accompanied by a cover letter setting forth the information specified in the agency's confidential business information regulation, 49 CFR part 512.

All comments received before the close of business on the comment closing date indicated above for the proposal will be considered, and will be available for examination in the docket at the above address both before and after that date. To the extent possible, comments filed after the closing date will also be considered. Comments received too late for consideration in regard to the final rule will be considered as suggestions for further rulemaking action. Comments on the proposal will be available to inspection in the docket. NHTSA will continue to file relevant information as it becomes available in the docket after the closing date and it is recommended that

interested persons continue to examine the docket for new material.

Those persons desiring to be notified upon receipt of their comments in the rules docket should enclose a self-addressed stamped postcard in the envelope with their comments. Upon receiving the comments, the docket supervisor will return the postcard by mail.

*Effective Date:* Since the purpose of the amendments is to clarify existing requirements, the agency believes that a final rule would not impose any additional burden with one exception. The amended language regarding haze resistance of plastic headlamp lens material would supersede a December 1994 interpretation and may cause some headlamp manufacturers to reinstate the coating materials and products generally in use before that time. Therefore, the proposed amendment would become effective 180 days after publication, to allow time for potential production changes for plastic headlamp lenses.

#### **Rulemaking Analyses**

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

This rulemaking action was not reviewed under Executive Order 12866. It has been determined that the rulemaking action is not significant under Department of Transportation regulatory policies and procedures. The effect of the rulemaking action would be to clarify existing requirements. It would not impose any additional burden upon any person, except that a truck or multipurpose passenger vehicle equipped with a four-lamp headlamp system in which the lamps are arranged vertically would have to switch the relative positions of the lamps on vehicles manufactured on and after September 1, 2000. Impacts of the proposed rule are, therefore, so minimal as not to warrant preparation of a full regulatory evaluation.

##### *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. Sec. 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. Sec. 605(b)). The final rule affects manufacturers of motor vehicles and motor vehicle headlamps. According to the size standards of the Small Business Association (at 13 CFR Part 121.601), manufacturers of lamps and reflective devices would be

considered manufacturers of "Motor Vehicle Parts and Accessories" (SIC Code 3714). The size standard for SIC Code 3714 is 750 employees or fewer. The size standard for manufacturers of "Motor Vehicles and Passenger Car Bodies" (SIC Code 3711) is 1,000 employees or fewer. This NPRM would have no significant economic impact of a small business in these industries because, if made final, the rule would make no substantive change to requirements currently specified in Standard No. 108.

Further, small organizations and governmental jurisdictions will not be significantly affected as no price increases are expected as a result of this rulemaking. Accordingly, no Regulatory Flexibility Analysis has been prepared.

##### *Executive Order 12612 (Federalism)*

This action has been analyzed in accordance with the principles and criteria contained in Executive Order 12612 on "Federalism." It has been determined that the rulemaking action does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

##### *National Environmental Policy Act*

NHTSA has analyzed this rulemaking action for purposes of the National Environmental Policy Act. The rulemaking action would not have a significant effect upon the environment as it does not affect the present method of manufacturing motor vehicle lighting equipment.

##### *Civil Justice Reform*

This rule would not have any retroactive effect. Under section 103(d) of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392(d)), 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. Section 105 of the Act (15 U.S.C. 1394) 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.

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

Imports, Motor vehicle safety, Motor vehicles.

## PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

In consideration of the foregoing, it is proposed that 49 CFR Part 571 be amended as follows:

1. The authority citation would continue to read as follows:

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

### § 571.108 [Amended]

2. Section 571.108 would be amended by:

(a) adding two new definitions, "Four-headlamp system" and "Two-headlamp system," in alphabetical order to S4,

(b) revising the definitions of "Integral beam headlamp" and "Replaceable bulb headlamp," in S4,

(c) revising S5.5.10(c) and S5.510(d),

(d) removing S7 through S12.5,

(e) adding new S7 through S11,

(f) removing Figures 11 through 14, 16, 18, 21 and 22; and

(g) adding new Figure 11, to read as follows:

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

\* \* \* \* \*

#### S4. Definitions.

\* \* \* \* \*

*Four-headlamp system* means a headlamp system with two independent headlamps on each side of a vehicle which may be used singly or in combination to provide lower and upper beams.

\* \* \* \* \*

*Integral Beam Headlamp* means a headlamp (including a sealed beam headlamp listed in SAE J1383 DEC96 but not a replaceable bulb headlamp) comprising an integral and indivisible optical assembly including lens, reflector, and light source, except that a visually/optically aimable headlamp or one incorporating a vehicle headlamp aiming device may have a lens designed to be replaceable.

\* \* \* \* \*

*Replaceable bulb headlamp* means a headlamp comprising a bonded lens reflector assembly and one or two replaceable headlamp light sources, except that a visually/optically aimable headlamp or one incorporating a vehicle headlamp aiming device may have a lens designed to be replaceable.

\* \* \* \* \*

*Two-headlamp system* means a headlamp system with one headlamp on each side of a vehicle, each of which provides a lower and upper beam.

\* \* \* \* \*

S5.5.10 \* \* \*

(c) A motorcycle headlamp may be wired to allow either its upper beam or its lower beam, but not both, to modulate from a higher intensity to a lower intensity in accordance with S7.3;

(d) All other lamps, including all lamps not required by this standard, shall be wired to be steady burning.

\* \* \* \* \*

### S7. Headlamp and replaceable light source requirements.

*S7.0 Table of Contents.* The following is a table of contents of the requirements for headlamps and replaceable light sources.

S7.1 General Installation Requirements

S7.2 Lens Marking and Replacement Lens Requirements

S7.3 Motorcycle Headlamps

S7.4 Integral Beam Headlamp Systems

S7.5 Replaceable Light Source Headlamp Systems

S7.6 Replaceable Light Sources

S7.7 Special Wiring Requirements

### S7.1 General installation requirements.

(a) Each passenger car, multipurpose passenger vehicle, truck, and bus shall be equipped with a headlighting system designed to conform to the requirements of S7.4 or S7.5. The headlamps shall be mounted on the front of the vehicle symmetrically disposed about its vertical centerline, with each lower beam headlamp at the same height and as far apart as practicable, and with each upper beam headlamp at the same height. With the vehicle at curb weight, the center of each headlamp shall be not less than 560 mm (22 in) and not more than 1370 mm (54 in) above the road surface.

(b) Each motorcycle shall be equipped with a headlighting system designed to conform with the requirements of S7.3. A single headlamp shall be mounted on the front vertical centerline of the motorcycle, or if two headlamps are used, they shall be symmetrically disposed about its vertical centerline. With the vehicle at curb weight, the center of each headlamp shall be not less than 560 mm (22 in) and not more than 1370 mm (54 in) above the road surface.

(c) When activated in a steady-burning state, headlamps shall not have any styling ornament or other feature, such as a translucent cover or grill, in front of the lens. Headlamp wipers may be used in front of the lens, provided that the headlamp system is designed to conform with all applicable photometric requirements with the wiper stopped in any position in front of the lens.

### S7.2 Lens marking and replacement lens requirements.

#### S7.2.1 Lens marking requirements.

(a) The lens of each original and replacement equipment headlamp and of each original equipment and replacement equipment beam contributor, and each replacement headlamp lens, shall be marked with the symbol "DOT," either horizontally or vertically, which shall constitute the certification required by 49 U.S.C. 30115.

(b) Each headlamp lens and each beam contributor to which S7.2.1(a) applies shall be marked with the name and/or trademark registered with the U.S. Patent and Trademark Office of the manufacturer of such headlamp, replacement lens or beam contributor, or of its importer, or of any manufacturer of a vehicle equipped with such headlamp or beam contributor. Each replacement headlamp lens shall also be marked with the manufacturer and the part or trade number of the headlamp for which it is intended. Nothing in this paragraph shall be construed to authorize the marking of any such name and/or trademark by one who is not the owner, unless the owner has consented to it.

(c) Each headlamp and beam contributor to which S7.2.1(a) applies shall be marked with its voltage and with its part or trade number.

(d) Headlamps designed to interchange with types C and D sealed beam headlamps, specified by SAE Standard J1383 DEC96, may be marked "1" and "2" rather than "1C1" and "2C1", respectively and "TOP" or "2" rather than "2D1".

### S7.2.2 Replacement lens requirements.

(a) A replacement lens for a headlamp that is not required to have a bonded lens shall be provided with a replacement seal in a package that includes instructions for the removal and replacement of the lens, the cleaning of the reflector, and the sealing of the replacement lens to the reflector assembly.

(b) Each replacement headlamp lens when installed on a headlamp with a replacement seal, according to the lens manufacturer's instructions, shall not cause the headlamp to fail to comply with any of the requirements of this standard.

*S7.3 Motorcycle headlamps.* Each motorcycle shall be equipped with a headlighting system designed to conform to the following requirements.

### S7.3.1 Photometric requirements and applicable SAE standard.

Each motorcycle may be equipped with—  
(a) A headlighting system designed to conform to SAE Standard J584 *Motorcycle Headlamps* April 1964 (which includes requirements for



photometry, focus, color and resistance to vibration, moisture, dust and corrosion) using the photometric specifications of Figure 32 and the upper beam aimability specifications of S7.3.2 rather than the SAE J584 photometry requirements, or

(b) If manufactured on or before September 1, 2000, a headlighting system designed to conform to SAE Standard J584 April 1964; or

(c) One half of any headlighting system specified in S7.4 or S7.5 which provides both a full upper beam and full lower beam. Where more than one lamp must be used, the lamps shall be mounted vertically, with the lower beam as high as practicable. When installed on a motorcycle, such half systems need not meet the aiming requirements of S8.

#### S7.3.2 Aimability.

S7.3.2.1 *Photoelectric aim using upper beam.* The upper beam of a multiple beam headlamp designed to conform to the photometric requirements of Figure 32 shall be aimed photoelectrically during the photometric test in the manner prescribed in SAE Standard J584 OCT93, *Motorcycle Headlamps*.

S7.3.2.2 *Headlamp mounting.* Headlamps and headlamp mountings shall be so designed and constructed that:

(a) The axis of the light beams may be adjusted to the left, right, up or down from the designed setting, the amount of adjustability to be determined by practical operating conditions and the type of equipment.

(b) The adjustments may be conveniently made by one person with tools ordinarily available.

(c) When the headlamps are secured, the aim will not be disturbed under ordinary conditions of service.

#### S7.3.3 Motorcycle headlamp modulation system.

S7.3.3.1 A headlamp on a motorcycle may be wired to modulate either the upper beam or the lower beam from its maximum intensity to a lesser intensity, provided that:

(a) The rate of modulation shall be  $240 \pm 40$  cycles per minute.

(b) The headlamp shall be operated at maximum power for 50 to 70 percent of each cycle.

(c) The lowest intensity at any test point shall be not less than 17 percent of the maximum intensity measured at the same point.

(d) The modulator switch shall be wired in the power lead of the beam filament being modulated and not in the ground side of the circuit.

(e) Means shall be provided so that both the lower beam and upper beam

remain operable in the event of a modulator failure.

(f) The system shall include a sensor mounted with the axis of its sensing element perpendicular to a horizontal plane. Headlamp modulation shall cease whenever the level of light emitted by a tungsten filament light operating at 3000 degrees Kelvin is either less than 270 lux (25 foot-candles) of direct light for upward pointing sensors or less than 60 lux (5.6 foot-candles) of reflected light for downward-pointing sensors. The light is measured by a silicon cell type light meter that is located at the sensor and pointing in the same direction as the sensor. A Kodak Gray Card (Kodak R-27) is placed at ground level to simulate the road surface in testing downward pointing sensors.

(g) When tested in accordance with the test profile shown in Figure 9, the voltage drop across the modulator when the lamp is on at all test conditions for 12-volt systems and 6-volt systems shall not be greater than 0.45 volt. The modulator shall meet all the provisions of the standard after completion of the test profile shown in Figure 9.

(h) Means shall be provided so that both the lower and upper beam function at design voltage when the headlamp control switch is in either the lower or upper beam position when the modulator is off.

S7.3.3.2(a) Each motorcycle headlamp modulator not intended as original equipment shall comply with S7.3.3.1(a) through (g) when connected to a headlamp of the maximum rated power and a headlamp of the minimum rated power, and shall provide means so that the modulated beam functions at design voltage when the modulator is off.

(b) Instructions, with a diagram, shall be provided for mounting the light sensor including location on the motorcycle, distance above the road surface, and orientation with respect to the light.

S7.3.4 *Marking.* (a) Each replaceable bulb headlamp that is designed to meet the photometric requirements of S7.3.1(a) or S7.3.2(a) and that is equipped with a light source other than a replaceable light source meeting the requirements of S7.7, shall have the word "motorcycle" permanently marked on the lens in characters not less than 3 mm (0.114 in) in height.

(b) Each motorcycle headlamp modulator not intended as original equipment, or its container, shall be labeled with the maximum wattage, and the minimum wattage appropriate for its use.

S7.4 *Integral beam headlamp systems.* An integral beam headlamp

system shall be designed to conform to the following requirements:

#### S7.4.1 Photometric requirements.

The system shall provide in total not more than two upper beams and two lower beams. The color of any headlamp beam shall be white as specified in SAE J578 JUN95.

#### S7.4.1.1 Four-headlamp systems.

Except as provided in S7.4.1.1(d), each upper beam headlamp and each lower beam headlamp in a four-headlamp system shall be designed to conform to the photometrics specified in its respective column of one of the following:

(a) Figure 15, or

(b) Figure 15 except that the upper beam test value at 2.5 D-V and 2.5 D-12R and 12L, shall apply to the lower beam headlamp and not to the upper beam headlamp, and the upper beam test point value at 1.5D-9R and 9L shall be 1000, or

(c) Figure 28;

(d) Headlamps designed to interchange with types A, C and G sealed beam headlamps shall conform to the photometrics of Figure 28 only; headlamps designed to interchange with type F sealed beam headlamps shall conform to the photometrics of Figure 15 only; headlamps designed to interchange with type J sealed beam headlamps shall conform to the photometric specification of S7.4.1.3, and type 55x135 sealed beam headlamps shall conform to the photometric specification of S7.4.1.1(b). The cited types of sealed beam headlamps are those specified by SAE Standard J1383 DEC96 *Performance Requirements for Motor Vehicle Headlamps*.

(e) Headlamp systems using the photometry of Figures 15-1 or 28-1 shall comply with the mechanical aim requirements of S8.3 or S8.4.

S7.4.1.2 *Two-headlamp systems.* (a) Each headlamp shall be designed to conform to the photometrics of either Figure 17 or Figure 27.

(b) Headlamp systems using the photometry of Figures 17-1 or 27-1 shall comply with the mechanical aim requirements of S8.3 or S8.4.

S7.4.1.3 *Headlamp systems using lamps comprised of multiple beam contributors.* In a headlamp system in which there is more than one beam contributor providing each lower beam, and/or more than one beam contributor providing each upper beam, each beam contributor in the system shall be designed to meet only the photometric performance requirements of Figure 15 based upon the following mathematical expression: conforming test point value = (Figure 15 test point value)/total



number of beam contributors for each lower or upper beam, as appropriate). The system shall be designed to use the Vehicle Headlamp Aiming Device (VHAD) as specified in S8.4.

**S7.4.2 Photometric test procedure.** Each integral beam headlamp system shall be designed to conform to the applicable photometric performance requirements of S7.4.1 (rather than Table 3 of SAE J1383 DEC96) when tested in accordance with the test procedures of Paragraphs 5.1 and 5.1.4 of SAE Standard J1383 DEC96. Unless stated otherwise, a tolerance of  $\pm 1/4$  degree is permitted during photometric performance tests for any headlamp or beam contributor. The test points 10U–90U shall be measured in a horizontal range 45R to 45L from the normally exposed surface of the lens face. Luminous intensities in this upper region may exceed the limits contained in S7.4.1 if they are confined within a 2-degree conical angle and do not exceed 438 cd. The term “aiming plane” means “aiming reference plane,” or an appropriate vertical plane defined by the manufacturer as required in S8.1.

**S7.4.3 Assemblies allowing simultaneous aim of multiple lamps.** A headlamp or beam contributor designed to meet S7.4.1.1 or 7.4.1.3, and S8.3, except a type A, C or G sealed beam headlamp, may be mounted in an assembly to permit simultaneous aiming of the beam(s) contributors, provided that with any complying contributor the assembly complete with all lamps meets the appropriate photometric requirements when tested in accordance with S7.4.4.

**S7.4.4 Photometric test procedure for simultaneous aim assemblies.** The assembly used for simultaneously aiming more than one integral beam headlamp, at each side of a vehicle, shall be placed on a test fixture on a goniometer located not less than 18.3 m (60 ft) from the photometer. The assembly shall be aimed by centering the geometric center of the lower beam lens(es) on the photometer axis and by aligning the photometer axis to be perpendicular to the aiming reference plane or appropriate vertical plane defined by the manufacturer of any lower beam contributor. Photometric compliance of a lower beam shall be determined with all lower beam contributors illuminated and in accordance with the test procedures of paragraphs 5.1 and 5.1.4 of SAE Standard J1383 DEC96 using the test points and photometric requirements of Figure 15. The assembly shall then be moved in a plane parallel to the established aiming plane of the lower beam until the assembly is located with

the geometric center of the upper lens(es) on the photometer axis. Photometric compliance for an upper beam shall now be determined using the figure and procedure specified for the lower beam. During photometric testing, a  $1/4$  degree reaim is permitted in any direction at any test point.

**S7.4.5 Arrangement and marking of upper and lower beams.**

(a) The reflector with the most outboard lighted edge or the most outboard light source within a headlamp in a two-headlamp system, or the most outboard headlamp in a four-headlamp system shall provide all or part of the lower beam. If the light sources or the outboard lighted edges of reflectors or headlamps are arranged along the same vertical longitudinal plane, the upper light source, reflector or headlamp shall provide all or part of the lower beam. For purposes of this paragraph, the location within the headlamp reflector of the light path from a remote light source shall be considered the location of the light source.

(b) In a four-headlamp system, the lower beam headlamp lens shall be permanently marked with the letter “L” or the number “2” before the type designation letter of types A, C and G sealed beam headlamps, and the upper beam headlamp lens shall be permanently marked with the letter “U” or the number “1” before the type designation letter of types A, C and G sealed beam headlamps.

**S7.4.6 Aimability.** The system shall be aimable in accordance with the requirements of S8. A system that incorporates any headlamp or beam contributor that does not have a VHAD as an integral and indivisible part of the headlamp or beam contributor shall be designed so that the appropriate photometrics are met when any correctly aimed and photometrically conforming headlamp or beam contributor is removed from its mounting and aiming mechanism, and is replaced without reaim by any conforming headlamp or beam contributor of the same type. A visually/optically aimable sealed beam headlamp interchangeable with a mechanically aimable sealed beam headlamp shall be manufactured with the aiming pads specified for it in SAE J1383 DEC96.

**S7.4.7 Replaceable lenses.** Headlamps that are visually/optically aimable in accordance with S8.5 or that incorporate a vehicle headlamp aiming device conforming to S8.4 may be designed to have a replaceable lens.

**S7.4.8 Other performance requirements.** When tested according to any of the procedures indicated in S9,

each headlamp or beam contributor shall meet the appropriate requirement:

**S7.4.8.1 Abrasion.** After an abrasion test conducted in accordance with S9.2, the headlamp shall meet the photometric requirements applicable to the headlamp system under test.

**S7.4.8.2 Chemical resistance.** After the chemical resistance tests of S9.3 and S9.10.1, the headlamp shall have no surface deterioration, coating delamination, fractures, deterioration of bonding or sealing materials, color bleeding or color pickup visible without magnification, and the headlamp shall meet the photometric requirements applicable to the headlamp system under test.

**S7.4.8.3 Corrosion resistance.** After a corrosion test conducted in accordance with S9.4, there shall be no evidence of external or internal corrosion or rust visible without magnification. After a corrosion test conducted in accordance with S9.10.2, there shall be no evidence of corrosion or rust visible without magnification on any part of the headlamp reflector that receives light from a headlamp light source, on any metal light or heat shield assembly, or on a metal reflector of any other lamp not sealed from the headlamp reflector. Loss of adhesion of any applied coating shall not occur more than 3.2 mm (0.125 in.) from any sharp edge on the inside or outside. Corrosion may occur on terminals only if the current produced during the test of S9.4(c) is not less than 9.7 amperes.

**S7.4.8.4 Dust resistance.** After a dust test conducted in accordance with S9.5, the headlamp shall meet the photometric requirements applicable to the headlamp system under test.

**S7.4.8.5 Heat resistance.** The headlamp shall first meet the requirements of S7.4.8.5(a) and then those of S7.4.8.5(b).

(a) After a temperature cycle test conducted in accordance with S9.6.1, the headlamp shall show no evidence of delamination, fractures, entry of moisture or deterioration of bonding material, color bleeding, warpage or deformation visible without magnification or lens warpage greater than 3 mm (0.118 in) measured parallel to the optical axis at the point of intersection of the axis of each light source with the exterior surface of the lens, and it shall meet the photometric requirements applicable to the headlamp system under test.

(b) After an internal heat test conducted in accordance with S9.6.2, there shall be no lens warpage greater than 3 mm (0.118 in) when measured parallel to the optical axis at the point of intersection of the axis of each light

source with the exterior surface of the lens, and it shall meet the photometric requirements applicable to the headlamp system under test.

**S7.4.8.6 Humidity resistance.** After a humidity test conducted in accordance with S9.7, the inside of the headlamp shall show no evidence of delamination or moisture, fogging or condensation visible without magnification.

**S7.4.8.7 Vibration resistance.** After a vibration test conducted in accordance with S9.8, there shall be no evidence of loose or broken parts, other than filaments, visible without magnification.

**S7.4.8.8 Exposure resistance.** After a three-year outdoor exposure test conducted in accordance with SAE J576 JUL91, plastic materials used for headlamp lenses shall:

(a) Have no loss of luminous transmittance of more than 25 percent of the luminous transmittance of the unexposed control sample when tested according to ASTM E 308-66 using CIE Illuminant A (2856K);

(b) Continue to conform to the color specification of achromatic lens material contained in SAE J578 JUN95 for samples having the thickness of the headlamp lens or greater;

(c) Show no deterioration regarding haze when evaluated visually, and

(d) Show no physical changes affecting performance such as color bleeding, delamination, crazing or cracking when compared visually to unexposed samples.

**S7.4.9 Exceptions to other performance requirements.** A headlamp with a glass lens need not meet the abrasion resistance test (S9.2). A headlamp with a nonreplaceable lens need not meet the chemical and corrosion resistance test of reflectors (S9.10). A headlamp with a nonreplaceable glass lens need not meet the chemical resistance test (S9.3). A headlamp with a glass lens and a non-plastic reflector need not meet the internal heat test of S9.6.2. A headlamp of sealed design as verified in S9.9 (sealing) need not meet the dust, humidity or corrosion resistance requirements of S7.4.8, except that it must meet the corrosion resistance requirement for terminals in S7.4.8.3.

**S7.4.10 Incorporation of non-headlamp light sources.** An integral beam headlamp may incorporate replaceable light sources that are used for purposes other than headlighting.

**S7.5 Replaceable light source headlamp systems.** Each replaceable light source headlamp system shall use replaceable light sources complying with S7.6, or a combination at each side of fixed light sources and complying replaceable light sources, and it shall be

designed to conform to the following requirements:

**S7.5.1 Photometric requirements.** The system shall provide in total not more than two upper beams and two lower beams and shall incorporate not more than two replaceable light sources in each headlamp of a two-headlamp system nor more than one replaceable light source in each headlamp of a four-headlamp system. The color of the emanating light produced by a headlamp shall be white as specified in SAE J578 JUN95. The photometric performance specified in S7.5.1.1 and S7.5.1.2 (depicted in Figure 26) shall be obtained using any complying replaceable light source of the type intended for use in such system.

**S7.5.1.1 Four-headlamp systems.** Each upper beam headlamp and each lower beam headlamp of a four-headlamp system shall be designed to conform to the photometrics of one of the following:

(a) Figure 15, or

(b) Figures 15 or 27 if the system uses only light sources of types HB1 or HB5.

**S7.5.1.2 Two-headlamp systems.** Each headlamp in a two-headlamp system shall be designed to conform to the photometrics of one of the following:

(a) Figure 17, or

(b) Figures 17 or 27 if the system uses only light sources of types HB1 or HB5.

**S7.5.2 Photometric test procedure.** Each replaceable light source headlamp system shall be designed to conform to the applicable photometric performance requirements of S7.5.1 (rather than Table 3 of SAE J1383 DEC96) when tested in accordance with the test procedures of Paragraphs 5.1 and 5.1.4 of SAE Standard J1383 DEC96. Unless stated otherwise, a tolerance of  $\pm 1/4$  degree is permitted during photometric performance tests for any headlamp. The test points 10U-90U shall be measured in a horizontal range 45R to 45L from the normally exposed surface of the lens face. Luminous intensities in this upper region may exceed the limits contained in S7.5.1 if they are confined within a 2-degree conical angle and do not exceed 438 cd. The term "aiming plane" means "aiming reference plane," or an appropriate vertical plane defined by the manufacturer as required in S8.1.

**S7.5.3 Arrangement and marking of upper and lower beams.** (a) The reflector with the most outboard lighted edge or the most outboard light source within a headlamp in a two-headlamp system, or the most outboard headlamp in a four-headlamp system shall provide all or part of the lower beam. If the light sources or the outboard lighted edges of

reflectors or headlamps are arranged along the same vertical longitudinal plane, the upper light source, reflector or headlamp shall provide all or part of the lower beam. For purposes of this paragraph, the location within the headlamp reflector of the light path from a remote light source shall be considered the location of the light source.

(b) In a four-headlamp system the lower beam headlamp lens shall be permanently marked with the letter "L" and the upper beam headlamp lens shall be permanently marked with the letter "U".

(c) The lens of each replaceable light source headlamp shall bear permanent marking in front of each replaceable light source with which it is equipped that states the HB Type or the bulb marking/designation provided in compliance with Section VIII of Appendix A or Section VI of Appendix B of part 564 of this chapter.

**S7.5.4 Aimability.** The system shall be aimable in accordance with the requirements of S8. Headlamps designed to conform to the external mechanical aiming requirements of S8.3 shall have no mechanism that allows adjustment of an individual light source, or, if there are two light sources, independent adjustment of each reflector.

**S7.5.5 Replaceable lenses.** Headlamps that are visually/optically aimable in accordance with S8.5 or that incorporate a vehicle headlamp aiming device conforming to S8.4 may be designed to have a replaceable lens.

**S7.5.6 Replacement lens-reflector units.** Each lens reflector unit manufactured as replacement equipment shall be designed to conform to the requirements of S7.5.1 when any replaceable light source appropriate for such unit is inserted in it.

**S7.5.7 Other performance requirements.** Each headlamp shall meet the requirements of S7.4.8 and S7.4.9, except that the sentence in S7.4.9 granting exceptions to the corrosion, dust and humidity test requirements for sealed headlamps does not apply.

**S7.5.8 Incorporation of non-headlamp light sources.** A replaceable bulb headlamp may incorporate replaceable light sources that are used for purposes other than headlighting.

**S7.6 Replaceable light sources.** Each replaceable light source shall be designed to conform to the dimensions and electrical specifications furnished with respect to it pursuant to part 564 of this chapter, and shall conform to the following requirements:

**S7.6.1 Color.** When the replaceable light source of any complying headlamp

is replaced with a complying light source having a compatible base, the color of the light produced by the headlamp shall remain white as specified in SAE J578 JUN95.

**S7.6.2 Test of luminous flux and power.** The measurements of maximum power and luminous flux that are submitted in compliance with Appendix A or Appendix B of part 564 of this chapter, shall be made with the direct current test voltage regulated within one quarter of one percent. The test voltage shall be 12.8v. The measurement of luminous flux shall be in accordance with the Illuminating Engineering Society of North America, LM 45; *IES Approved Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps* (April 1980). The replaceable light source shall be seasoned before such measurement.

(a) For a light source with a resistive element type filament, seasoning of the light source shall be made in accordance with paragraph 3.8 of SAE Standard J1383 DEC96 *Performance Requirements for Motor Vehicle Headlamps*. The measurement of luminous flux shall be made with the black cap installed on Type HB1, Type HB2, Type HB4, and Type HB5 light sources, and on any other replaceable light source so designed, and shall be made with the electrical conductor and light source base shrouded with an opaque white colored cover, except for the portion normally located within the interior of the lamp housing. The measurement of luminous flux for Type HB3 and Type HB4 shall be made with the base covered with the white cover shown in the drawings for Types HB3 and HB4 filed in Docket No. NHTSA 98-3397. The white covers are used to eliminate the likelihood of incorrect lumens measurement that will occur should the reflectance of the light source base and electrical connector be low.

(b) For a light source using excited gas mixtures as a filament or discharge arc, seasoning of the light source system, including any ballast required for its operation, shall be made in accordance with paragraph 4.0 of SAE Recommended Practice J2009 FEB93 *Discharge Forward Lighting Systems*. With the test voltage applied to the ballast input terminals, the measurement of luminous flux shall be made with the black cap installed, if so designed, and shall be made with the base covered with an opaque white colored cover, except for the portion normally located within the interior of the lamp housing.

**S7.6.3 Test of seal airtightness.** The capsule, lead wires and/or terminals,

and seal on each Type HB1, Type HB3, Type HB4, and Type HB5 light source, and on any other replaceable light source which uses a seal, shall be installed in a pressure chamber as shown in Figure 25 so as to provide an airtight seal. The diameter of the aperture in Figure 25 on a replaceable light source (other than an HB Type) shall be that dimension furnished for such light source in compliance with Section IV.B of Appendix A or Section III.B of Appendix B of part 564 of this chapter. An airtight seal exists when no air bubbles appear on the low pressure (connector) side after the light source has been immersed in water for one minute while inserted in a cylindrical aperture specified for the light source, and subjected to an air pressure of 70kPa (10 P.S.I.G.) on the glass capsule side.

**7.6.4 Deflection resistance requirement.** After the force deflection test conducted in accordance with S7.6.5, the permanent deflection of the glass envelope shall not exceed 0.13 mm (0.005 in) in the direction of the applied force.

**S7.6.5 Deflection test.** With the light source rigidly mounted in a fixture in a manner indicated in Figure 8, a force of  $17.8 \pm 0.4\text{N}$  ( $4.0 \pm 0.1\text{ lb}$ ) is applied at a distance "A" from the reference plane perpendicular to the longitudinal axis of the glass capsule and parallel to the smallest dimension of the pressed glass capsule seal. The force shall be applied (using a rod with a hard rubber tip with a minimum spherical radius of 1 mm (0.039 in) radially to the surface of the glass capsule in four locations in a plane parallel to the reference plane and spaced at a distance "A" from that plane. These force applications shall be spaced 90 degrees apart starting at the point perpendicular to the smallest dimension of the pressed seal of the glass capsule. The bulb deflection shall be measured at the glass capsule surface at 180 degrees opposite to the force application. Distance 'A' for a replaceable light source other than an HB Type shall be the dimension provided in accordance with Appendix A of part 564 of this chapter.

**7.6.6 Rated laboratory life of discharge type light sources.** The "rated laboratory life" that is submitted in compliance with Appendix B of Part 564 of this chapter shall be determined in accordance with paragraphs 4.3 and 4.9 of SAE Recommended Practice J2009 FEB93 *Forward Discharge Lighting Systems* for light sources that use excited gas mixtures as a filament or discharge arc.

**7.6.7 Marking requirements for light sources.** The base of each HB Type shall

be marked with its HB Type designation. If other than an HB Type, the light source shall be marked with the bulb marking designation specified for it in compliance with Appendix A or Appendix B of part 564 of this chapter. Each replaceable light source shall also be marked with the symbol DOT and with a name or trademark in accordance with S7.2.

**7.6.8 Marking requirements for ballast devices.** If a ballast is required for light source operation, each ballast shall bear the following permanent markings:

(a) Name or logo of ballast manufacturer;

(b) Ballast part number or unique identification;

(c) Part number or other unique identification of the light source for which the ballast is designed;

(d) Rated laboratory life of the light source/ballast combination, if the information for the light source has been filed in Appendix B of part 564 of this chapter;

(e) A warning that ballast output voltage presents the potential for severe electrical shock that could lead to permanent injury or death;

(f) Ballast output power in watts and output voltage in volts DC or root mean squared volts AC; and

(g) The symbol 'DOT'.

**S7.7 Special wiring requirements.**

**S7.7.1 Headlamp beam switching.** Each vehicle shall have a means of switching between lower and upper beams designed and located so that it may be operated conveniently by a simple movement of the driver's hand or foot. The switch shall complete the circuit for one beam before opening the circuit for the other beam to avoid transient points in which neither beam is powered. A blue or green upper beam indicator light shall be provided, with a minimum area equivalent to that of a 4.75 mm (3/16 in) diameter circle, plainly visible to drivers of all heights under normal driving conditions when headlamps are required.

**S7.7.2 Semi-automatic headlamp beam switching.** As an alternative to S7.7.1, a vehicle may be equipped with semi-automatic means of switching between lower and upper beams that conforms to SAE Recommended Practice J565 JUN89, *Semi-Automatic Headlamp Beam Switching Devices*.

**S7.7.3 Prohibition against simultaneous upper and lower beam use.** Except as provided in S7.7.4, the wiring harness or connector assembly of each headlamp system shall 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 as provided in S7.7.4, the lower and upper beams shall not be energized simultaneously except momentarily for temporary signaling purposes or during switching between beams.

**S7.7.4 Exceptions to simultaneous beam prohibition.**

S7.7.4(a) On a motor vehicle equipped with a headlighting system designed to conform to the photometric requirements of Figure 15-1 or 15-2, the lower beam lamps may be wired to remain activated when the upper beam lamps are activated.

(b) On a motor vehicle equipped with an Integral Beam headlighting system meeting the photometric requirements of S7.4.1.1(b), the lower beam headlamps shall be wired to remain permanently activated when the upper beam headlamps are activated.

(c) On a motor vehicle equipped with a headlighting system designed to conform to the requirements of Figure 17-1 or 17-2, a lower beam light source may be wired to remain activated when an upper beam light source is activated if the lower beam light source contributes to compliance of the headlighting system with the upper beam requirements of Figure 17-1 or 17-2.

(d) Lower beam headlamps may be wired to activate upon failure of an upper beam headlamp, regardless of the position of the beam selector switch.

**S7.7.5 Flashing.** Headlamps and side marker lamps may be wired to flash for signaling purposes;

**S7.7.6 Motorcycle headlamp beam modulation.** A motorcycle headlamp may be wired to allow either its upper beam or its lower beam, but not both, to modulate between a higher intensity and a lower intensity in accordance with S7.3.4.

**S8. Headlamp aimability performance requirements.**

S8.0 The following is a table of contents for headlamp aimability performance requirements:

- S8.1 General requirements
- S8.2 Aiming reference features
- S8.3 Headlamp mounting and aiming mechanism
- S8.4 External mechanical aiming
- S8.5 On-vehicle mechanical aiming (VHAD)
- S8.6 Visual/optical aiming
- S8.7 Replacement headlamps

**S8.1 General requirements.** When a headlamp system is installed on a motor vehicle, it shall be aimable with at least one of the following: an externally

applied mechanical aiming device, as specified in S8.4; an on-vehicle mechanical headlamp aiming device installed by the vehicle or lamp manufacturer, as specified in S8.5; or by visual/optical means, as specified in S8.6. All of the headlamps within the system shall be aimable by the same means. An auxiliary vertical VHAD complying with S8.5 may be used on a headlamp complying with S8.6.

**S8.2 Aiming reference features**

(a) Each headlamp or beam contributor that is not visually/optically aimable in accordance with S8.6 of this standard shall be equipped with fiducial marks, aiming pads, or similar references of sufficient detail and accuracy, for determination of an appropriate vehicle plane to be used with the photometric procedures of SAE J1383 DEC96 for correct alignment with the photometer axis when being tested for photometric compliance, and to serve for the aiming reference when the headlamp or beam contributor is installed on a motor vehicle. The fiducial marks, aiming pads, or similar references are protrusions, bubble vials, holes, indentations, ridges, scribed lines, or other readily identifiable marks established and described by the vehicle or headlamp manufacturer.

(b) Each motor vehicle manufactured on and after September 1, 1998, shall be equipped with headlamps or beam contributors which have a mark or markings that are visible from the front of the headlamp when installed on the vehicle to identify the optical axis of the headlamp to assure proper horizontal and vertical alignment of the aiming screen or optical aiming equipment. The manufacturer is free to choose the design of the mark or markings. The mark or markings may be on the interior or exterior of the lens or indicated by a mark or central structure on the interior or exterior of the headlamp. Examples of such marks include, but are not limited to: dots, circles or trademarks with an obvious center; marks on the periphery of the lens which can be converged accurately to the optical center; pointed bulb tips or circular light shields clearly visible through unfluted lenses if they coincide with the optical center. The shape of a round or rectangular headlamp intrinsically marks the center if its lens surface is symmetric about its beam axis.

(c) Each headlamp that is visually/optically aimable in accordance with S8.6 of this standard shall be marked in accordance with S8.6.6.

**S8.3 Headlamp mounting and aiming mechanism.** Except as provided in this paragraph, each headlamp shall be installed on a motor vehicle with a

mounting and aiming mechanism that allows aim inspection and adjustment of both vertical and horizontal aim, and is accessible for those purposes without removal of any vehicle parts, except for protective covers removable without the use of tools.

**S8.3.1 Cross-axis sensitivity.**

(a) When installed on the vehicle, adjustment of one aim axis through its full on-vehicle range shall not cause the aim of the other axis to deviate more than  $\pm 0.76$  degree.

(b) If the performance specified in S8.3.1(a) is not achievable, the labeling requirements of S8.5.3(c) apply, except that if the aiming mechanism is not a VHAD, the requirements specific to VHADs are not applicable, and the instructions shall be specific to the aiming mechanism installed.

(c) A visually/optically aimable headlamp that has a lower beam shall not have a horizontal adjustment mechanism unless such mechanism meets the on-vehicle aiming requirements of S8.4 of this standard.

**S8.3.2 Aim adjustment range.**

(a) When a headlamp system is tested in a laboratory, the range of its vertical aim shall not be less than  $\pm 4$  degrees from the nominal correct aim position for the intended vehicle application. When installed on a motor vehicle, the range of vertical aim shall be not less than the full range of pitch of the vehicle on which the headlamp system is installed. The installed range of static pitch angle shall as a minimum be determined from unloaded vehicle weight to gross vehicle weight rating, and incorporate pitch angle effects from maximum trailer or trunk loadings, the full range of tire intermix sizes and suspensions recommended and/or installed by the vehicle manufacturer, and the anticipated effects of variable passenger loading. The vertical aim adjustment mechanism shall be continuously adjustable over the full range.

(b) When a headlamp system is tested in a laboratory, the range of its horizontal aim shall be not less than  $\pm 2.5$  degrees from the nominal correct aim position for the intended vehicle application.

**S8.3.3 Mechanisms with independent reflector movement.** If the headlamp is aimed by moving the reflector relative to the lens and headlamp housing, or vice versa, it shall:

(a) allow movement of the headlamp system, when tested in the laboratory, to be not less than the full range of pitch on the vehicle on which the headlamp system is installed and for the horizontal aim range limits of S8.3.2(b),

(b) conform with the photometrics applicable to it with the lens at any position relative to the reflector within the range limits as specified in S8.3.3(a)

(c) be exempted from the  $\pm 4$  degree vertical aim range for laboratory testing of S8.3.2(a), and

(d) be exempted from the  $\pm 2.5$  degree horizontal aim range of S8.3.2(b) if it is visually/optically aimable and has fixed horizontal aim.

**S8.4 External Mechanical aiming.** Each headlamp system that is capable of being mechanically aimed by externally applied headlamp aiming devices shall be mechanically aimable using the equipment specified in SAE Standard J602 DEC89 *Headlamp Aiming Device for Mechanically Aimable Headlamp Units* without the removal of any ornamental trim rings, covers, wipers or other vehicle parts. The torque deflection test of S8.4.1 assures that headlamps designed for external aiming are mounted to the vehicle in a manner sufficiently rigid to prevent aiming errors as a consequence of the weight of the headlamp aiming device. The inward force test limits the influence of aerodynamic forces on headlamp aim.

**S8.4.1 Torque deflection test.** The aim of the headlamps in each headlamp system that is designed to use such external aiming devices, shall not deviate more than 0.30 degree when a torque of 2.25 N-m (20 in-lb), applied about a horizontal axis in the aiming reference plane, is removed from the headlamp in its design operating position. The downward force used to create the torque shall be applied parallel to the aiming reference plane, through the aiming pads, and displaced forward using a lever arm that is perpendicular to the aiming reference plane and originates at the center of the aiming pad pattern (see Figures 4-1 and 4-3). For headlamps using the aiming pad locations of Group I, the distance between the point of application of force and the aiming reference plane shall be not less than 168.3 mm (6.625 in.) plus the distance from the aiming reference plane to the secondary plane, if used (see S8.3.4(a)). For headlamps using the aiming pad locations of Group II, the distance between the point of application of force and the aiming reference plane shall be not less than 167.9 mm (6.609 in) plus the distance from the aiming reference plane to the secondary plane, if used. For headlamps using the nonadjustable Headlamp Aiming Device Locating Plates for the 146 mm diameter, the 176 mm diameter, and the 92x150 mm sealed beam units, the distance between the point of application of force and the aiming plane shall, respectively, be not less

than 177.4 mm (6.984 in), 176.2 mm (6.937 in), and 193.7 mm (7.625 in). For types A, B, C, D, E, F, G and H sealed beam headlamps the force shall be applied using the appropriate deflectometer described in SAE J1383 DEC96.

**S8.4.2 Inward force test.** When a headlamp is installed on a motor vehicle, its aim in any direction shall not change by more than 0.30 degree nor shall the lamp recede more than 2.5 mm (0.1 in) after being subjected to an inward force of 222N (50 lb) applied evenly to the lens parallel to the optical axis.

**S8.4.3 Corrosion test.** The mounting and aiming mechanism of each headlamp system shall be subjected to a salt spray (fog) test in accordance with ASTM B117-73 *Method of Salt Spray (Fog) Testing* for a period of 50 hours, consisting of two successive 25-hour periods of 24 hours exposure followed by 1 hour of drying. At the end of 50 hours, the headlamp system shall be capable of meeting any of the applicable requirements of S8.

**S8.4.4 Lens marking for use of adjustable aimer locating plate.** Each headlamp system which is designed to use the type of Headlamp Aiming Device Locating Plates which uses adjustable length legs for the 100 x 165 mm unit and the 142 x 200 mm unit shall meet the requirements of S8.4.4 (a) and (b).

(a) The lens shall have three aiming pads which meet the requirements of Figure 4, *Dimensional Specifications for Location of Aiming Pads on Replaceable Bulb Headlamp Units*. The aiming pads need not be centered at the geometric center of the lens, or on the optical axis. Except as provided in subparagraph S8.4.4(b), a whole number, which represents the distance in tenths of an inch (i.e., 0.3 inch = 3) from the aiming reference plane to the respective aiming pads which are not in contact with that plane, shall be inscribed adjacent to each respective aiming pad on the lens. The height of these numbers shall be not less than 4 mm (0.157 in). If there is interference between the plane and the area of the lens between the aiming pads, the whole number represents the distance to a secondary plane. The secondary plane shall be located parallel to the aiming reference plane and as close to the lens as possible without causing interference.

(b) If the most forward aiming pad is the lower inboard aiming pad, then the dimensions may be placed anywhere on the lens. The dimension for the outboard aiming pad (Dimension F in Figure 4) shall be followed by the letter "H" and the dimension for the center

aiming pad shall be followed by the letter "V." The dimensions shall be expressed in tenths of an inch.

**S8.4.5 Nonadjustable aimer locating plate.** Each headlamp may be designed to use the nonadjustable Headlamp Aiming Device Locating Plate for the 100 x 165 mm unit, the 142 x 200 mm unit, the 146 mm diameter unit, the 176 mm diameter unit, or the 92 x 150 mm unit of SAE J602 DEC89 and incorporate lens mounted aiming pads or other aiming plane locators as specified for those units in Figures 27, 21, 22, 25 or 23 respectively in SAE J1383 DEC96. If so designed, no additional lens marking is necessary to designate the type of plate or dimensions.

**S8.5 On-vehicle mechanical aiming (VHAD).** Each headlamp system that is capable of being aimed by mechanical equipment installed on the vehicle shall include a Vehicle Headlamp Aiming Device (VHAD), providing for headlamp aim inspection and adjustment in both the vertical and horizontal axes, that conforms to the following requirements:

**S8.5.1 Vertical aim.** The VHAD shall include the necessary references and scales relative to the horizontal plane to assure correct vertical aim for photometry and aiming purposes. An off-vehicle measurement of the angle of the plane of the ground is permitted. In addition, an equal number of graduations from the "0" position representing angular changes in the axis in the upward and downward directions shall be provided.

(a) Each graduation shall represent a change in the vertical position of the mechanical axis not larger than 0.19 degree (2.54 mm at 7.61 m (1 in. at 25 ft)) to provide for variations in aim at least 1.2 degrees above and below the horizontal, and have an accuracy relative to the zero mark of less than 0.1 degree.

(b) The VHAD shall be marked to indicate headlamp aim movement in the upward and downward directions.

(c) Each graduation shall indicate a linear movement of the scale indicator of not less than 1.27 mm (0.05 in) if a direct reading analog indicator is used. If a remote reading indicator is provided, it shall represent the actual aim movement in a clear, understandable format.

(d) The vertical indicator shall perform through a minimum range of  $\pm 1.2$  degrees.

(e) Means shall be provided in the VHAD for compensating for deviations in floor slope less than 1.2 degrees from the horizontal that would affect the correct positioning of the headlamp for vertical aim.

(f) The graduations shall be legible under an illumination level not greater than 30 foot-candles, measured at the top of the graduation, by an observer having 20/20 vision (Snellen), and shall permit aim adjustment to within 0.19 degree (25.4 mm at 7.61 m (1 in. at 25 ft)).

**S8.5.2 Horizontal aim.** The VHAD shall include references and scales relative to the longitudinal axis of the vehicle necessary to assure correct horizontal aim for photometry and aiming purposes. An "0" mark shall be used to indicate alignment of the headlamps relative to the longitudinal axis of the vehicle. In addition, an equal number of graduations from the "0" position representing equal angular changes in the axis relative to the vehicle axis shall be provided.

(a) Each graduation shall represent a change in the horizontal position of the mechanical axis not greater than 0.38 degree (51 mm at 7.61 m (2 in. at 25 ft)) to provide for variations in aim at least 0.76 degree (102 mm at 7.61 m (4 in. at 25 ft.)) to the left and right of the longitudinal axis of the vehicle, and shall have an accuracy relative to the zero mark of less than 0.1 degree.

(b) The VHAD shall be marked to indicate headlamp aim movement in the left and right directions.

(c) The graduations shall be legible under an illumination level not greater than 30 foot-candles, measured at the top of the graduation, by an observer having 20/20 vision (Snellen), and shall permit aim adjustment to within 0.38 degree (51 mm at 7.61 m (2 in. at 25 ft.)).

(d) The horizontal indicator shall perform through a minimum range of  $\pm 0.76$  degree (102 mm at 7.61 m (4 in. at 25 ft.)); however, the indicator itself shall be capable of recalibration over a movement of  $\pm 2.5$  degrees relative to the longitudinal axis of the vehicle to accommodate any adjustment necessary for recalibrating the indicator after vehicle repair from accident damage.

**S8.5.3 Aiming labels and instructions.**

(a) The instructions for properly aiming the headlighting system using the VHAD shall be provided on a label permanently affixed to the vehicle adjacent to the VHAD, or in the vehicle operator's manual. The instructions shall advise that the headlighting system is properly aimed if the appropriate vertical plane (as defined by the vehicle manufacturer) is perpendicular to both the longitudinal axis of the vehicle, and a horizontal plane when the vehicle is on a horizontal surface, and the VHAD is set at "O" vertical and "O" horizontal.

(b) Should a remote indicator or a remote indicator and adjuster be provided, the instructions shall be placed in the operator's manual, and may also be placed on a label adjacent to the VHAD.

(c) Should the mechanism not meet the requirements of S8.3.1, a cautionary label shall be placed adjacent to the mechanism stating the caution and including either the reason for the caution or the corrective action necessary. Each such label shall also refer the reader to the vehicle operator's manual for complete instructions. Each such vehicle shall be equipped with an operator's manual containing the complete instructions appropriate for the mechanism installed.

**S8.5.4 Fixed VHAD calibration.** Each headlamp equipped with a VHAD that is manufactured for use on motor vehicles manufactured on or after September 1, 1998, shall be manufactured with the geometry of the VHAD devices permanently aligned with the beam pattern.

**S8.5.5 Testing the VHAD.**

**S8.5.5.1** The headlamp assembly (the headlamp(s) and the VHAD(s)) shall be mounted on a level goniometer, aligned to a photometer located not less than 18.3 m (60 ft) from the VHAD assembly. The assembly shall be mechanically aimed using the VHAD in accordance with the manufacturer's instructions as provided with the vehicle on which the VHAD is intended to be used. A  $\frac{1}{4}$  degree re-aim is permitted in any direction at any test point to allow for variations in readings between laboratories. The test shall be conducted in accordance with the photometry test procedures of paragraphs 5.1 and 5.1.4 of SAE J1383 DEC96. Under these conditions the mounted headlamp assembly shall be designed to conform to the photometric requirements appropriate for the headlamp system under test.

**S8.5.5.2** When tested in accordance with S8.5.5.1, with any complying replacement headlamp unit(s) or complying light sources intended for use in the system under test, the VHAD and headlamp system shall be designed to conform to the photometric performance requirements appropriate for the system under test.

**S8.5.5.3** With the same VHAD and associated headlamp(s) (or headlamp assembly) rigidly mounted in a headlamp test fixture, each graduation on the horizontal and vertical aim scales shall be checked and any variation from the correct aim shall not exceed  $\pm 0.2$  degree, and  $\pm 0.1$  degree respectively.

**S8.5.5.4** The calibration of the VHAD shall be maintained under the

following test conditions. The aimer shall be adjusted before each of the following tests to assure that the indicators are centered at 0 with the aiming plane horizontal and vertical and with the scale on the device set at 0.

(a) The VHAD and an unlighted headlamp assembly shall be stabilized at  $-7 \pm 3$  degrees C ( $20 \pm 5$  degrees F) in a circulating air environmental test chamber. After a period of 30 minutes, when measured at that soak temperature, the variation from correct horizontal or vertical aim shall not exceed  $\pm 0.2$  degree, and  $\pm 0.1$  degree, respectively.

(b) The VHAD, and the headlamp assembly with its highest wattage filament (or combination of filaments intended to be used simultaneously) energized at its design voltage, shall then be stabilized at  $38 \pm 3$  degrees C ( $100 \pm 5$  degrees F) in a circulating air environmental test chamber. After a period of 30 minutes, when measured at that soak temperature, the variation from correct horizontal and vertical aim shall not exceed  $\pm 0.2$  degree, and  $\pm 0.1$  degree, respectively.

(c) The VHAD and an unlighted headlamp assembly shall then be placed in a circulating air environmental test chamber and exposed to a temperature of  $60 \pm 3$  degrees C ( $140 \pm 5$  degrees F) for 24 hours, followed by a temperature of  $-40 \pm 5$  degrees C ( $-40 \pm 3$  degrees F) for 24 hours and then permitted to return to room temperature, after which the VHAD and headlamp assembly shall show no damage which would impair its ability to perform as specified herein. The variation from correct horizontal or vertical aim shall not exceed  $\pm 0.2$  degree, and  $\pm 0.1$  degree, respectively.

**S8.5.5.5** The same VHAD and headlamp assembly shall then be tested according to the corrosion test procedure of S8.5.3.

**S8.5.5.6** The same VHAD and headlamp assembly shall then be tested for photometric compliance as specified in S8.5.5.1 and S8.5.5.2.

**S8.6 Visual/optical aiming.** Each visually/optically aimable headlamp shall be designed to conform to the following requirements:

**S8.6.1 Vertical aim, lower beam.** Each lower beam headlamp shall have a cutoff in the beam pattern. It may be either on the left side or the right side of the optical axis, but once chosen for a particular headlamp system's design, the side chosen for the cutoff shall not be changed for any headlamps intended to be used as replacements for those system's headlamps.

**S8.6.1.1 Vertical position of cutoff:** The headlamp shall be aimed vertically

so that the cutoff is on the left side, at 0.4 degree down from the H-H line, or on the right side, at the H-H line.

**S8.6.1.2 Vertical gradient:** The gradient of the cutoff measured at either 2.5 degrees L or 2.0 degrees R shall be not less than 0.13 based on the procedure of S8.5.1.5.

**S8.6.1.3 Horizontal position of the cutoff:** The width shall be not less than two degrees, with not less than two degrees of its actual width centered at either 2.5 degrees L, or 2.0 degrees R.

**S8.6.1.4 Maximum inclination of cutoff:** The vertical location of the highest gradient at the ends of the minimum width shall be within  $\pm 0.2$  degree of the vertical location of the maximum gradient measured at the appropriate vertical line (at either 2.5 degrees L for a left-side cutoff, or 2.0 degrees R for a right-side cutoff.)

**S8.6.1.5 Measuring the cutoff parameter:**

(a) The headlamp shall be mounted on a fixture which simulates its actual design location on any vehicle for which the headlamp is intended. The fixture, with the headlamp installed shall be attached to the goniometer table in such a way that the fixture alignment axes are coincident with the goniometer axes. The headlamp shall be energized at the specified test voltage.

(b) The headlamp beam pattern shall be aimed with the cutoff at the H-H axis. There shall be no adjustment, shimming, or modification of the horizontal axis of the headlamp or test fixture, unless the headlamp is equipped with a VHAD. In this case the VHAD shall be adjusted to zero.

(c) A vertical scan of the beam pattern shall be conducted for a headlamp with a left-side gradient by aligning the goniometer on a vertical line at 2.5 degrees L and scanning from 1.5 degrees U to 1.5 degrees D. For a headlamp with a right-side gradient, a vertical scan of the beam pattern shall be conducted by aligning the goniometer on a vertical line at 2.0 degrees R and scanning from 1.5 degrees U to 1.5 degrees D.

(d) Determine the maximum gradient within the range of the scan by using the formula:  $G = \log E(\alpha) - \log E(\alpha + 0.1)$ , where "G" is the gradient, "E" is illumination and " $\alpha$ " is vertical angular position. The maximum value of the gradient "G" determines the vertical angular location of the cutoff. Perform vertical scans at 1.0 degree L and R of the measurement point of the maximum gradient to determine the inclination.

**S8.6.2 Horizontal aim, lower beam.** There shall be no adjustment of horizontal aim unless the headlamp is equipped with a horizontal VHAD. If

the headlamp has a VHAD, it shall be set to zero.

**S8.6.3 Vertical aim, upper beam.**

(a) If the upper beam is combined in a headlamp with a lower beam, the vertical aim of the upper beam shall not be changed from the aim set using the procedures of S8.6.1 and S8.6.2 used for the lower beam.

(b) If the upper beam is not combined in a headlamp with a lower beam, the vertical aim of the upper beam shall be adjusted so that the maximum beam intensity is located on the H-H axis.

**S8.6.4 Horizontal aim, upper beam.**

(a) If the upper beam is combined in a headlamp with a lower beam, the horizontal aim of the upper beam shall not be changed from the aim set using the procedures of S8.6.1 and S8.6.2 used for the lower beam.

(b) If the upper beam is not combined in a headlamp with the lower beam and has fixed horizontal aim or has a horizontal VHAD, then the headlamp shall be mounted on a fixture which simulates its actual design location on any vehicle for which the headlamp is intended. The fixture, with the headlamp installed shall be attached to the goniometer table in such a way that the fixture alignment axes are coincident with the goniometer axes. The headlamp shall be energized at  $12.8 \text{ V} \pm 20 \text{ mV}$ . There shall be no adjustment, shimming, or modification of the horizontal axis of the headlamp or test fixture, unless the headlamp is equipped with a VHAD. In this case the VHAD shall be adjusted to zero.

(c) If the upper beam is not combined in a headlamp with a lower beam, and it does not have a VHAD, the horizontal aim of the upper beam shall be adjusted so that the maximum beam intensity is located on the V-V axis.

**S8.6.5 Photometric Requirements and Measurement:**

(a) Instead of being designed to conform to the photometric requirements of Figures 15-1, 17-1, 27-1 or 28-1, a visually/optically aimable headlamp shall be designed to conform to the requirements of Figures 15-2, 17-2, 27-2 or 28-2 when tested in accordance with S8.6.5 (b) and SAE J575 JUN92, with the distance from the photometer to the headlamp no less than 18.3 m (60 ft).

(b) If the lower beam has a left side cutoff, reaim the headlamp vertically to place the maximum gradient found in S8.5 at 0.4 degree below the H-H line. For a headlamp with a lower beam right side cutoff, place the maximum gradient found in S8.5 at the H-H line. For an upper beam, the headlamp would already be aimed at the end of the procedure found in S8.5. A 0.25 degree

reaim is permitted in any direction at any test point.

**S8.6.6 Marking.**

**S8.6.6.1 Headlamp optical axis mark.** There shall be a mark or markings identifying the optical axis of the headlamp visible from the front of the headlamp when installed on the vehicle, to assure proper horizontal and vertical alignment of the aiming screen or optical aiming equipment with the headlamp being aimed. The manufacturer is free to choose the design of the mark or markings. The mark or markings may be on the interior or exterior of the lens or indicated by a mark or central structure on the interior or exterior of the headlamp.

**S8.6.6.2 Visual/optical aimability identification marks.**

(a) The lens of a lower beam headlamp shall be marked "VOL" if the headlamp is intended to be visually/optically aimed using the left side of the lower beam pattern.

(b) The lens of a lower beam headlamp shall be marked "VOR" if the headlamp is intended to be visually/optically aimed using the right side of the lower beam pattern.

(c) The lens of each sealed beam or integral beam headlamp shall be marked "VOR" if the headlamp is of a type that was manufactured before March 1, 1997, and if such headlamp type has been redesigned since then to be visually/optically aimable.

(d) The lens of a headlamp that is solely an upper beam headlamp and intended to be visually/optically aimed using the upper beam shall be marked "VO".

(e) Each letter used in marking according to this paragraph shall be not less than 3 mm. (0.118 in) high.

**S8.7 Replacement headlamps.**

**S8.7.1** If a headlamp using visual/optical aim or a VHAD is offered as a replacement for a headlamp using external mechanical aim, it shall have the same pattern of aiming pads as the original headlamp.

**S8.7.2** A headlamp using visual/optical aim may be offered as a replacement for a headlamp using a VHAD only if the replacement headlamp has a horizontal VHAD complying with S8.5.

**S8.7.3** A headlamp using a VHAD may be offered as a replacement for a headlamp using visual/optical aim.

**S9. Headlamp performance test procedures.**

**S9.0** The following is a table of contents of the test procedures for headlamp performance.

**S9.1** Photometry.

**S9.2** Abrasion.



- S9.3 Chemical resistance.
- S9.4 Corrosion.
- S9.5 Dust.
- S9.6 Temperature and internal heat tests.
- S9.7 Humidity.
- S9.8 Vibration.
- S9.9 Sealing.
- S9.10 Chemical and corrosion resistance of reflectors of replaceable lens headlamps

S9.1 *Photometry.* Each headlamp to which S9 applies shall be tested according to the test procedures of Paragraphs 5.1 and 5.1.4 of SAE Standard J1383 DEC96 and the applicable photometric requirements specified in S7.4 or S7.5, after each test specified in S9.2, S9.3, S9.5, S9.6.1, S9.6.2, S9.7, and S9.10.1 and S9.10.2, if applicable. A 1/4 degree reaim is permitted in any direction at any test point.

S9.2 *Abrasion.*

S9.2.1 A headlamp shall be mounted in the abrasion test fixture in the manner indicated in Figure 5 with the lens facing upward.

S9.2.2 An abrading pad meeting the requirements in S9.2.2 (c)(1) through (c)(4) shall be cycled back and forth (1 cycle) for 11 cycles at 100 mm  $\pm$  20 mm (4  $\pm$  0.8 in) per second over at least 80 percent of the lens surface, including all the area between the upper and lower aiming pads, but not including lens trim rings and edges.

S9.2.3(a) The abrading pad shall be not less than 25 mm  $\pm$  1 mm (1.0  $\pm$  .04 in) wide, constructed of 0000 steel wool, and rubber cemented to a rigid base shaped to the same vertical contour of the lens. The "grain" of the pad shall be perpendicular to the direction of motion.

(b) The abrading pad support shall be equal in size to the pad and the center of the support surface shall be within  $\pm$  2 mm ( $\pm$  .08 in) of parallel to the lens surface.

(c) The density of the abrading pad shall be such that when the pad is mounted to its support and is resting unweighted on the lens, the base of the pad shall be no closer than 3.2 mm (.125 in) to the lens at its closest point.

(d) When mounted on its support and resting on the lens of the test headlamp, the abrading pad shall then be weighted such that a pad pressure of 14  $\pm$  1 kPpa (2.0  $\pm$  .15 psi) exists at the center and perpendicular to the face of the lens.

S9.2.4 A pivot shall be used if it is required to follow the contour of the lens.

S9.2.5 Unused steel wool shall be used for each test.

S9.3 *Chemical resistance.*

S9.3.1 The entire exterior lens surface of the headlamp in the headlamp test fixture and top surface of

the lens-reflector joint shall be wiped once to the left and once to the right with a 150 mm (6 in) square soft cotton cloth (with pressure equally applied) which has been saturated once in a container with 60 ml (2 oz) of a test fluid as listed in S9.3.2. The lamp shall be wiped within 5 seconds after removal of the cloth from the test fluid.

S9.3.2 The test fluids are:

(a) ASTM Reference Fuel C, which is composed of Isooctane 50 percent volume and Toluene 50 percent volume. ASTM Reference Fuel C must be used as specified in OSHA Standard 29 CFR 1910.106—*Handling storage and use of flammable combustible liquids.*

(b) Tar remover (consisting by volume of 45 percent xylene and 55 percent petroleum base mineral spirits).

(c) Power steering fluid (as specified by the vehicle manufacturer for use in the motor vehicle on which the headlamp is intended to be installed).

(d) Windshield washer fluid consisting of 0.5 percent monoethanolamine with the remainder 50 percent concentration of methanol/distilled water by volume.

(e) Antifreeze (50 percent concentration of ethylene glycol/distilled water by volume).

S9.3.3 After the headlamp has been wiped with the test fluid, it shall be stored in its designed operating attitude for 48 hours at a temperature of 73 degrees F  $\pm$  7 degrees (23 degrees C  $\pm$  4 degrees) and a relative humidity of 30  $\pm$  10 percent. At the end of the 48-hour period, the headlamp shall be wiped clean with a soft dry cotton cloth and visually inspected.

S9.4 *Corrosion.*

(a) Prior to exposure, each terminal between the headlamp and its connector shall be tested with apparatus shown in Figure 11. The power source shall be set to provide 12.8 volts and the resistance shall be set to produce 10 amperes at each terminal and recorded. In the case of replaceable light source headlamps, the procedure may be performed with the light source removed from the headlamp. If necessary, holes may be made in the connector body or bulb base for access to the terminal. Such holes shall be plugged during the test procedure of paragraph (b) below, and reopened for the procedure of paragraph (c), below.

(b) The headlamp with connector attached to the terminals (but the rest of the apparatus of Figure 11 removed), unfixed and in its designed operating attitude with all drain holes, breathing devices or other designed openings in their normal operating positions, shall be subjected to a salt spray (fog) test in accordance with ASTM B117-73,

*Method of Salt Spray (Fog) Testing*, for 240 hours, consisting of ten successive 24-hour periods. During each period, the headlamp shall be mounted in the middle of the chamber and exposed for 23 hours to the salt spray. The spray shall not be activated during the 24th hour. The replaceable light source shall be removed from the headlamp and from the test chamber during the one hour of salt spray deactivation and reinserted for the start of the next test period, at the end of the first and last three 23-hour periods of salt spray exposure, and at the end of any two of the fourth through seventh 23-hour periods of salt-spray exposure. The test chamber shall be closed at all times except for a maximum of 2 minutes which is allowed for removal or replacement of the replaceable light source during each period. After the ten periods, the lens reflector unit without the bulb shall be immersed in deionized water for 5 minutes, then secured and allowed to dry by natural convection only.

(c) Using the voltage, resistance and pretest set up of subparagraph (a) the current in each terminal test circuit shall be measured after the salt spray exposure test conducted in subparagraph (b).

S9.5 *Dust.* The headlamp, mounted on a headlamp test fixture, with all drain holes, breathing devices or other designed openings in their normal operating positions, shall be positioned within a cubical box, with inside measurements of 900 mm (35.4 in) on each side or larger if required for adequate wall clearance, i.e., a distance of at least 150 mm (5.9 in) between the headlamp and any wall of the box. The box shall contain 4.5 kg (9.9 lb) of fine powdered cement which conforms to the ASTM C150-77 specification for Portland Cement. Every 15 minutes, the cement shall be agitated by compressed air or fan blower(s) by projecting blasts of air for a two-second period in a downward direction so that the cement is diffused as uniformly as possible throughout the entire box. This test shall be continued for five hours after which the exterior surfaces of the headlamp shall be wiped clean.

S9.6 *Temperature and internal heat tests.* A headlamp with one or more replaceable light sources shall be tested according to S9.6.1 and S9.6.2. Tests shall be made with all filaments lighted at design voltage that are intended to be used simultaneously in the headlamp and which in combination draw the highest total wattage. These include but are not limited to filaments used for turn signal lamps, fog lamps, parking lamps, and headlamp lower beams

lighted with upper beams when the wiring harness is so connected on the vehicle. If a turn signal is included in the headlamp assembly, it shall be operated at 90 flashes a minute with a  $75 \pm 2$  percent current "on time." If the lamp produces both the upper and lower beam, it shall be tested in both the upper beam mode and the lower beam mode under the conditions above described, except for a headlamp with a single Type HB1 or HB2 light source.

**S9.6.1 Temperature cycle.** A headlamp, mounted on a headlamp test fixture, shall be subjected to 10 complete consecutive cycles having the thermal cycle profile shown in Figure 6. During the hot cycle, the lamp, shall be energized commencing at point "A" of Figure 6 and de-energized at point "B." Separate or single test chambers may be used to generate the environment of Figure 6. All drain holes, breathing devices or other openings or vents of the headlamps shall be in their normal operating positions.

**S9.6.2 Internal Heat Test.**

(a) The headlamp lens surface that would normally be exposed to road dirt shall be uniformly sprayed with any appropriate mixture of dust and water or other materials to reduce the photometric output at the H-V test point of the upper beam (or the 1/2D-1 1/2R test point of the lower beam as appropriate) to  $25 \pm 2$  percent of the output originally measured in the photometric test conducted pursuant to S7.4.2 or S7.5.2, as applicable. A headlamp with a single light source having two filaments shall be tested on the upper beam only. Such reduction shall be determined under the same conditions as that of the original photometric measurement.

(b) After the photometric output of the lamp has been reduced as specified in 9.6.(a), the lamp and its mounting hardware shall be mounted in an environmental chamber in a manner similar to that indicated in Figure 7 "Dirt/Ambient Test Setup." The headlamp shall be soaked for one hour at a temperature of  $35 + 4 - 0$  degrees C ( $95 + 7 - 0$  degrees F) and then the lamp shall be energized according to S8.6 for one hour in a still air condition, allowing the temperature to rise from the soak temperature.

(c) The lamp shall be returned to a room ambient temperature of  $23 + 4 - 0$  degrees C ( $73 + 7 - 0$  degrees F) and a relative humidity of  $30 \pm 10$  percent and allowed to stabilize to the room ambient temperature. The lens shall then be cleaned.

**S9.7 Humidity.**

(a) The test fixture consists of a horizontal steel plate to which three

threaded steel or aluminum rods of nominal 13 mm (0.5 in) diameter are screwed vertically behind the headlamp. The headlamp assembly is clamped to the vertical rods, which are behind the headlamp. All attachments to the headlamp assembly are made behind the lens and vents or openings, and are not within 51 mm (2 in) laterally of a vent inlet or outlet.

(b) The mounted headlamp assembly is oriented in its design operating position, and is placed in a controlled environment at a temperature of  $38 + 4 - 0$  degrees C ( $100 + 7 - 0$  degrees F) with a relative humidity of not less than 90 percent. All drain holes, breathing devices, and other openings are in their normal operation positions for all phases of the humidity test. The headlamp shall be subjected to 24 consecutive 3-hour test cycles. In each cycle, it shall be energized for 1 hour at design voltage with the highest combination of filament wattages that are intended to be used, and then de-energized for 2 hours. If the headlamp incorporates a turn signal, it shall flash at 90 flashes per minute with a  $75 \pm 2$  percent current "on-time."

(c) Within 3 minutes after the completion of the 24th cycle, the air flow test will begin. The following shall occur: the mounted assembly shall be removed, placed in an insulating box and covered with foam material so that there is no visible air space around the assembly; the box shall be closed, taken to the air flow test chamber, and placed within it. Inside the chamber, the assembly with respect to the air flow, shall be oriented in its design operating position. The assembly is positioned in the chamber so that the center of the lens is in the center of the opening of the air flow entry duct during the test. The headlamp has at least 75 mm (3 in) clearance on all sides, and at least 100 mm (4 in) to the entry and exit ducts at the closest points. If vent tubes are used which extend below the lamp body, the 75 mm (3 in) are measured from the bottom of the vent tube or its protection. The temperature of the chamber is  $23 + 4 - 0$  degrees C ( $73 + 7 - 0$  degrees F) with a relative humidity of  $30 + 10 - 0$  percent. The headlamp is not energized.

(d) Before the test specified in S9.7(e) the uniformity of the air flow in the empty test chamber at a plane 100 mm (4 in) downstream of the air entry duct shall have been measured over a 100 mm (4 in) square grid. The uniformity of air flow at each grid point is  $\pm 10$  percent of the average air flow specified in S9.7(e) of this paragraph.

(e) The mounted assembly in the chamber shall be exposed, for 1 hour to an average air flow of  $100 + 0 - 10$  m/min

( $330 + 0 - 30$  ft/min) as measured with an air velocity measuring probe having an accuracy of  $\pm 3$  percent in the 100 m/min (330 ft/min) range. The average air flow is the average of the velocity recorded at six points around the perimeter of the lens. The six points are determined as follows: at the center of the lens, construct a horizontal plane. The first two points are located in the plane, 25 mm (1 in) outward from the intersection of the plane and each edge of the lens. Then, trisect the distance between these two points and construct longitudinal vertical planes at the two intermediate locations formed by the trisection. The four remaining points are located in the vertical planes, 25 mm (1 in) above the top edge of the lens, and 25 mm (1 in) below the bottom edge of the lens.

(f) After one hour, the headlamp is removed and inspected for moisture.

**S9.8 Vibration.** A vibration test shall be conducted in accordance with the procedures of SAE J2139 JAN94 *Tests for Lighting Devices and Components Used on Vehicles 2032 mm or More in Overall Width*, and the following: the table on the adapter plate shall be of sufficient size to completely contain the test fixture base with no overhang. The vibration shall be applied in the vertical axis of the headlamp system as mounted on the vehicle. The filament shall not be energized.

**S9.9 Sealing.** An unfixtured headlamp in its design mounting position shall be placed in water at a temperature of  $60 \pm 3$  degrees C ( $176 \pm 5$  degrees F) for 1 hour. The headlamp shall be energized in its highest wattage mode, with the test voltage at  $12.8 \pm 0.1$  V. during immersion. The lamp shall then be de-energized and immediately submerged in its design mounting position into water at  $0 + 3 - 0$  degrees C ( $32 + 5 - 0$  degrees F). The water shall be in a pressurized vessel, and the pressure shall be increased to 70 kPa (10 psi), upon placing the lamp in the water. The lamp shall remain in the pressurized vessel for a period of 30 minutes. This entire procedure shall be repeated for four cycles. Then the lamp shall be inspected for any signs of water on its interior. During the high temperature portion of the cycles, the lamp shall be observed for signs of air escaping from its interior. If any water occurs on the interior or air escapes, the lamp is not a sealed lamp.

**S9.10 Chemical and corrosion resistance of reflectors of replaceable lens headlamps.**

**S9.10.1 Chemical resistance.**

(a) With the headlamp in the headlamp test fixture and the lens removed, the entire surface of the reflector that receives light from a

headlamp light source shall be wiped once to the left and once to the right with a 150 mm (6 in) square soft cotton cloth (with pressure equally applied) which has been saturated once in a container with 60 ml (2 oz) of one of the test fluids listed in S9.10.1(b). The lamp shall be wiped within 5 seconds after removal of the cloth from the test fluid.

(b) The test fluids are tar remover (consisting by volume of 45 percent xylene and 55 percent petroleum base mineral spirits); mineral spirits; and fluids other than water contained in the manufacturer's instructions for cleaning the reflector.

(c) After the headlamp has been wiped with the test fluid, it shall be stored in its designed operating attitude for 48 hours at a temperature of  $23 \text{ degrees C} \pm 4 \text{ degrees}$  ( $73 \text{ degrees F} \pm 7 \text{ degrees}$ ) and a relative humidity of  $30 \pm 10$  percent. At the end of the 48-hour period, the headlamp shall be wiped clean with a soft dry cotton cloth and visually inspected.

#### S9.10.2 Corrosion.

(a) The headlamp with the lens removed, unfixtured and in its designed operating attitude with all drain holes, breathing devices or other designed openings in their normal operating positions, shall be subjected to a salt spray (fog) test in accordance with ASTM B117-73, *Method of Salt Spray (Fog) Testing*, for 24 hours, while mounted in the middle of the chamber.

(b) Afterwards, the headlamp shall be stored in its designed operating attitude for 48 hours at a temperature of  $23 \text{ degrees C} \pm 4 \text{ degrees}$  ( $73 \text{ degrees F} \pm 7 \text{ degrees}$ ) and a relative humidity of  $30 \pm 10$  percent and allowed to dry by natural convection only. At the end of the 48-hour period, the reflector shall be cleaned according to the instructions supplied with the headlamp manufacturer's replacement lens, and inspected. The lens and seal shall then be attached according to these instructions and the headlamp tested for photometric performance.

#### S10. Headlamp concealment devices.

S10.1 While the headlamp is illuminated, its fully-opened headlamp concealment device shall remain fully opened should any loss of power to or within the headlamp concealment device occur.

S10.2 Whenever any malfunction occurs in a component that controls or conducts power for the actuation of the headlamp concealment device shall be capable of being fully opened by a means not requiring the use of any tools. Thereafter, the headlamp concealment device must remain fully opened until intentionally closed.

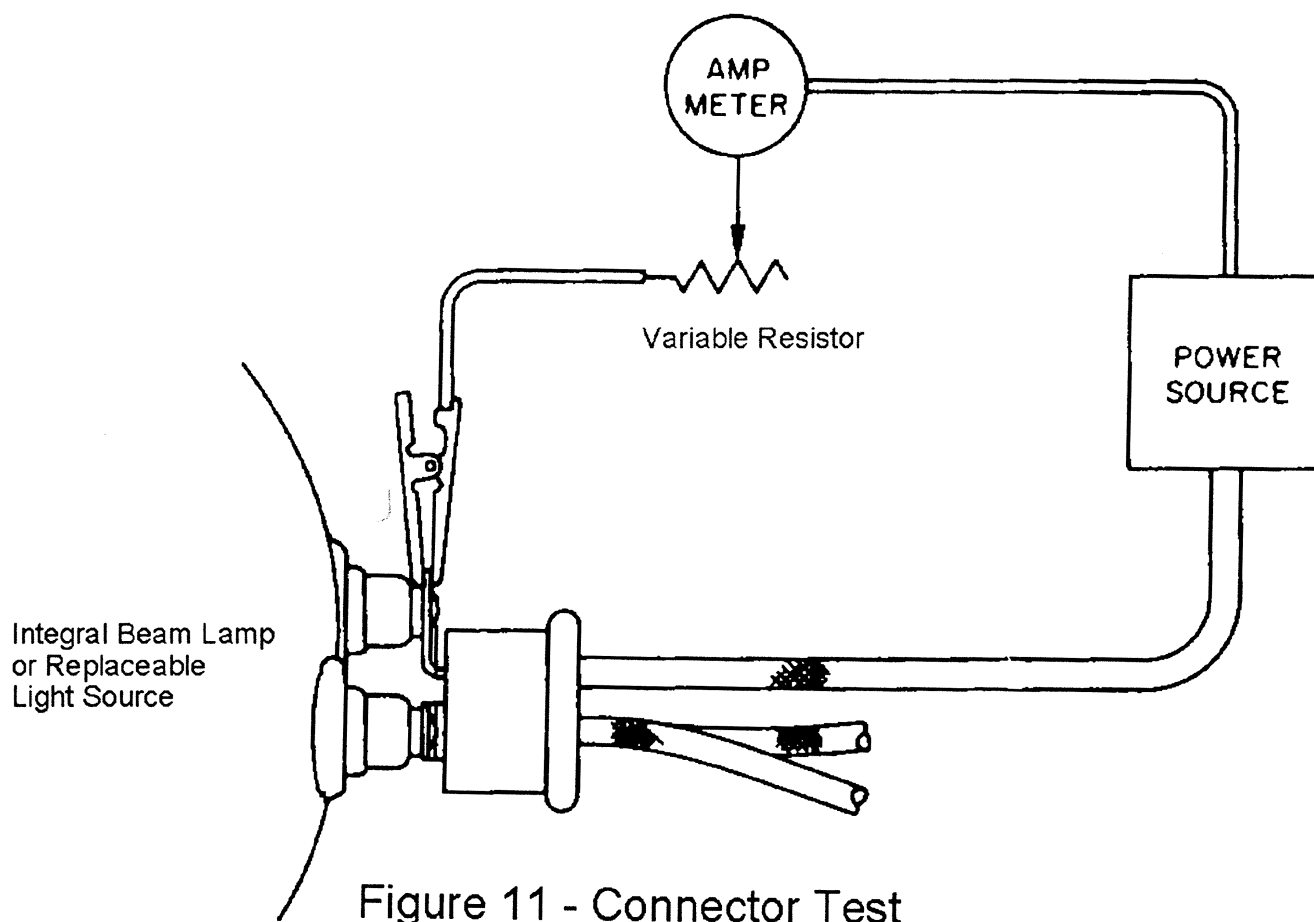
S10.3 Except for malfunctions covered by S10.2, each headlamp concealment device shall be capable of being fully opened and the headlamps illuminated by actuation of a single switch, lever, or similar mechanism,

including a mechanism that is automatically actuated by a change in ambient light conditions.

S10.4 Each headlamp concealment device shall be installed so that the headlamp may be mounted, aimed, and adjusted without removing any component of the device, other than components of the headlamp assembly.

S10.5 Except for cases of malfunction covered by S10.2, each headlamp concealment device shall, within an ambient temperature range of  $-29 \text{ degrees C}$  to  $+49 \text{ degrees C}$  ( $-20 \text{ degrees F}$  to  $+120 \text{ degrees F}$ ), be capable of being fully opened in not more than 3 seconds after the actuation of the headlighting control.

S11. *Photometric test of DRL.* A lamp that is wired in accordance with S5.5.11, shall be tested for compliance with S5.5.11(a)(1) in accordance with the test method specified for photometric testing in SAE Standard J575 JUN92 when a test voltage of  $12.8\text{V} \pm 20 \text{ mV}$  is applied to the input terminals of the lamp switch module or voltage-reducing equipment, whichever is closer to the electrical source on the vehicle. The test distance from the lamp to the photometer shall be not less than 18.3 m (60 ft), if the lamp is optically combined with a headlamp, or is a separate lamp, and not less than 3 m (9.75 ft), if the lamp is optically combined with a lamp, other than a headlamp, that is required by this standard.



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[Insert Figure 11 ]

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BILLING CODE 4910-59-P

Issued on: November 4, 1998.

**James R. Hackney,***Acting Associate Administrator for Safety  
Performance Standards.*

[FR Doc. 98-29921 Filed 11-10-98; 8:45 am]

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**DEPARTMENT OF COMMERCE****National Oceanic and Atmospheric  
Administration****50 CFR Part 622**[Docket No. 981006253-8253-01; I.D.  
082698D]

RIN 0648-AK05

**Fisheries of the Caribbean, Gulf of  
Mexico, and South Atlantic; Snapper-  
Grouper Fishery off the Southern  
Atlantic States; Amendment 9****AGENCY:** National Marine Fisheries  
Service (NMFS), National Oceanic andAtmospheric Administration (NOAA),  
Commerce.**ACTION:** Proposed rule; request for  
comments.

**SUMMARY:** NMFS issues this proposed rule to implement Amendment 9 to the Fishery Management Plan for the Snapper-Grouper Fishery of the South Atlantic Region (FMP). This proposed rule would increase the minimum size for red porgy, black sea bass, gag, and black grouper for all participants in the fishery; increase the minimum size for vermilion snapper for a person subject to the bag limit; establish bag limits for red porgy and black sea bass; during March and April, prohibit harvest and possession in excess of the bag limit and prohibit purchase and sale of red porgy, gag grouper, and black grouper; for greater amberjack, reduce the bag limit, establish a commercial quota and trip limit, prohibit sale of greater amberjack caught under the bag limit when the commercial fishery is closed, prohibit harvest and possession in excess of the bag limit during April, change the beginning of the fishing year to May 1, and prohibit coring (i.e., removing the head from the carcass); restrict possession of gag and black grouper

within the aggregate grouper bag limit; establish an aggregate bag limit for all snapper-grouper species currently not under a bag limit (excluding tomtate and blue runner); require escape vents and escape panels with degradable hinges and fasteners in black sea bass pots; and specify that a vessel with longline gear on board may only possess certain deep-water species of snapper-grouper (i.e., snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish.) The intended effect of this rule is to reduce overfishing and to conserve and manage these snapper-grouper species.

**DATES:** Written comments must be received on or before December 28, 1998.

**ADDRESSES:** Comments on this proposed rule or on the initial regulatory flexibility analysis (IRFA) should be sent to the Southeast Regional Office, NMFS, 9721 Executive Center Drive N., St. Petersburg, FL 33702.

Comments regarding the collection-of-information requirements contained in this rule should be sent to Edward E. Burgess, Southeast Regional Office, NMFS, 9721 Executive Center Drive N.,