Amendment No. 1 August 2013
To
AIS-012(Part 6) (Rev. 1):2011

Performance Requirements for Front and Rear Position (Side) Lamps, Stop Lamps and End-outline Marker Lamps for Motor Vehicles

1. Page 12/30,

Add following new clause 16.2 after clause 16.1

"16.2 **Series of amendments**

Changes in ECE regulation, which are issued as series of amendments (series of amendments may affect the earlier type approvals) will not be considered for issuing approval to this standard.

However, Chairman, AISC may, on a case to case basis, permit to accept latest series of amendments.

This shall be incorporated in the test report.

Note: Such changes will be considered for inclusion in this standard at the time of its next revision."

PRINTED BY
THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA
P. B. NO. 832, PUNE 411 004
ON BEHALF OF
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE
UNDER
CENTRAL MOTOR VEHICLES RULES - TECHNICAL STANDING COMMITTEE
SET-UP BY
MINISTRY OF ROAD TRANSPORT & HIGHWAYS
(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)
GOVERNMENT OF INDIA

August 2013

AUTOMOTIVE INDUSTRY STANDARD

Performance Requirements for Front and Rear Position (Side) Lamps, Stop-Lamps and End-outline Marker Lamps for Motor Vehicles

(Revision 1)

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October 2011

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 front and rear position (side) lamps, stop-lamps and end-outline marker lamps for motor vehicles.

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

ECE R 7 Revision 4 – Amendment 2 - Corrigendum 2 (Corrigendum 2 to Supplement 12 to the 02 series of amendments, Date of entry into force: 10 March 2009)	Uniform provisions concerning the approval of front and rear position (side) lamps, stop-lamps and end-outline marker 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-009 (Rev.1): 2011	Automotive Vehicles - Installation Requirements of Lighting and Light-signalling Devices for L Category Vehicles, their Trailers and Semi-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 H and Annex J respectively.

Performance Requirements for Front and Rear Position (Side) Lamps Stop-Lamps and End-outline Marker Lamps for Motor Vehicles

Performance Requirements for Front and Rear Position (Side) Lamps, Stop-Lamps and End-outline Marker Lamps for Motor Vehicles

0 SCOPE

This standard applies to:

0.1. front and rear position (side) lamps and stop lamps for vehicles of categories L, M, N, T and A [1/]; and,

0.2. end - outline marker lamps for vehicles of categories M, N, T and A.

Note: The permission to use front, rear position and end-outline marker 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 "**Front position (side) lamp**" means the lamp used to indicate the presence and the width of the vehicle when viewed from the front;

1.3 "**Rear position (side) lamp**" means the lamp used to indicate the presence and the width of the vehicle when viewed from the rear;

1.4 "**Stop-lamp**" means the lamp used to indicate to other road-users to the rear of the vehicle that its driver is applying the service brake. The stop-lamps may be activated by the application of a retarder or a similar device;

1.5. "**End-outline marker lamp**" means a lamp fitted near to the extreme outer edges and as close as possible to the top of the vehicle and intended to indicate clearly the vehicle's overall width. In the case of certain power-driven vehicles and trailers, this lamp is intended to complement the vehicle's position (side) lamps and draw special attention to its outline;

1.6. "**Front and rear position lamps, stop-lamps and end-outline marker lamps of different type**" means lamps which differ in each said category 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/ As defined in AIS-053: Automotive Vehicles - Types - Terminology

2.0 APPLICATION FOR APPROVAL: TECHNICAL INFORMATION TO BE SUBMITTED BY THE APPLICANT AT THE TIME OF APPROVAL

Sr. No.	Particulars
A	Manufacturer's name and address
B	Telephone No
C	FAX. No.
D	E mail address
E	Contact person
F	Plant/(s)of manufacture.
G	The intended function(s) of the device.

2.1 The application for approval shall be submitted by applicant. It shall specify:

2.1.1 The purpose or purposes for which the device submitted for approval is intended and whether it may also be used in an assembly of two lamps of the same kind/type;

2.1.2 In the case of an end-outline marker lamp, whether it is intended to emit white or red light;

2.1.3 In the case of a category S3 or S4 stop lamp, whether it is intended to be mounted outside or inside (behind the rear window) the vehicle.

2.1.4 Whether the device produces steady luminous intensity (category R1, S1 or S3) or variable luminous intensity (category R2 , S2 or S4).

2.1.5 At the choice of the applicant, 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 communication form

2.2 For each type of device, the application shall be accompanied by:

2.2.1 drawings, in triplicate, in sufficient detail to permit identification of the type of the device and showing in what geometrical position(s) the device (and if applicable for category S3 or S4 lamps the rear window) may be mounted on the vehicle; the axis of observation to be taken is 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. The drawings shall show the position intended for the approval number and the additional symbols in relation to the circle of the approval mark;

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 ; and/or

(b) the light source module specific identification code.

In the case of a category S3 or S4 stop lamp, which is intended to be mounted inside the vehicle, the technical description shall contain the specification of the optical properties (transmission, colour, inclination, etc.) of the rear window(s).

2.2.3 In the case of a lamp with variable luminous intensity, a concise description of the variable intensity control, an arrangement diagram and a specification of the characteristics of the system ensuring the two levels of intensity;

2.2.4 Two samples; if the approval is applied for devices which are not identical but are symmetrical and suitable for mounting one on the left and one on the right 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.

In the case of a lamp with variable luminous intensity the application shall also be accompanied by the variable intensity control or a generator providing the same signal(s)."

2.2.5 In the case of a category S3 or S4 stop lamp which is intended to be mounted inside the vehicle, a sample plate or sample plates (in case of different possibilities) having the equivalent optical properties corresponding to those of the actual rear window(s).

2.2.6 Two samples; if the approval is applied for devices which are not identical but are symmetrical and suitable for mounting one on the left and one on the right 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; in the case of a stop-lamp with two levels of intensity, the application shall also be accompanied by two samples of the parts constituting the system which ensures two levels of intensity.

2.2.7 In the case of a category S3 stop lamp, which is intended to be mounted inside the vehicle, a sample plate or sample plates (in case of different possibilities) having the equivalent optical properties corresponding to those of the actual rear window(s).

3. MARKINGS

Devices submitted for approval:

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

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

(a) the category or categories of filament lamp(s) prescribed; and/or

(b) the light source module specific identification code

3.3. Shall comprise a space of sufficient size for the approval marking and the additional symbols prescribed in AIS-037 and paragraph 4.2. below; this space shall be shown in the drawings mentioned in paragraph 2.2.1. above;

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 and/or light source module(s), bear the marking of the rated voltage or range of voltage and rated maximum wattage.

3.5 Lamps operating at voltages other than the nominal rated voltages of 6 V, 12 V or 24 V respectively, by the application of an electronic light source control gear or a variable intensity control being not part of the lamp, or having a secondary operating mode, shall also bear a marking denoting the rated secondary design voltage."

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

3.6.1. the trade name or mark of the applicant; this marking shall be clearly legible and indelible;

3.6.2. 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" 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 applicant.

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

3.7 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."

4 APPROVAL

4.1. General

4.1.1. If the two devices which are submitted in pursuance of paragraph 2.2.4. above satisfy the provisions of this standard, approval shall be granted.

4.1.2. When two or more lamps are part of the same unit of grouped, combined or reciprocally incorporated lamps, approval may be granted only if each of these lamps satisfies the provisions set out in this standard or in another standard. Lamps not satisfying the provisions of any of those standards shall not be part of such unit of grouped, combined or reciprocally incorporated lamps. This provision shall not apply to headlamps fitted with a double - filament bulb, where only one beam is approved.

4.1.3. Reserved.

4.1.4. Reserved.

4.1.5. Every device conforming to a type approved under this standard shall bear, in the space referred to in paragraph 3.3. above, and in addition to the markings prescribed in paragraphs 3.1. and 3.2. or 3.4. respectively, an approval mark as described in paragraphs 4.2. and 4.3. below.

4.2. **Composition of the approval mark**

The approval mark shall consist of:

4.2.1. Reserved

4.2.2. The following additional symbol or symbols:

4.2.2.1 On devices meeting the requirements of this standard in respect of the front position (side) lamps, the letter "A";

4.2.2.2 On devices meeting the requirements of this standard in respect of the rear position (side) lamps, the letter "R", followed by the figure "1" when the device produces steady luminous intensity and by the figure "2" when the device produces variable luminous intensity.

4.2.2.3 On devices meeting the requirements of this standard in respect of the stop-lamps, the letter "S" followed by the figure:

"1" when the device produces steady luminous intensity;
"2" when the device produces variable luminous intensity;
"3" when the device meets the specific requirements for category S3 stop-lamps and produces steady luminous intensity
"4" when the device meets the specific requirements for category S4 stop-lamps and produces variable luminous intensity;

4.2.2.4 On devices comprising both a rear position (side) lamp and a stop- lamp meeting the requirements of this standard in respect of such lamps, the letters "R1" or "R2" and "S1" or "S2" as the case may be, separated by a horizontal dash;

4.2.2.5 On front or rear position lamps of which the visibility angles are asymmetrical with regard to the reference axis in a horizontal direction, a horizontal arrow pointing towards the side on which the photometric specifications are met up to an angle of 80° H;

4.2.2.6 On devices which may be used as part of an assembly of two lamps, the additional letter "D" to the right of the symbol mentioned in paragraphs 4.2.2.1. and 4.2.2.4;

4.2.2.7 On devices with reduced light distribution in conformity to paragraph 2.3. in Annex D to this standard a vertical arrow starting from a horizontal segment and directed downwards.

4.2.3. Reserved

4.2.4. The marks and symbols referred to in paragraph 4.2.2. above shall be clearly legible and indelible even when the device is fitted in the vehicle.

4.3. **Arrangement of the approval mark**

4.3.1. Reserved

4.3.1.1 It is visible after their installation.

4.3.1.2 Reserved

4.3.1.3 Reserved

4.3.1.4 The main body of the lamp shall include the space described in paragraph 3.3. above and shall bear the approval mark of the actual function(s).

4.3.1.5 Reserved

4.3.2. Reserved

4.3.3. Reserved

4.3.4. The approval marking shall be clearly legible and indelible. It may be placed on an inner or outer part (transparent or not) of the device which cannot be separated from the transparent part of the device emitting the light. In any case the marking shall be visible when the device is fitted on the vehicle or when a movable part such as the hood or boot lid or a door is opened.

5 GENERAL SPECIFICATIONS

5.1. Each device supplied shall conform to the specifications set forth in paragraphs 6 and 8 below.

5.2. The devices shall be so designed and constructed that in normal conditions of use, and notwithstanding the vibrations to which they may be subjected in such use, their satisfactory operation remains assured and they retain the characteristics prescribed by this standard.

5.3. Lamps having been approved as front or rear position (side) lamps, are deemed being also approved end-outline marker lamps.

5.4. Front and rear position (side) lamps which are grouped or combined or reciprocally incorporated may also be used as end-outline marker lamps.

5.5. Position (side) lamps, which are reciprocally incorporated with another function, using a common light source, and designed to operate permanently with an additional system to regulate the intensity of the light emitted, are permitted.

5.5.1 However, in the case of rear (side) position lamp reciprocally incorporated with a stop lamp, the device shall either:

(a) be a part of a multiple light source arrangement, or

(b) be intended for use in a vehicle equipped with a failure monitoring system for that function.

In either case, a note shall be made in the applicant document

5.6. Light source module

5.6.1. The design of the light source module(s) shall be such that even in darkness the light source module(s) can be fitted in no other position, but the correct one

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

5.7. In case of failure of the variable intensity control of:

(a) a rear position lamp category R2 emitting more than the maximum value of category R or R1;

(b) a stop lamp category S2 emitting more than the maximum value of category S1;

(c) a stop lamp category S4 emitting more than the maximum value of category S3 requirements of steady luminous intensity of the respective category shall be fulfilled automatically.

6 INTENSITY OF LIGHT EMITTED

6.1 In the reference axis, the light emitted by each of the two devices supplied shall be of not less than the minimum intensity and of not more than the maximum intensity specified below:

1/	Minimum intensities cd	Maximum values in cd when used as		
		Single lamp	Lamp (single) marked "D" paragraph (4.2.2.6.)	Total for the assembly of two or more lamps 2/
6.1.1. Front position (side) lamps, front end-outline marker lamp	4	60 2/	42 2/	84 2/
6.1.2. Front position (side) lamps incorporated in headlamp	4	100 2/	-	-
6.1.3. Rear position lamps, rear end-outline marker lamps				
6.1.3.1. R1 (steady)	4	12	8.5	17
6.1.3.2. R2 (variable)	4	30	21	42
6.1.4. Stop-lamps				
6.1.4.1. S1 (steady)	60	185	130	260
6.1.4.2. S2 (variable)	60	521	365	730
6.1.4.3. S3 (steady)	25	80	55	110
6.1.4.4. S4 (variable)	25	114	80	160

1/ The installation of the devices referred to above in power-driven vehicles and their trailers is provided for in the standards concerning the installation of lighting and light-signalling devices (AIS-008 (Rev. 1) and AIS-009(Rev. 1)).

2/ The total value of maximum intensity for an assembly of two or more lamps is given by multiplying by 1.4 the value prescribed for a single lamp.

When an assembly of two or more lamps having the same function is deemed to be, for the purpose of installation on a vehicle, a "single lamp" (following the definition of AIS-008 (Rev. 1) and its amendments in force at the time of application for type approval), this assembly shall comply with the minimum intensity required when one lamp has failed, and all the lamps together shall not exceed the admissible maximum intensity (last column of the table).

In the case of a single lamp containing more than one light source:

(a) all light sources which are connected in series are considered to be one light source;

(b) the lamp shall comply with the minimum intensity required when any one light source has failed. However, for lamps designed for only two light sources, 50 per cent of the minimum intensity in the axis of reference of the lamp shall be considered sufficient, provided that a note in the communication form states that the lamp is only for use on a vehicle fitted with an operating tell-tale which indicates when any one of these two light sources has failed;

(c) when all light sources are illuminated the maximum intensity specified for a single lamp may be exceeded provided that the single lamp is not marked "D" and the maximum intensity specified for an assembly of two or more lamps (last column of the table) is not exceeded.

6.2. Outside the reference axis and within the angular fields defined in the diagrams in Annex A to this standard, the intensity of the light emitted by each of the two devices supplied shall:

6.2.1. In each direction corresponding to the points in the light distribution table reproduced in Annex D to this standard, be not less than the

product of the minimum specified in paragraph 6.1. above by the percentage specified in the said table of the direction in question;

6.2.2. In no direction within the space from which the light-signalling device is visible, exceed the maximum specified in paragraph 6.1. above;

6.2.3. However, a luminous intensity of 60 cd shall be permitted for rear position (side) lamps reciprocally incorporated with stop-lamps (see paragraph 6.1.3. above) below a plane forming an angle of 5° with and downward from the horizontal plane;

6.2.4. Moreover,

6.2.4.1. Throughout the fields defined in the diagrams in Annex A, the luminous intensity of the light emitted shall be not less than 0.05 cd for front and rear position (side) lamps and end-outline marker lamps, not less than 0.3 cd for stop-lamps;"

6.2.4.2. If a rear position (side) lamp is reciprocally incorporated with a stop-lamp producing either steady or variable luminous intensity, the ratio between the luminous intensities actually measured of the two lamps when turned on simultaneously at the intensity of the rear position (side) lamp when turned on alone should be at least 5 : 1 in the field delimited by the straight horizontal lines passing through ± 5° V and the straight vertical lines passing through ± 10° H of the light distribution table.

If the rear position (side) lamp or the stop lamp or both contain more than one light source and are considered as a single lamp as defined in note 2/ of the table in paragraph 6.1. above, the values to be considered are those obtained with all sources in operation;

6.2.4.3. The provisions of paragraph D 2.2. of Annex D to this standard on local variations of intensity shall be observed.

6.3. The intensities shall be measured with the filament lamp(s) continuously alight and, in the case of devices emitting red light, in coloured light.

6.4. In the case of devices of categories R2, S2 and S4 the time that elapses between energising the light source(s) and the light output measured on the reference axis to reach 90 per cent of the value measured in accordance with paragraph 6.3. above shall be measured for the extreme levels of luminous intensity produced by the device. The time measured to obtain the lowest luminous intensity shall not exceed the time measured to obtain the highest luminous intensity.

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

6.5.1 Outside the range specified in paragraph 6.1. above and

6.5.2. Exceeding the respective steady luminous intensity maximum specified in paragraph 6.1. for the specific device

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

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

7 TEST PROCEDURE

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

7.1.1 In 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 [2/] 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. However, in the case of light sources operated by a variable intensity control to obtain variable luminous intensity, photometric measurements shall be performed according to the applicant's description.

7.3. 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.

7.4 The voltage to be applied to the lamp shall be noted in the application for type approval.

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

7.6. In the case of a category S3 or S4 stop lamp, which is intended to be mounted inside the vehicle a sample plate or sample plates (in case of different possibilities) as supplied (see paragraph 2.2.5.) shall be positioned in front of the lamp to be tested, in the geometrical position(s) as described in the application drawing(s) (see paragraph 2.2.1.).

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.

2/ 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, but supplied by the lamp manufacturer as part of the lamp system.

8 COLOUR OF LIGHT EMITTED

8.1 The colour of the light emitted inside the field of the light distribution grid defined in paragraph D 2 of Annex D shall be within the limits of the coordinates prescribed in AIS-010 (Part 5)(Rev.1). Outside this field, no sharp variation of colour shall be observed.

8.2 These requirements shall also apply within the range of variable luminous intensity produced by:

(a) rear position lamps of category R2;

(b) stop lamps of categories S2 and S4.

9 CONFORMITY OF PRODUCTION

9.1 The Conformity of Production procedures shall comply with those set out in the AIS-037, with the following requirements:

9.2 Lamps approved under this standard shall be so manufactured as to conform to the type approved by meeting the requirements set forth in paragraphs 6 and 8 above.

9.3 The minimum requirements for Conformity of Production control procedures set forth in Annex F to this standard shall be complied with.

9.4 The minimum requirements for sampling by the testing agency set forth in Annex G to this standard shall be complied with.

9.5 The authority which has granted type approval may at any time verify the conformity control methods applied in each production facility. The normal frequency of these verifications shall be once every two years.

10. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

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

10.2. Reserved

11 to 13 Reserved

14. TRANSITIONAL PROVISIONS

14.1 At the request of the applicant, type approvals for compliance to AIS-012 (Part 6)(Rev. 1) : 2011, shall be granted by testing agencies from 22nd February 2011(date of adoption of this standard by CMVR-TSC). Such type approvals shall be deemed to be compliance to AIS-012:2004.

Note: Date of adoption is the date of the meeting of the CMVR-TSC, in which AIS-012 (Part 6)(Rev. 1) : 2011 is adopted.

14.2 At the request of applicant, type approval to the compliance to AIS-012:2004 shall be granted up to the notified date of implementation of AIS-012 (Part 6) (Rev. 1): 2011.

14.3 Type approvals issued for compliance to AIS-012:2004 shall be extended to approval of AIS-012 (Part 6)(Rev. 1) : 2011, subject to satisfactory compliance of the following:

14.4 (a) Marking

14.5 Extension of Approvals for engineering and administrative changes:

14.5.1 In the case of 14.1, extensions shall be granted subject to the conditions of AIS-012 (Part 6)(Rev. 1):2011. Such extensions shall be deemed to be compliance to AIS-012:2004.

14.5.2 In the case of 14.2, extensions shall be granted subject to conditions of AIS-012:2004, till the notified date of implementation.

14.6 Type approvals for compliance to AIS-037, already been granted, shall continue to be valid for AIS-012 (Part 6)(Rev. 1) :2011 subject to satisfactory compliance of the following:

(a) Marking

15. ESTABLISHING COMPLIANCE OF "E"/"e" APPROVED FRONT POSITION, REAR POSITION, STOP-LAMP AND END OUTLINE MARKER LAMPS TO THIS STANDARD

15.1 As an exception to 7.4 of AIS-037, (or related administrative decisions) for certifying compliance of "E"/"e" marked light and light signalling devices to this standard, the test for the following shall be carried out by testing agency.

15.1.1 Photometric requirements shall be within the limits specified in 9.0.

15.1.2 Colourimetric requirements shall be within the limits specified in 6.0.

16 AMENDMENTS TO ECE REGULATIONS AFTER THE LEVEL DESCRIBED IN 0.3 OF INTRODUCTION

16.1 Supplements

In case of changes in ECE regulation, which are issued as supplements (Supplements do not affect the earlier type approvals) at the request of applicant, approval of compliance to this standard shall be issued taking into account the changes arising out of such supplement(s) to ECE regulation with approval from Chairman AISC.

This shall be incorporated in the test report.

Note : Such changes will be considered for inclusion in this standard at the time of its next amendment /revision.

17. MODIFICATIONS OF THE TYPE OF FRONT POSITION, REAR POSITION, STOP-LAMP AND END OUTLINE MARKER LAMPS FOR MOTOR VEHICLES AND THEIR TRAILERS AND EXTENSION OF APPROVAL

17.1 Every modification pertaining to the information, even if the changes are not technical in nature declared in accordance with clause No. 2 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,

17.1.1 the model with the changed specifications still complies with provisions, or

17.1.2 Any further verification is required to establish compliance.

17.2 For considering whether testing is required or not, guidelines given in 18.0 (Criteria for Extension of Approval) shall be used.

17.3 In case of 17.1.2**,** tests for only those parameters which are affected by the modifications need be carried out

17.4 In case of fulfillment of criterion of 17**.**1.1 or after results of further verification as per 17**.**1.2 are satisfactory, the approval of compliance shall be extended for the changes carried out.

18. CRITERIA FOR EXTENSION OF APPROVAL

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

ANNEX A

(See 6.2)

FRONT AND REAR POSITION (SIDE) LAMPS, END-OUTLINE MARKER LAMPS AND STOP-LAMPS: MINIMUM ANGLES REQUIRED FOR LIGHT DISTRIBUTION IN SPACE OF THESE LAMPS[1/]

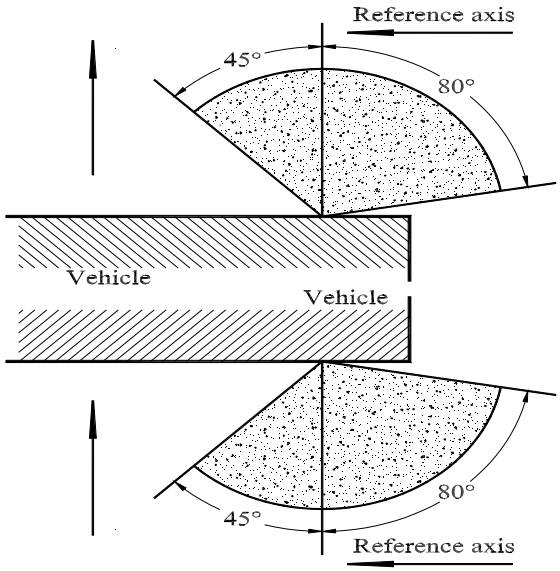
In all cases, the minimum vertical angles of light distribution in space are 15° above and 15° below the horizontal for all categories of devices included in this standard, except:

(a) for lamps with a permissible mounting height ≤ 750 mm above the ground, for which they are 15° above and 5° below the horizontal;

(b) for category S3 stop lamp for which they are 10° above and 5° below the horizontal;

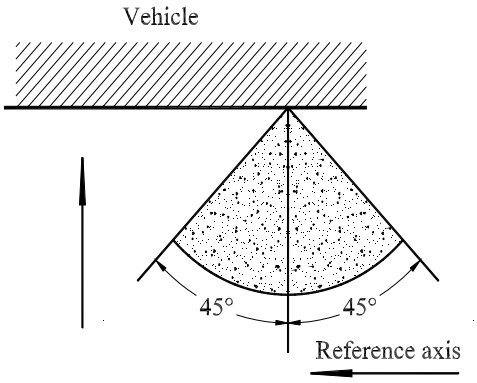
Minimum horizontal angles of light distribution in space

Front position (side) lamps, end-outline marker lamps

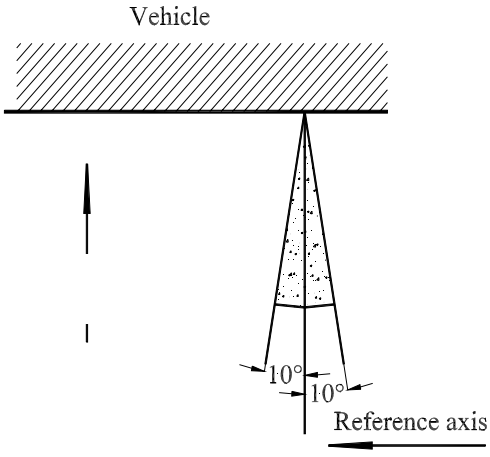


Rear position lamps, end-outline marker lamps

1/ The angles shown in these diagrams are correct for devices to be mounted on the right side of the vehicle. The arrows point to the front of the vehicle.



Stop-lamps (S1 and S2)



Stop-lamps (S3)

ANNEX B
(Reserved)

ANNEX C
(Reserved)

ANNEX D

(See 6.2.1)

PHOTOMETRIC MEASUREMENTS

D1. MEASUREMENT METHODS

D1.1. During photometric measurements, stray reflections shall be avoided by appropriate masking.

D1.2. In case the results of measurements should be challenged, measurements shall be carried out in such a way as to meet the following requirements:

D1.2.1. The distance of measurement shall be such that the law of the inverse of the square of the distance is applicable;

D1.2.2. The measuring equipment shall be such that the angular aperture of the receiver viewed from the reference centre of the lamp is comprised between 10 angular minutes and one degree;

D1.2.3. The intensity requirement for a particular direction of observation shall be deemed to be satisfied if that requirement is met in a direction deviating by not more than one-quarter of a degree from the direction of observation.

D1.3. 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.

D2. TABLE OF STANDARD LIGHT DISTRIBUTION

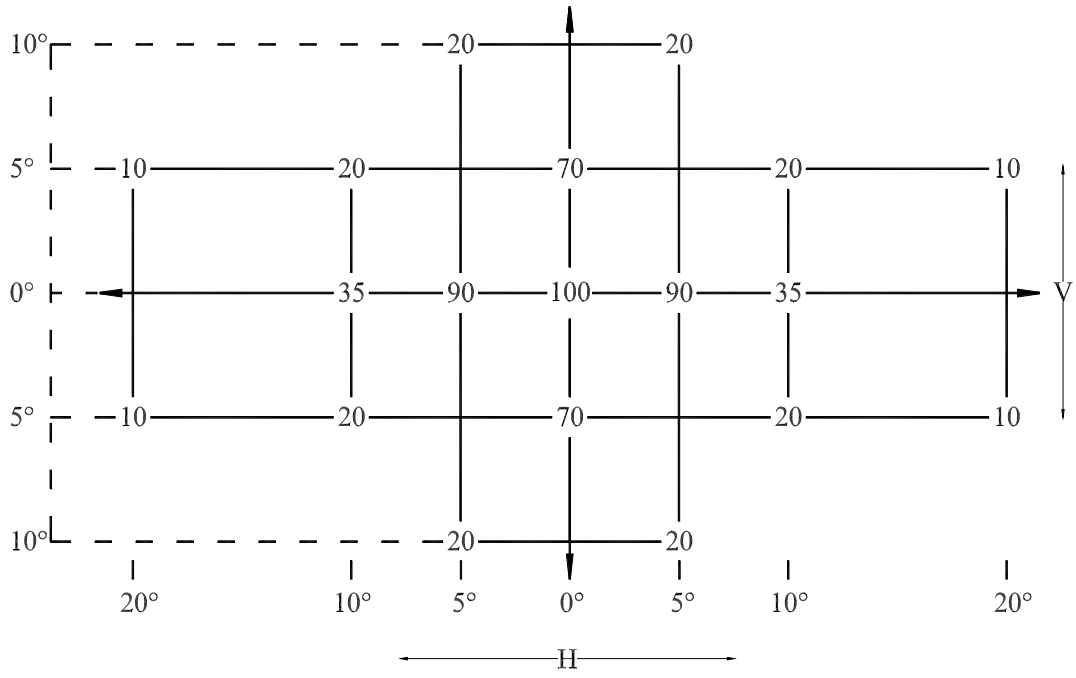


Table of light distribution for category S3 stop-lamp

10°	32	-	64	-	32
5°	64	100	100	100	64
0°	64	100	100	100	64
5°	64	100	100	100	64
	10°	5°	0°	5°	10°

D2.1. The direction H = 0° and V = 0° corresponds to the reference axis. (On the vehicle it is horizontal, parallel to the median longitudinal plane of the vehicle and oriented in the required direction of visibility.) It passes through the centre of reference. The values shown in the table give, for the various directions of measurement, the minimum intensities as a percentage of the minimum required in the axis for each lamp (in the direction H = 0° and V = 0°).

D2.2 Within the field of light distribution of paragraph D2. schematically shown as a grid, the light pattern should be substantially uniform, i.e. the light intensity in each direction of a part of the field formed by the grid lines shall meet at least the lowest minimum value being

shown on the grid lines surrounding the questioned direction as a percentage.

D2.3. However, in the case where a device is intended to be installed at a mounting height of equal to or less than 750 mm above the ground, the photometric intensity is verified only up to an angle of 5° downwards.

D3. PHOTOMETRIC MEASUREMENT OF LAMPS

The photometric performance shall be checked:

D3.1. For non-replaceable light sources (filament lamps and other):
with the light sources present in the lamp, in accordance with the relevant sub-paragraph of paragraph 7.1. of this standard.

D3.2. 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.

D3.3. For any signalling lamp except those equipped with filament lamp(s), 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 can 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.

ANNEX E

(See 8)

COLOURS OF LIGHTS

For checking these colorimetric characteristics, the test procedure described in paragraph 7. of this standard shall be applied.

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 the relevant sub-paragraph of paragraph 7.1. of this standard.

In the case of a category S3 or S4 stop lamp, which is intended to be mounted inside the vehicle, the colorimetric characteristics shall be verified with the worst case combination(s) of lamp and rear window(s) or sample plate(s).

ANNEX F

(See 9.3)

MINIMUM REQUIREMENTS FOR CONFORMITY OF PRODUCTION CONTROL PROCEDURES

F1. GENERAL

F1.1. 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.

F1.2. 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 according to paragraph 7. of this standard, respectively:

F1.2.1. no measured value deviates unfavourably by more than 20 per cent from the values prescribed in this standard.

F1.2.2. 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.

F1.3. The chromaticity coordinates shall be complied when tested under conditions of paragraph 7. of this standard.

F2. 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.

F2.1. **Nature of tests**

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

F2.2. **Methods used in tests**

F2.2.1. Tests shall generally be carried out in accordance with the methods set out in this standard.

F2.2.2. 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.

F2.2.3. The application of paragraphs F 2.2.1. and F 2.2.2. requires regular calibration of test apparatus and its correlation with measurements made by a testing agency.

F2.2.4. In all cases the reference methods shall be those of this standard, particularly for the purpose of administrative verification and sampling.

F2.3. **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.

F2.4. **Measured and recorded photometric characteristics**

The sampled lamp shall be subjected to photometric measurements for the minimum values at the points listed in Annex D and the chromaticity coordinates listed in Annex E, provided for in the standard.

F2.5. **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 9.1. 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 G (first sampling) would be 0.95.

ANNEX G

(See 9.4)

MINIMUM REQUIREMENTS FOR SAMPLING BY A TESTING AGENCY

G1. GENERAL

G1.1. 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.

G1.2. 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 according to paragraph 7. of this standard, respectively:

G1.2.1. No measured value deviates unfavourably by more than 20 per cent from the values prescribed in this standard.

G1.2.2. 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.

G1.2.3. Lamps with apparent defects are disregarded.

G1.3. The chromaticity coordinates shall be complied when tested under conditions of paragraph 7. of this standard.

G2. 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.

G2.1. **The conformity is not contested**

G2.1.1. 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 unfavourable directions are:

G2.1.1.1. 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	

G2.1.1.2. sample B

B1:	both lamps	0 per cent

G2.1.2. or, if the conditions of paragraph G1.2.2. for sample A are fulfilled.

G2.2. **The conformity is contested**

G2.2.1. 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:

G2.2.1.1. 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

G2.2.1.2. 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

G2.2.2. or, if the conditions of paragraph G1.2.2. for sample A are not fulfilled.

G2.3. **Non conformity established**

Conformity shall be contested and paragraph 10 applied if, following the sampling procedure in Figure 1 of this annex, the deviations of the measured values of the lamps are:

G2.3.1. 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

G2.3.2. 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

G2.3.3. or, if the conditions of paragraph G1.2.2. for samples A and B are not fulfilled.

G3. 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.

G3.1. The conformity is not contested

G3.1.1. 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:

G3.1.1.1. 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	

G3.1.1.2. sample D

D1:	in the case of C2	
	both lamps	0 per cent

G3.1.2. or, if the conditions of paragraph G1.2.2. for sample C are fulfilled.

G3.2. The conformity is contested

G3.2.1. 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:

G3.2.1.1. 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

G3.2.1.2. or, if the conditions of paragraph G1.2.2. for sample C are not fulfilled.

G3.3. **Non conformity established**

Conformity shall be contested and paragraph 10 applied if, following the sampling procedure in Figure 1 of this annex, the deviations of the measured values of the lamps are:

G3.3.1. sample C

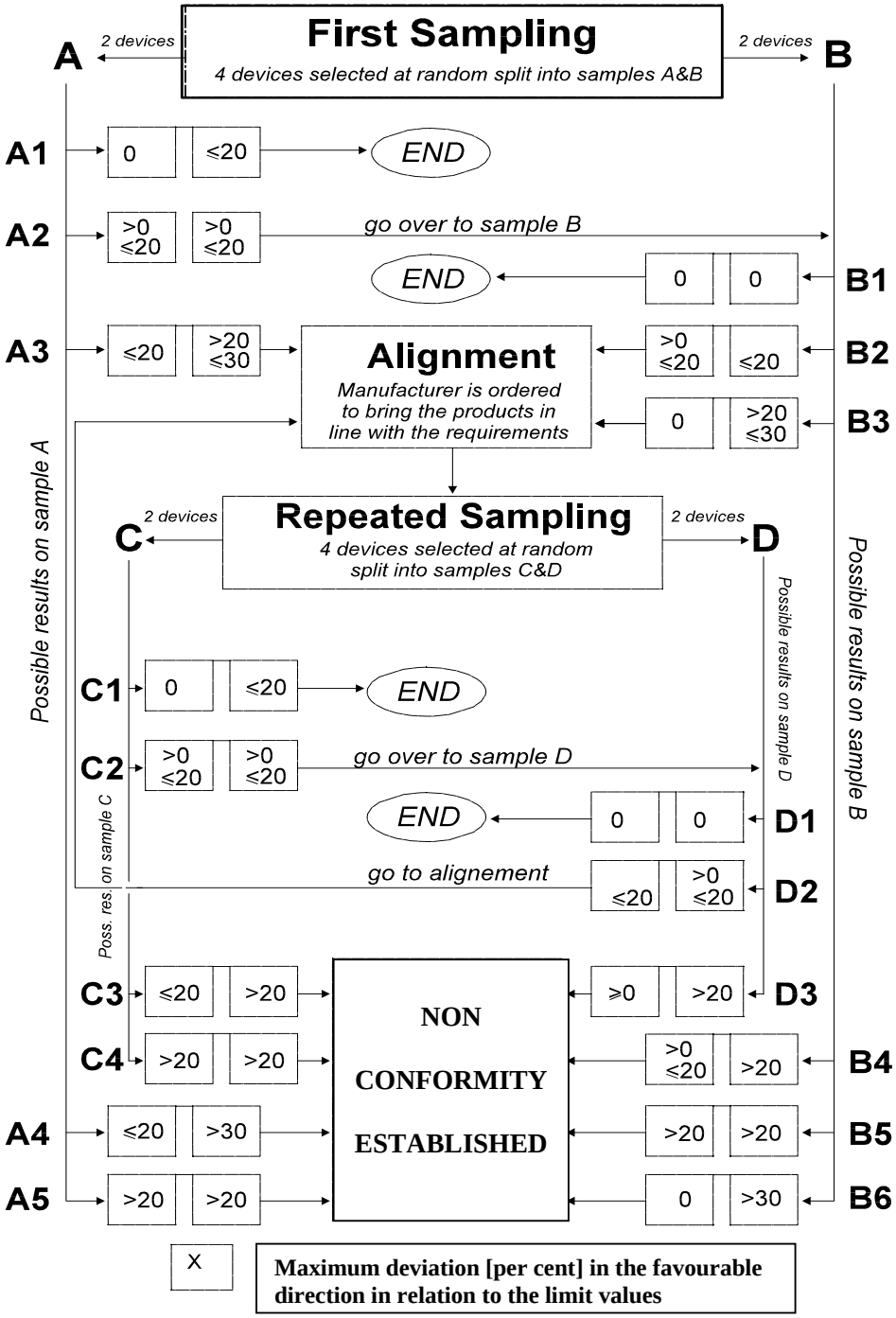
C3:	one lamp not more than	20 per cent
	one lamp more than	20 per cent
C4:	both lamps more than	20 per cent

G3.3.2. sample D

D3:	in the case of C2	
	one lamp 0 or more than	0 per cent
	one lamp more than	20 per cent

G3.3.3. or, if the conditions of paragraph G1.2.2. 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
A2
A3
A4
A5
B1
B2
B3
B4
B5
B6
0
≤20
END
>0 ≤20
go over to sample B
Alignment
Manufacturer is ordered to bring the products in line with the requirements
>20 ≤30
Repeated Sampling
4 devices selected at random split into samples C&D
C
D
C1
C2
C3
C4
D1
D2
D3
go over to sample D
go to alignement
NON CONFORMITY ESTABLISHED
≥0
Possible results on sample A
Possible results on sample B
Possible results on sample D
Poss. res. on sample C
X
Maximum deviation [per cent] in the favourable direction in relation to the limit values

ANNEX H

(See introduction)

COMPOSITION OF AISC PANEL ON LIGHTING AND LIGHT SIGNALLING DEVICES*

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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 J
(See introduction)

COMMITTEE COMPOSITION*
Automotive Industry Standards Committee

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Shri Shrikant R. Marathe	Director The Automotive Research Association of India, Pune
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Representative from	Ministry of Heavy Industries & Public Enterprises (Department of Heavy Industry), New Delhi
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Member Secretary
Mrs. Rashmi Urdhwareshe
Sr. Deputy Director
The Automotive Research Association of India, Pune

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