AUTOMOTIVE INDUSTRY STANDARD

Performance Requirements for Rear Fog Lamps for Motor Vehicles

(Revision 1)

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AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER
CENTRAL MOTOR VEHICLE RULES – TECHNICAL STANDING COMMITTEE

SET-UP BY
MINISTRY OF ROAD TRANSPORT & HIGHWAYS
(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)
GOVERNMENT OF INDIA

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Status chart of the standard to be used by the purchaser for updating the record

Sr. No.	Corrigenda.	Amendment	Revision	Date	Remark	Misc.
General remarks :						

INTRODUCTION

0.1 The Government of India felt the need for a permanent agency to expedite the publication of standards and development of test facilities in parallel when the work on the preparation of the standards is going on, as the development of improved safety critical parts can be undertaken only after the publication of the standard and commissioning of test facilities. To this end, the erstwhile Ministry of Surface Transport (MOST) has constituted a permanent Automotive Industry Standards Committee (AISC) vide order No. RT-11028/11/97-MVL dated September 15, 1997. The standards prepared by AISC will be approved by the permanent CMVR Technical Standing Committee (CTSC). After approval, the Automotive Research Association of India, (ARAI), Pune, being the Secretariat of the AIS Committee, has published this standard. For better dissemination of this information ARAI may publish this document on their Web site.

0.2 Accordingly AIS-012 covering performance requirements of lighting and light-signalling devices for motor vehicles having more than three wheels, trailers and semi-trailers has been published in 2004 and implemented thereafter in 2005.

With technological advancement in lighting and light-signalling devices and updation in ECE regulations, AIS-012 was taken up for revision and now is prepared in ten parts. This part covers performance requirements for rear fog lamps for motor vehicles.

0.3 While preparing this standard considerable assistance has been derived from following ECE regulation.

ECE R 38 Amd. 4 Supplement 14 to the original version of the Standard: Date of entry into force: 15 Oct. 2008	Uniform Provisions Concerning the Approval of Rear Fog Lamps for Power-Driven Vehicles and their Trailers

0.4 The following standards contain provisions, which through reference in this text constitute provisions of the standard.

AIS-053:2005	Automotive Vehicles - Types - Terminology
AIS-008 (Rev.1): 2010	Installation Requirements of Lighting and Light-signalling Devices for Motor Vehicle having more than Three Wheels, Trailer and Semi-trailer excluding Agricultural Tractor and Special Purpose Vehicle
AIS-034 (Part 1) (Rev. 1):2010	Provisions concerning the Approval of Filament Lamps for use in Approved Lamp Units on Power Driven Vehicles and their Trailers
AIS-010 (Part 5) (Rev. 1):2010	Requirements of Chromaticity Co-ordinates of Colour of Light Emitted from Lighting and Light-signalling Devices

AIS-037:2004	Procedure for Type Approval and Establishing Conformity of Production for Safety Critical Components

0.5 The AISC panel and Automotive Industry Standards Committee (AISC) responsible for preparation of this standard are given in Annex F and Annex G respectively.

Performance Requirements for Rear Fog Lamps for Motor Vehicles

Performance Requirements for Rear Fog Lamps for Motor Vehicles

0. SCOPE

This standard applies to rear fog lamps for vehicles of categories L, M, N, T and A[1/]

Note: The permission to use rear fog lamps covered by this standard are governed by requirements specified by the standard for installation of requirements of that category of vehicles.

1. DEFINITIONS

For the purpose of this standard,

1.1. The definitions given in AIS-008(Rev.1) and its amendments in force at the time of application for type approval shall apply to this standard.

1.2. **"Rear fog lamp"** means a lamp used to make the vehicle more easily visible from the rear by giving a red signal of greater intensity than the rear position (side) lamps;

1.3. **"Rear fog lamps of different types"** means lamps which differ in such essential respects as:

(a) the trade name or mark;

(b) The characteristics of the optical system; (levels of intensity, light distribution angles, category of filament lamp, light source module, etc.);

(c) The variable intensity control, if any.

A change of the colour of the filament lamp or the colour of any filter does not constitute a change of type.

1.4. References made in this standard for filament lamps shall be referred to AIS-034 (Part 1)(Rev. 1) and its amendments at the time of application for type approval.

2. APPLICATION FOR APPROVAL

2.1. The application for approval shall be submitted by the applicant. It shall specify whether the device produces steady luminous intensity or whether the device produces variable luminous intensity (See Annex A).

At the choice of the applicant, it will specify that the device may be installed on the vehicle with different inclinations of the reference axis in respect to the vehicle reference planes and to the ground or rotate around its reference axis; these different conditions of installation shall be indicated in the application.

1/ As defined in AIS-053: Automotive Vehicles - Types - Terminology

2.2. For each type of rear fog lamp, the application shall be accompanied by:

2.2.1. drawings, in triplicate, in sufficient detail to permit identification of the type of the rear fog lamp and showing geometrically the position(s) in which the rear fog lamp may be fitted to the vehicle; the axis of observation to be taken as the axis of reference in the tests (horizontal angle H = 0°; vertical angle V = 0°); and the point to be taken as the centre of reference in the said tests;

2.2.2. a brief technical description stating, in particular, with the exception of lamps with non-replaceable light sources:

(a) The category or categories of filament lamp(s) prescribed; this filament lamp category shall be one of those contained in AIS-034 (Part 1)(Rev. 1) and its amendments in force at the time of application for type approval; and/or

(b) The light source module specific identification code.

(c) For a rear fog lamp of category F2, a concise description of the variable intensity control.

2.2.3. two samples; if the rear fog lamp cannot be mounted indiscriminately on either side of the vehicle, the two samples submitted may be identical and be suitable for mounting only on the right or only on the left side of the vehicle. For a rear fog lamp of category F2, the application shall also be accompanied by the variable intensity control or a generator providing the same signal(s).

3. MARKINGS

The samples of a type of rear fog lamp submitted for approval shall:

3.1. bear the trade name or mark of the lamp manufacturer; this marking shall be clearly legible and be indelible;

3.2 With the exception of lamps with non-replaceable light sources bear a clearly legible and indelible marking indicating:

- the category or categories of filament lamp prescribed; and/or
- the light source module specific identification code.

3.3 Reserved

3.4 In the case of lamps with an electronic light source control gear or a variable intensity control and/or non-replaceable light sources or light source module(s), bear the marking of the rated voltage or range of voltage and rated maximum wattage.

3.5. In the case of lamps with light source module(s), the light source module(s) shall bear:

3.5.1. The trade name or mark of the lamp manufacturer; this marking shall be clearly legible and indelible;

3.5.2. The specific identification code of the module; this marking shall be clearly legible and indelible. This specific identification code shall comprise the starting letters "MD" for MODULE, in the case several non identical light source modules are used, followed by additional symbols or characters; this specific identification code shall be shown in the drawings mentioned in paragraph 2.2.1.above.

The approval marking does not have to be the same as the one on the lamp in which the module is used, but both markings shall be from the same lamp manufacturer.

3.5.3 The marking of the rated voltage or range of voltage and rated maximum wattage.

3.6. An electronic light source control gear or a variable intensity control being part of the lamp but not included into the lamp body shall bear the name of the manufacturer and its identification number.

3.7. On the prototype for type approval, the markings may be provided by suitable temporary methods and need not necessary be obtained from the tools used for series production.

4. APPROVAL

4.1. If the two samples of a type of rear fog lamp meet the requirements of this standard, approval shall be granted.

4.2 to 4.7 Reserved clauses

5. GENERAL SPECIFICATIONS

5.1. Each sample shall conform to the specifications set forth in the paragraphs below.

5.2. Rear fog lamps shall be so designed and constructed that in normal use, despite the vibration to which they may then be subjected, they continue to function satisfactorily and retain the characteristics prescribed by this standard.

5.3. In the case of light source modules, it shall be checked that:

5.3.1. The design of the light source module(s) shall be such as:

(a) That each light source module may only be fitted in no other position than the designated and correct one and may only be removed with the use of tool(s);

(b) If there are more than one light source module used in the housing for a device, light source modules having different characteristics can not be interchanged within the same lamp housing.

5.3.2. The light source module(s) shall be tamperproof.

5.4. In the case of failure of the variable intensity control regulating the variable luminous intensity of a rear fog lamp of category F2 emitting more than the maximum value of category F or F1, requirements of steady luminous intensity of category F or F1 shall be fulfilled automatically.

5.5 In the case of replaceable filament lamp(s):

5.5.1. Any category or categories of filament lamp(s) approved according to AIS-034 (Part 1) (Rev. 1) may be used, provided that no restriction on the use is made in AIS-034 (Part 1)(Rev. 1) and its amendments in force at the time of application for type approval.

5.5.2. The design of the device shall be such that the filament lamp may be fixed in no other position but the correct one.

5.5.3. The filament lamp holder shall conform to the characteristics given in IEC Publication 60061. The holder data sheet relevant to the category of filament lamp used, applies.

6. INTENSITY OF LIGHT EMITTED

6.1 The intensity of the light emitted by each of the two samples shall be not less than the minima and not greater than the maxima specified below and shall be measured in relation to the axis of references in the directions shown below (expressed in degrees of angle with the axis of reference).

6.2 The intensity along the H and V axes, between 10° to the left and 10° to the right and between 5° up and 5° down, shall not be less than 150 cd.

6.3 The intensity of the light emitted in all directions in which the light(s) may be observed shall not exceed 300 cd for a device with steady luminous intensity (F or F1) and 840 cd for a device with variable luminous intensity (F2).

6.4 In the case of a single lamp containing more than one light source, the lamp shall comply with the minimum intensity required when any one light source has failed and when all light sources are illuminated the maximum intensities shall not be exceeded.

6.5 The variable intensity control shall not generate signals which cause luminous intensities:

6.5.1. Outside the range specified in paragraphs 6.2. and 6.3. above and

6.5.2. Exceeding the category F or F1 maximum specified in paragraph 6.3:

(a) for systems depending only on daytime and night time conditions: under night time Conditions;

(b) For other systems: under standard conditions[1/]

1/ Good visibility (meteorological optical range MOR > 2,000 m defined according to WMO, Guide to Meteorological Instruments and Methods of Observation, Sixth Edition, ISBN: 92-63-16008-2, pp 1.9.1/1.9.11, Geneva 1996.) and clean lens.

6.6 The apparent surface in the direction of the reference axis shall not exceed 140 cm^2.

6.7 Annex C gives particulars of the measurement method to be used in case of doubt.

7. TEST PROCEDURE

7.1 All measurements, photometric and colorimetric, shall be made:

7.1.1. In the case of a lamp with replaceable light source, if not supplied by an electronic light source control gear or a variable intensity control, with an uncolored or colored standard filament lamp of the category prescribed for the device, supplied with the voltage necessary to produce the reference luminous flux required for that category of filament lamp.

7.1.2. In the case of a lamp equipped with non-replaceable light sources (filament lamps and other), at 6.75 V, 13.5 V or 28.0 V respectively.

7.1.3. In the case of a system that uses an electronic light source control gear or a variable intensity control being part of the lamp[1/] applying at the input terminals of the lamp the voltage declared by the manufacturer or, if not indicated, 6.75 V, 13.5 V or 28.0 V respectively.

7.1.4. In the case of a system that uses an electronic light source control gear or a variable intensity control, not being part of the lamp the voltage declared by the manufacturer shall be applied to the input terminals of the lamp.

7.2 The test laboratory shall require from the manufacturer the light source control gear or a variable intensity control needed to supply the light source and the applicable functions.

7.3 However in the case of a rear fog lamp of category F2 operated by a variable intensity control to obtain variable luminous intensity, photometric measurements shall be performed according to the applicant's description.

7.4 The voltage to be applied to the lamp shall be informed by the lamp manufacturer during application for approval.

7.5 For any lamp except those equipped with filament lamps, the luminous intensities, measured after one minute and after 30 minutes of operation, shall comply with the minimum and maximum requirements. The luminous intensity distribution after one minute of operation may be calculated from the luminous intensity distribution after 30 minutes of operation by applying at each test point the ratio of luminous intensities measured at HV after one minute and after 30 minutes of operation.

7.6 The limits of the apparent surface in the direction of the reference axis of a light signalling device shall be determined.

1/ For the purpose of this standard "being part of the lamp" means to be physically included in the lamp body or to be external, separated or not, from the lamp body but supplied by the lamp manufacturer as part of the lamp system.

8. HEAT RESISTANCE TEST

8.1 The lamp shall be subjected to a one-hour test of continuous operation following a warm-up period of 20 minutes. The ambient temperature shall be 23º C ± 5º C. The lamp used shall be a lamp of the category prescribed for the lamp, and shall be supplied with a current at a voltage such that it gives the specified average power at the corresponding test voltage.

8.2 Where only the maximum power is specified, the test shall be carried out by regulating the voltage to obtain a power equal to 90 per cent of the specified power. The specified average or maximum power referred to above shall in all cases be chosen from the voltage range of 6, 12 or 24 V at which it reaches the highest value.

8.3 In the case of light sources operated by an electronic control gear to obtain variable luminous intensity, the test shall be carried out under the conditions given at minimum 90 per cent of the higher luminous intensity.

8.4 After the lamp has been stabilized at the ambient temperature, no distortion, deformation, cracking or colour modification shall be perceptible.

9. COLOUR OF LIGHT EMITTED

9.1. The colour of the light emitted shall be red.

9.2. The colour of the light emitted inside the field of the light distribution grid defined in paragraph C3 of Annex C shall be within the limits of the coordinates prescribed in para 5, AIS-010 (Part 5)(Rev. 1).

It shall be measured under the conditions as prescribed in paragraph 7. Outside this field, no sharp variations of colour shall be observed However, for lamps equipped with non-replaceable light sources (filament lamps and other), the colorimetric characteristics should be verified with the light sources present in the lamp, in accordance with relevant sub-paragraph of paragraph 7.1. of this standard.

10. CONFORMITY OF PRODUCTION

10.1. Every device bearing an approval mark as prescribed under this standard shall conform to the type approved and shall comply with the requirements of this standard. However, in the case of a device picked at random from series production, the requirements as to the respectively, minimum and maximum intensities of the light emitted shall be as specified in paragraph 6.2 and 6.3 of this standard.

10.2 The conformity of production procedures shall comply with those set out in the AIS-037 with the following requirements:

10.2.1 During the verification as per 10.2, if tests are required, the following tests shall be carried out:

10.2.1.1 Intensity of light emitted (See 6).

10.2.1.2 Colour of light emitted (See 9).

10.3 Devices with apparent defects are disregarded.

10.4 The reference mark is disregarded.

10.5 The normal frequency of these verifications shall be once every two years.

11. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

11.1. Penalties for non-conformity of production shall be as prescribed in AIS-037.

11.2. Reserved.

12. Reserved

13. Reserved

14. MODIFICATIONS OF THE TYPE OF REAR FOG LAMP AND EXTENSION OF APPROVAL

14.1. Every modification pertaining to the information, even if the changes are not technical in nature shall be intimated by the applicant to the testing agency.

If the changes are in parameters not related to the provisions, no further action need be taken.

If the changes are in parameters related to the provisions, the testing agency, which has issued the certificate of compliance, shall then consider, whether,

14.1.1. The device with the changed specifications still complies with provisions, or

14.1.2. Any further verification is required to establish compliance.

14.2 For considering whether testing is required or not, guidelines given in 14.5 (Criteria for Extension of Approval) shall be used.

14.3. In case of 14.1.2, tests for only those parameters which are affected by the modifications need be carried out

14.4 In case of fulfilment of criterion of 14.1.1 or after results of further verification as per 14.1.2 are satisfactory, the approval of compliance shall be extended for the changes carried out.

14.5 Criteria for extension of approval

The criteria shall be as agreed between the testing agency and applicant.

15. TRANSITIONAL PROVISION

15.1 At the request of the applicant, type approvals for compliance to AIS-012(Part 2) (Rev.1): 2011, shall be granted by testing agencies from 22nd February 2011 (date of adoption of this standard in CMVR-TSC). Such type approvals shall be deemed to be compliance to Annex J1, J2,J3 of AIS-012:2004.

15.2 At the request of applicant, type approval to the compliance to Annex J1, J2, J3 AIS-012: 2004 shall be granted up to the notified date of implementation of AIS-012(Part 2) (Rev.1):2011.

15.3 Type approvals issued for compliance to Annex J1, J2, J3 of AIS-012: 2004 shall be extended to approval of AIS-012(Part 2) (Rev.1):2011 subject to satisfactory compliance of the following:

15.3.1 Marking as per 3.0 applicable for marking.

15.3.2 In case of "E"/"e" approved devices, requirements specified in 16.

15.3.3 Photometric requirements, in particular those prescribed in 7.1 of this standard.

Note: Additional verification for the above need not be carried out, if compliance to the above requirements has already been established during the type approval as per Annex J1, J2, J3 of AIS-012:2004.

15.4 Extension of Approvals for engineering and administrative changes:

15.4.1 In the case of 15.1**,** extensions shall be granted subject to the conditions of AIS-012 (Part 2) (Rev.1):2011. Such extensions shall be deemed to be compliance to AIS-012:2004.

15.4.2 In the case of 15.2**,** extensions shall be granted subject to conditions of AIS-012:2004 till the notified date of implementation of AIS-012 (Part 2) (Rev.1):2011.

15.5 Type approvals for compliance to AIS-037**,** already been granted, shall continue to be valid for AIS-012 (Part 2)(Rev.1):2011.

Note : Necessary corrections to the reference of verification reports as per this standard shall be incorporated while issuing the next COP certificate. In the meantime for issuing of vehicle certificate, test/verification report as per this standard shall deemed to be the proof of compliance of AIS-037.

16. ESTABLISHING COMPLIANCE OF "E"/"e" APPROVED REAR FOG LAMPS TO THIS STANDARD

16.1. As an exception to 7.4 of AIS-037, (or related administrative decisions) for certifying compliance of "E"/"e" approved rear fog lamps to this standard, the test for the following shall be carried out by testing agency

16.1.1. Photometric requirements measured shall be specified in 7. within the limits specified.

16.1.2 Colorimetric requirements shall be specified in 9. within the limits specified.

ANNEX A

(See 2.0)

APPLICATION FOR APPROVAL

Technical Information to be submitted by the Applicant at the time of Approval

A 1. Manufacturer's name and address

A 2. Telephone No

A 3. FAX. No.

A 4. E mail address

A 5. Contact person

A 6. Plant/(s) of manufacture.

A 7. The intended function(s) of the device.

A 7.1 Whether the device produces steady luminous intensity or variable luminous intensity.

ANNEX B

(Reserved)

ANNEX C

(See 6.7)

PHOTOMETRIC MEASUREMENTS

C.1. When photometric measurements are taken, stray reflex ions shall be avoided by appropriate masking.

C.2. In the event that the results of measurements are challenged, measurements shall be taken in such a way as to meet the following requirements:

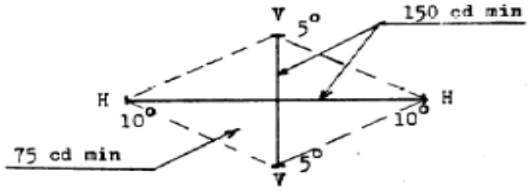
C2.1. the distance of measurement shall be such that the law of the inverse of the square of the distance is applicable;

C2.2. the measuring equipment shall be such that the angle subtended by the receiver from the reference centre of the light is between 10' and 1°;

C2.3. the intensity requirement for a particular direction of observation shall be satisfied if the required intensity is obtained in a direction deviating by not more than one-quarter of a degree from the direction of observation.

C.3. In the case where the device may be installed on the vehicle in more than one or in a field of different positions the photometric measurements shall be repeated for each position or for the extreme positions of the field of the reference axis specified by the manufacturer.

C.4. If visual examination of a light appears to reveal substantial local variations of intensity, a check shall be made to ensure that, outside the axes, no intensity measured within the rhombus defined by the extreme directions of measurement is below 75 cd (see diagram below).



C.5. Photometric measurement of lamps equipped with several light sources

The photometric performance shall be checked:

C.5.1. For non-replaceable light sources (filament lamps and other):

With the light sources present in the lamp, in accordance with paragraph 7.1. of this standard.

C.5.2. For replaceable filament lamps:

When equipped with filament lamps at 6.75 V, 13.5 V or 28.0 V, the luminous intensity values produced shall be corrected. The correction factor is the ratio between the reference luminous flux and the mean value of the luminous flux found at the voltage applied (6.75 V, 13.5 V or 28.0 V). The actual luminous fluxes of each filament lamp used shall not deviate more than ± 5 per cent from the mean value. Alternatively a standard filament lamp may be used in turn, in each of the individual positions, operated at its reference flux, the individual measurements in each position being added together.

ANNEX D

(See 10)

MINIMUM REQUIREMENTS FOR CONFORMITY OF PRODUCTION CONTROL PROCEDURES

D.1. **GENERAL**

D.1.1. The conformity requirements shall be considered satisfied from a mechanical and geometric standpoint, if the differences do not exceed inevitable manufacturing deviations within the requirements of this standard.

D.1.2. With respect to photometric performances, the conformity of mass-produced lamps shall not be contested if, when testing photometric performances of any lamp chosen at random and equipped with a standard filament lamp, or when the lamps are equipped with non-replaceable light sources (filament lamps or other), and when all measurements are made at 6.75 V, 13.5 V or 28.0 V respectively:

D.1.2.1. No measured value deviates unfavorably by more than 20 per cent from the values prescribed in this standard.

D.1.2.2. If, in the case of a lamp equipped with a replaceable light source and if results of the test described above do not meet the requirements, tests on lamps shall be repeated using another standard filament lamp.

D.1.3. The chromaticity coordinates shall be complied with when the lamp is equipped with a standard filament lamp, or for lamps equipped with non-replaceable light sources (filament lamps or other), when the colorimetric characteristics are verified with the light source present in the lamp

D.2 **MINIMUM REQUIREMENTS FOR VERIFICATION OF CONFORMITY BY THE MANUFACTURER**

For each type of lamp the holder of the approval mark shall carry out at least the following tests, at appropriate intervals. The tests shall be carried out in accordance with the provisions of this standard.

If any sampling shows non-conformity with regard to the type of test concerned, further samples shall be taken and tested. The manufacturer shall take steps to ensure the conformity of the production concerned.

D.2.1. **Nature of tests**

Tests of conformity in this standard shall cover the photometric and colorimetric characteristics.

D.2.2. **Methods used in tests**

D.2.2.1. Tests shall generally be carried out in accordance with the methods set out in this standard.

D.2.2.2. In any test of conformity carried out by the manufacturer, equivalent methods may be used with the consent of the testing agency responsible for approval tests. The manufacturer is responsible for proving that the applied methods are equivalent to those laid down in this standard.

D.2.2.3. The application of paragraphs D.2.2.1. and D.2.2.2. requires regular calibration of test apparatus and its correlation with measurements made by a testing agency.

D.2.2.4. In all cases the reference methods shall be those of this standard, particularly for the purpose of administrative verification and sampling.

D.2.3. **Nature of sampling**

Samples of lamps shall be selected at random from the production of a uniform batch. A uniform batch means a set of lamps of the same type, defined according to the production methods of the manufacturer.

The assessment shall in general cover series production from individual factories. However, a manufacturer may group together records concerning the same type from several factories, provided these operate under the same quality system and quality management.

D.2.4. **Measured and recorded photometric characteristics**

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex C and for the chromaticity coordinates provided for in paragraph 9. of the standard.

D.2.5. **Criteria governing acceptability**

The manufacturer is responsible for carrying out a statistical study of the test results and for defining, in agreement with the testing agency, criteria governing the acceptability of his products in order to meet the specifications laid down for verification of conformity of products in paragraph 10.1. of this standard.

The criteria governing the acceptability shall be such that, with a confidence level of 95 per cent, the minimum probability of passing a spot check in accordance with Annex E (first sampling) would be 0.95.

ANNEX E

(See D 2.5)

MINIMUM REQUIREMENTS FOR SAMPLING BY A TESTING AGENCY

E.1. **GENERAL**

E.1.1. The conformity requirements shall be considered satisfied from a mechanical and a geometric standpoint, in accordance with the requirements of this standard, if any, if the differences do not exceed inevitable manufacturing deviations.

E.1.2. With respect to photometric performance, the conformity of mass-produced lamps shall not be contested if, when testing photometric performances of any lamp chosen at random and equipped with a standard filament lamp, or when the lamps are equipped with non-replaceable light sources (filament lamps or other), and when all measurements are made at 6.75 V, 13.5 V or 28.0 V respectively:

E.1.2.1. No measured value deviates unfavorably by more than 20 per cent from the values prescribed in this standard.

E.1.2.2. If, in the case of a lamp equipped with a replaceable light source and if results of the test described above do not meet the requirements, tests on lamps shall be repeated using another standard filament lamp.

E.1.2.3. Lamps with apparent defects are disregarded.

E.1.3. The chromaticity coordinates shall be complied with when the lamp is equipped with a standard filament lamp, or for lamps equipped with non-replaceable light sources (filament lamps or other), when the colorimetric characteristics are verified with the light source present in the lamp.

E.2. **FIRST SAMPLING**

In the first sampling four lamps are selected at random. The first sample of two is marked A, the second sample of two is marked B.

E.2.1. **The conformity is not contested.**

E.2.1.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced lamps shall not be contested if the deviation of the measured values of the lamps in the unfavorable directions are:

E.2.1.1.1. sample A

A1: one lamp	0 per cent
one lamp not more than	20 per cent
A2: both lamps more than	0 per cent
but not more than	20 per cent
go to sample B	

E.2.1.1.2. sample B

B1: both lamps	0 per cent

E.2.1.2. or, if the conditions of paragraph E.1.2.2. for sample A are fulfilled.

E.2.2. **The conformity is contested**.

E.2.2.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced lamps shall be contested and the manufacturer requested to make his production meet the requirements (alignment) if the deviations of the measured values of the lamps are:

E.2.2.1.1. sample A

A3: one lamp not more than	20 per cent
one lamp more than	20 per cent
but not more than	30 per cent

E.2.2.1.2. sample B

B2: in the case of A2

one lamp more than	0 per cent
but not more than	20 per cent
one lamp not more than	20 per cent

B3: in the case of A2

one lamp	0 per cent
one lamp more than	20 per cent
but not more than	30 per cent

E.2.2.2. or, if the conditions of paragraph E.1.2.2. for sample A are not fulfilled.

E.2.3. **Non conformity established**

Conformity shall be contested and paragraph 11. applied if, following the sampling procedure in Figure 1 of this annex, the deviations of the measured values of the lamps are:

E.2.3.1. sample A

A4: one lamp not more than	20 per cent
one lamp more than	30 per cent
A5: both lamps more than	20 per cent

E.2.3.2. sample B

B4: in the case of A2

one lamp more than	0 per cent
but not more than	20 per cent
one lamp more than	20 per cent

B5: in the case of A2

both lamps more than	20 per cent

B6: in the case of A2

one lamp	0 per cent
one lamp more than	30 per cent

E.2.3.3. or, if the conditions of paragraph E.1.2.2. for samples A and B are not fulfilled.

E.3 **REPEATED SAMPLING**

In the cases of A3, B2, B3 a repeated sampling, third sample C of two lamps and fourth sample D of two lamps, selected from stock manufactured after alignment, is necessary within two months' time after the notification.

E.3.1. **The conformity is not contested**

E.3.1.1. Following the sampling procedure shown in figure 1 of this annex the conformity of mass-produced lamps shall not be contested if the deviations of the measured values of the lamps are:

E.3.1.1.1. sample C

C1: one lamp	0 per cent
one lamp not more than	20 per cent
C2: both lamps more than	0 per cent
but not more than	20 per cent
go to sample D	

E.3.1.1.2. sample D

D1: in the case of C2

both lamps	0 per cent

E.3.1.2. or, if the conditions of paragraph E.1.2.2. for sample C are fulfilled.

E.3.2. **The conformity is contested**

E.3.2.1. Following the sampling procedure shown in Figure 1 of this annex the conformity of mass-produced lamps shall be contested and the manufacturer requested to make his production meet the requirements (alignment) if the deviations of the measured values of the lamps are:

E.3.2.1.1. sample D

D2: in the case of C2

one lamp more than	0 per cent
but not more than	20 per cent
one lamp not more than	20 per cent

E 3.2.1.2. or, if the conditions of paragraph E.1.2.2. for sample C are not fulfilled.

E.3.3. **Non conformity established**

Conformity shall be contested and paragraph 11 applied if, following the sampling procedure in Figure 1 of this annex, the deviations of the measured values of the lamps are:

E.3.3.1. **sample C**

C3: one lamp not more than	20 per cent
one lamp more than	20 per cent
C4: both lamps more than	20 per cent

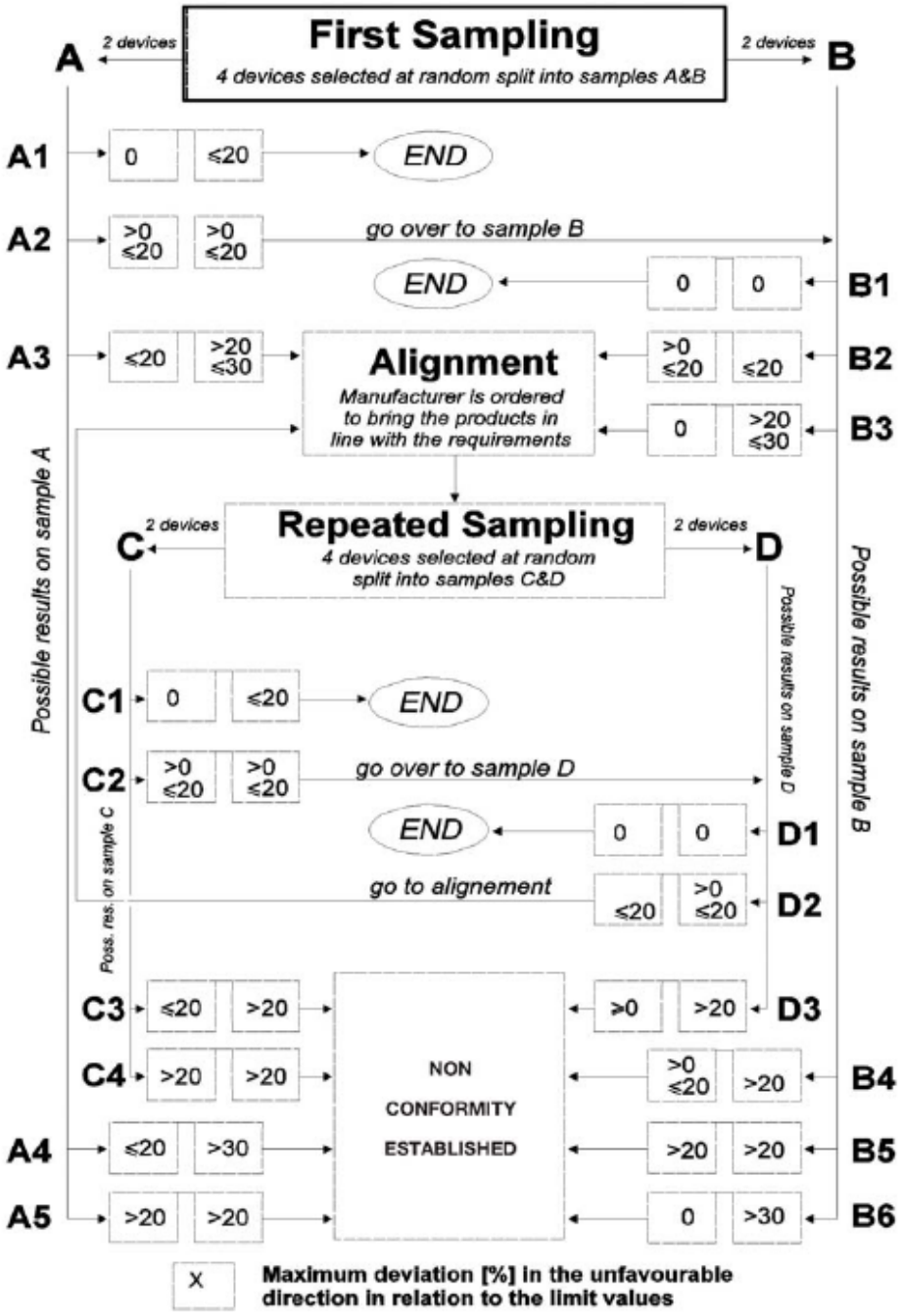
E.3.3.2. **sample D**

D3: in the case of C2

one lamp 0 or more than	0 per cent
one lamp more than	20 per cent

E.3.3.3. or, if the conditions of paragraph E.1.2.2. for samples C and D are not fulfilled.

Figure 1


First Sampling
4 devices selected at random split into samples A&B
2 devices
2 devices
A
B
A1
0
≤20
END
A2
>0 ≤20
>0 ≤20
go over to sample B
END
0
0
B1
A3
≤20
>20 ≤30
Alignment
Manufacturer is ordered to bring the products in line with the requirements
>0 ≤20
≤20
B2
0
>20 ≤30
B3
Repeated Sampling
4 devices selected at random split into samples C&D
2 devices
2 devices
C
D
Possible results on sample A
Possible results on sample B
Possible results on sample D
C1
0
≤20
END
C2
>0 ≤20
>0 ≤20
go over to sample D
END
0
0
D1
Poss. res. on sample C
go to alignement
≤20
>0 ≤20
D2
C3
≤20
>20
≥0
>20
D3
C4
>20
>20
NON CONFORMITY ESTABLISHED
>0 ≤20
>20
B4
A4
≤20
>30
>20
>20
B5
A5
>20
>20
0
>30
B6
X
Maximum deviation [%] in the unfavourable direction in relation to the limit values

ANNEX F
(See introduction)

COMPOSITION OF AISC PANEL ON LIGHTING AND LIGHT SIGNALLING DEVICES*

Convener	
Mr. R. M. Kanitkar	Force Motors Ltd., (SIAM)
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Mr. T. M. Balaraman	Society of Indian Automobile Manufacturers (SIAM) (Hero MotoCorp Ltd.)
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Mr. T.C. Gopalan,	Tractor Manufacturers Association (TMA)
Mr. K. N. D. Nambudiripad	Automotive Component Manufacturers Association (ACMA)
Mr. G. V. George	FIEM Industries Ltd. (ACMA)
Mr. Rajagopalan	FIEM Industries Ltd. (ACMA)
Mr. Virendra Sachdev	Lumax Industries Ltd. (ACMA)
Mr. Sagar Kulkarni	Rinder India Pvt. Ltd. (ACMA)
Mr. T. V. Singh	Bureau of Indian Standards (BIS)
Mr. Rajiv Agarwal	All India Auto & Miniature Bulbs & Component Mfrs. Association
Mr. C. K. Choudhari	All India Auto & Miniature Bulbs & Component Mfrs. Association

* At the time of approval of this Automotive Industry Standard (AIS)

ANNEX G
(See introduction)

COMMITTEE COMPOSITION*
Automotive Industry Standards Committee

Chairman	
Shri Shrikant R. Marathe	Director The Automotive Research Association of India, Pune
Members	**Representing**
Representative from	Ministry of Road Transport & Highways (Dept. of Road Transport & Highways), New Delhi
Representative from	Ministry of Heavy Industries & Public Enterprises (Department of Heavy Industry), New Delhi
Shri S. M. Ahuja	Office of the Development Commissioner, MSME, Ministry of Micro, Small & Medium Enterprises, New Delhi
Shri T. V. Singh	Bureau of Indian Standards, New Delhi
Director Shri D. P. Saste (Alternate)	Central Institute of Road Transport, Pune
Dr. M. O. Garg	Indian Institute of Petroleum, Dehra Dun
Shri C. P. Ramnarayanan	Vehicles Research & Development Establishment, Ahmednagar
Representatives from	Society of Indian Automobile Manufacturers
Shri T.C. Gopalan	Tractor Manufacturers Association, New Delhi
Shri K.N.D. Nambudiripad	Automotive Components Manufacturers Association of India, New Delhi

Member Secretary
Mrs. Rashmi Urdhwareshe
Sr. Deputy Director
The Automotive Research Association of India, Pune

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