

DRAFT

AUTOMOTIVE INDUSTRY STANDARD

**Provisions concerning the Approval of
Front Position Lamps, Rear Position Lamps,
Stop Lamps, Direction Indicators, Rear-
Registration Plate Illuminating Devices and
Reversing Lamp for Vehicles of Category L
and their Trailers and Semi-trailers**

(Revision 2)

ARAI

Date of hosting on website:7th August 2017
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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. 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 (CMVR-TSC). After approval, the Automotive Research Association of India, (ARAI), Pune, being the Secretariat of the AIS Committee, will publish this standard. For better dissemination of this information ARAI may publish this document on their Web site..
- 0.1 Accordingly AIS-010 covering mandatory requirements regarding performance of lighting and light signaling devices for use in two and three wheelers has been published in 2004 and has been implemented thereafter in 2005. This standard is then published under Revision 1 in 2010 to include amendments of ECE Regulation No.113.
- 0.2 With technological developments in lighting and light signaling devices, this part is taken up for revision. This part covers the Approval of headlamps emitting an symmetrical passing beam or a driving beam or both and equipped with filament lamps, Gas-Discharge Light Sources or LED modules as applicable to motor vehicles. The permission to use headlamps covered by this standard for a vehicle category is governed by requirements specified by the standard for installation of requirements of that category of vehicles.
- 0.3 This part is based on ECE Regulation No.113 - Rev.3 - Supplement 05 to the 01 series of amendments – (Date of entry into force: 8 October 2015).
- 0.4 While preparing this standard attempts have been made to align with the above ECE regulation. However, certain changes were necessary in the Indian context.
- 0.5 The following standards contain provisions, which through reference in this text constitute provisions of the standard.

AIS-009	Automotive Vehicles - Installation Requirements of Lighting and Light Signalling Devices for L Category Vehicles, their Trailers and Semi Trailers
AIS-004 (Part 3)	Automotive Vehicles – Requirements for Electromagnetic compatibility
AIS-010	Performance Requirements of Lighting and Light-Signaling Devices for 2 and 3 Wheeled Motor Vehicles, Their Trailers and Semi-Trailers Vehicles Treated as such
AIS-010 (Part 5) (Rev. 2)	Requirements of Chromaticity Co-ordinates of Colour of Light Emitted from Lighting and Light-Signaling Devices

AIS-012 (Part 7)	Approval of Reversing Lamps for Power Driven Vehicles and their Trailers
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-034 (Part 2) (Rev. 1)	Provisions concerning the Approval of Gas discharge Light Sources for use in approved Gas Discharge Lamp Units of Power Driven Vehicles
AIS-053	Automotive Vehicles – Types – Terminology
AIS-012	Performance Requirements of Lighting and Light Signalling Devices for Motor Vehicle having more than Three wheels, Trailer and Semi
AIS-037	Procedure for Type Approval and Establishing Conformity of Production for Safety Critical Components
IEC Publication 60061	Lamp Caps and Holders together with Gauges for the Control of Interchangeability and Safety.
IEC Publication 61-2, third edition, 1969	Lamp Caps and Holders together with Gauges for the Control of Interchangeability and Safety- Part 2: Lamp Holders.

- 0.6 The AISC panel responsible for formulation of this standard is given in Annex ##
- 0.7 The Automotive Industry Standards Committee (AISC) responsible for approval of this standard is given in Annex ##

Provisions concerning the Approval of Front Position Lamps, Rear Position Lamps, Stop Lamps, Direction Indicators, Rear-Registration-plate Illuminating Devices and Reversing Lamp for Vehicles of Category L and their Trailers and Semi-trailers

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CHECK LIST FOR PREPARING AUTOMOTIVE INDUSTRY STANDARD

Draft AIS-010 (Part 2) (Rev.2)

**PROVISIONS CONCERNING THE APPROVAL OF FRONT POSITION
LAMPS, REAR POSITION LAMPS, STOP LAMPS, DIRECTION
INDICATORS, REAR-REGISTRATION-PLATE ILLUMINATING DEVICES
AND REVERSING LAMP FOR VEHICLES OF CATEGORY L AND
THEIR TRAILERS AND SEMI-TRAILERS**

SR. NO.	PARTICULARS	REMARKS
1.	Indicate details of the base reference standard. (eg. ECE / EEC Directive/GTR etc.)	ECE Regulation No.113 - Rev.3 – Supplement 05 to the 01 series of amendments – (Date of entry into force: 8 October 2015).
2.	Add an explanatory note indicating differences between the above standard and the draft, if any.	1. Cross references to respective Indian Standards. (e.g. AIS) 2. Marking requirements. 3. Transitional provisions. 4. Administrative provisions, e.g. Type approval & extension of approvals.
3.	Specify details of technical specifications to be submitted at the time of type approval relevant to the requirements of this standard covered.	As per Annex G
4.	Are the details of Worst Case Criteria covered?	Yes
5.	Are the performance requirements covered?	Yes,
6.	Is there a need to specify dimensional requirements?	Yes.
7.	If yes, are they covered?	Yes
8.	Is there a need to specify COP requirements? If yes, are they covered?	Yes. Yes
9.	Is there a need to specify type approval and routine test separately, as in the case of some of the Indian Standards? If yes, are they covered?	Not required.

10.	<p>If the standard is for a part/component or sub-system;</p> <p>i) AIS-037 or ISI marking scheme be implemented for this part?</p> <p>ii) Are there any requirements to be covered for this part when fitted on the vehicle?</p> <p>If yes, has a separate standard been prepared?</p>	<p>i) Yes</p> <p>ii) Not required</p>
11.	<p>If the standard is intended for replacing or revising an already notified standard, are transitory provisions for re-certification of already certified parts/vehicles by comparing the previous test result, certain additional test, etc. required?</p> <p>If yes, are they included?</p>	<p>Yes, Provisions included in clause 15.</p>
12.	<p>Include details of any other international or foreign national standards which could be considered as alternate standard.</p>	<p>No, However further Amendments/ Supplements / corrigendum to ECE R 113 may be considered for certification. Provisions included in clause 16.</p>
13.	<p>Are the details of accuracy and least counts of test equipment/meters required to be specified?</p> <p>If yes, have they been included?</p>	<p>Yes. Included.</p>
14.	<p>What are the test equipment for establishing compliance?</p>	<p>As specified in this standards</p>
15.	<p>If possible, identify such facilities available in India.</p>	<p>Test agencies to confirm.</p>
16.	<p>Are there any points on which special comments or information is to be invited from members?</p> <p>If yes, are they identified?</p>	<p>Comments / discussion required on yellow highlighted points.</p>
17.	<p>Does the scope of standard clearly identify vehicle categories?</p>	<p>Yes</p>
18.	<p>Has the clarity of definitions been examined?</p>	<p>Yes</p>

PROVISIONS CONCERNING THE APPROVAL OF FRONT POSITION LAMPS, REAR POSITION LAMPS, STOP LAMPS, DIRECTION INDICATORS, REAR-REGISTRATION-PLATE ILLUMINATING DEVICES AND REVERSING LAMP FOR VEHICLES OF CATEGORY L AND THEIR TRAILERS AND SEMI-TRAILERS

(Aligned with ECE Regulation No.50 - Rev.3 – Amendment- 2, Supplement 18 to the original series of amendments – (Date of entry into force: 08 October 2016))

Clause No. Clause as compared with AIS-010 (Part 3) (Rev.1):2010 – changes are marked *blue*.

1. SCOPE

This standard applies to front position lamps, rear position lamps, stop lamps, direction indicators, rear-registration-plate illuminating devices and reversing lamps for vehicles of category L, and their trailers and semi-trailers as defined in AIS-053.

- 1.1 The reversing lamps shall comply with the requirements specified in AIS-012 (Part 7)(Rev. 1).

Note: The permission to use lighting and light signalling devices covered by this standard are governed by requirements specified by the standard for installation of requirements of that category of vehicles.

2. DEFINITIONS

- 2.1. In addition to the following definition, the definitions given in AIS-008, AIS-009 and their amendments in force at the time of application for type approval shall apply to this standard.

- 2.2. *“Front position lamps, rear position lamps, stop lamps, direction indicator lamps and rear-registration-plate illuminating devices of different types” 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 the *light source*, light source module, etc.)

(c) The sequential activation of light sources, if any.

A change of the colour of the *light source* or the colour of any filter does not constitute a change of type.

- 2.3. The definitions of the colour of the light emitted, given in AIS-010 (Part 5) and its amendments in force at the time of application for type approval shall apply to this Regulation.

- 2.4. References made in this standard to standard (étalon) filament lamp(s) and to AIS-034 (Part 1) shall refer to AIS-034 (Part 1) and its amendments in force at the time of application for type approval.

References made in this standard to standard (étalon) LED light source(s) and to AIS-130 shall refer to AIS-130 and its amendments in force at the time of application for type approval

3. APPLICATION FOR APPROVAL

- 3.1 Information to be submitted at the time of applying for type approval of the lighting and light signalling devices shall be as given in Annex G.

3.1.1. Reserved

3.1.2. Reserved

3.1.3. Reserved

3.1.4. Reserved

3.2. Reserved

3.2.1. Reserved

3.2.2. Reserved

3.2.3. Reserved

4. MARKINGS

- 4.1. Devices submitted for approval shall in a clearly legible and indelible way bear the following markings:

4.1.1. The trade name or mark of the device manufacturer.

4.1.2. With the exception of lamps with non-replaceable light sources, a clearly legible and indelible marking indicating:

(a) The category or categories of *light sources* prescribed; and/or

(b) The light source module specific identification code.

4.2. They shall comprise furthermore a space of sufficient size for the approval mark (see G-10).

4.3. Lamps with non-replaceable light sources or light source module(s) shall bear the marking of rated voltage or the range of voltages, and the rated wattage.

4.4. In the case of light source module(s) the light source module(s) shall bear:

4.4.1. The trade name or mark of the device manufacturer. This marking shall be clearly legible and indelible;

4.4.2. 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” followed by the approval mark as per AIS-037 and 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 G-10.

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 device manufacturer.

Note: Where AIS-037 permits use of E/e mark for the device the marking on the module shall be as per paragraph 4.4.2 of ECE R 50.

4.4.3. the marking of the rated voltage and rated wattage.

4.5 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.

5. APPROVAL

5.1. If the two devices of a type of device which are submitted in pursuance of 3 above meet the requirements of this standard, approval shall be granted. *All the devices of an interdependent lamp system shall be submitted for type approval by the same applicant.*

5.2. When two or more lamps are part of the same device, approval is only granted, if each of these lamps satisfies the provisions of this standard or of another standard. Lamps not satisfying any one of those standard shall not be part of such device.

5.3. An approval number as per AIS-037 shall be assigned to each type approval.

5.4. Reserved

5.5. Reserved

5.5.1. Reserved

5.5.2. Reserved

5.5.3. In the general case of a direction indicator: a number indicating the category 11, 11a, 11b, 11c or 12 close to approval mark.

- 5.5.4 In the case of a direction indicator, which does on one side not attain the minimum luminous intensity prescribed up to an angle of $H = 80^\circ$ according to 7.7.1.: a horizontal arrow, the tip of which is oriented to the side where the minimum luminous intensity according to 7.7.1. is complied with up to an angle of at least 80° ;
- 5.5.5. On front or rear position lamps of which the visibility angles are asymmetrical with regard to the reference axis in a horizontal direction, an arrow pointing towards the side on which the photometric specifications are met up to an angle of 80° H.
- 5.5.6. *On devices with reduced light distribution in conformity to paragraph 2.3. In Annex D to this Regulation a vertical arrow starting from a horizontal segment and directed downwards.*
- 5.5.7. *On interdependent lamps, which may be used as part of an interdependent lamp system, the additional symbol shall be marked as follows:*
(a) For a front position lamp "MAY";
(b) For a rear position lamp "MRY";
(c) For a stop lamp "MSY"."
- 5.6. Where a device has been found to comply with the requirements of several standards, a single approval mark may be applied comprising the approval numbers and the additional symbols appropriate to each standard under which approval has been granted.
- 5.7. The approval mark above shall be clearly legible and be indelible. It may be placed on an inner or outer part (transparent or not) 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 set or a compartment cover is opened.
- 5.8. Annex 3 of the *ECE R 50, Rev. 3 Amendment 1 (Supplement 17 to the original version of the Regulation)* may be used for the relative location of approval marking and other markings.

6. GENERAL SPECIFICATIONS

- 6.1. Each device shall conform to the specifications of this standard.
- 6.2. The devices shall be so designed and constructed that in normal use, and despite the vibrations to which they may be subjected, their satisfactory operation continues to be assured and they retain the characteristics prescribed by this standard.
- Note:** Requirements of 5.2 above are deemed to be satisfied, if requirements specified in this standard are complied with.
- 6.3. *Position 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.

- 6.3.1. *However, in the case of rear 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 within the communication document.

- 6.4. In the case of replaceable *light source (s)*:

- 6.4.1. Any category or categories of *light sources* approved according to AIS-034 and/or *AIS-130* may be used, provided that no restriction on the use is made in AIS-034 and its amendments in force at the time of application for type approval or *in AIS-130 and its amendments in force at the time of application for type approval*

- 6.4.2. The design of the device shall be such that the *light source cannot* be fixed in no other position but the correct one.

- 6.4.3. The *light source* holder shall conform to the characteristics given in IEC Publication 60061. The holder data sheet relevant to the category of *light source* used, applies.

Note: Conditions of 6.4.3 are to be verified by using appropriate gauge or a standard reference *light source*.

- 6.5. *Reserved*

- 6.6. *Only front and rear position lamps and stop lamps may be constructed as an interdependent lamp system.*

- 6.7. *An interdependent lamp system shall meet the requirements when all its interdependent lamps are operated together. However, if the interdependent lamp system providing the rear position lamp function is partly mounted on the fixed component and partly mounted on a movable component, the interdependent lamp(s) specified by the applicant shall meet the outboard geometric visibility, colorimetric and photometric requirement, at all fixed positions of the movable component(s). In this case, the inboard geometric visibility requirement is deemed to be satisfied if this (these) interdependent lamp(s) still conform to the photometric values prescribed in the field of light distribution for the approval of the device, at all fixed positions of the moveable component(s)."*

- 6.8. *For direction indicator lamps of categories 11, 11a, 11b, 11c or 12 the flash may be produced by sequential activation of their light sources if the following conditions are met:*

- (a) Each light source, after its activation, shall remain lit until the end of the ON cycle;*

- (b) The sequence of activation of the light sources shall proceed in a uniform progressive manner from inboard towards the outboard edge of the apparent surface;*
- (c) It shall be one continuous line without repeat alternation in the vertical direction (e.g. no waves);*
- (d) The variation shall finish no more than 200 ms after the beginning of the ON cycle;*
- (e) For the orthogonal projection in the direction of the axis of reference of a rectangle, circumscribing the apparent surface of the direction indicator shall have its longer sides parallel to the H-plane, the ratio of the horizontal to the vertical sides shall not be less than 1.7.*

Compliance with the conditions mentioned above shall be verified in flashing mode."

7. INTENSITY OF LIGHT EMITTED

In the reference axis, the intensity of the emitted light of each of the two devices shall be at least equal to the minimum values and not exceed the maximum values of the following table. In no direction, the maximum values indicated shall be exceeded.

		<i>Minimum luminous intensity in cd</i>	<i>Maximum luminous intensity in cd</i>
7.1.	Rear position lamp	4	17
7.2.	Front position lamp	4	140
7.2.1.	Front position lamps incorporated in the a headlamp	4	140
7.3.	Stop lamp	40	260
7.4.	Direction indicators	-	-
7.4.1.	of the category 11 (*)	90	1,000
7.4.1.1.	of the category 11a (*)	175	1,000
7.4.1.2.	of the category 11b (*)	250	1,200
7.4.1.3.	of the category 11c (*)	400	1,200
7.4.2.	of the category 12 (*)	50	500
(*) (see Annex A)			

- 7.5. Outside of the reference axis and within the angle fields defined in the diagrams in Annex A to this standard, the intensity of the light emitted

shall, 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 minima specified in 7.1 to 7.4 above and of the percentage specified in the said table for the direction in question.

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

(a) *Except for a direction indicator lamp* The lamp shall comply with the minimum intensity required *in the table of standard light distribution in space as shown in Annex D* when any one light source has failed;

(b) All light sources which are connected in series are considered to be one light source

7.6. As an exception to 7.1 above, a luminous intensity of 60 cd maximum shall be permitted for rear position lamps reciprocally incorporated with stop lamps below a plane forming an angle of 5° with and downward from a horizontal plane.

7.7. Moreover,

7.7.1. Throughout the fields defined in Annex A, the intensity of the light emitted shall not be less than 0.05 cd for position lamps and not less than 0.3 cd for stop lamps and direction indicators;

7.7.2. If a position lamp is grouped or reciprocally incorporated with a stop lamp, the ratio between the luminous intensities actually measures of the two lamps when turned on simultaneously and the intensity of the rear position lamp when turned on alone shall be at least 5:1 to the eleven measuring points defined in Annex D and situated in the field delimited by straight vertical lines passing through 0°V/± 10°H and the straight horizontal lines passing through ± 5°V/0°H of the light distribution table;

If the rear position lamp or the stop lamp or both contain more than one light source and are considered as a single lamp, as defined in 7.5.1 above, the values to be considered are those obtained with all light sources in operation.

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

7.8. In general the intensities shall be measured with the light sources(s) continuously alight.

In the case of lamps intended to work intermittently, precaution shall be taken to avoid overheating of the device. Depending on the construction of the device, for example, the use of light-emitting diodes (LED) or the need to take precautions to avoid overheating, it is allowed to measure the lamps in flashing mode.

This shall be achieved by switching with a frequency of $f = 1.5 \pm 0.5$ Hz with the pulse width greater than 0.3 s, measured at 95 per cent peak light intensity.

In the case of replaceable filament lamps the filament lamps shall be operated at reference luminous flux during on time. In all other cases the voltage as required in 8.1. shall be switched with a rise time and fall time shorter than 0.01 s; no overshoot is allowed.

In the case of measurements taken in flashing mode the reported luminous intensity shall be represented by the maximum intensity.

- 7.9. Annex D, to which reference is made in 7.5 above, gives particulars of the methods of measurement to be used.
- 7.10. The rear-registration-plate illuminating device shall comply with the specifications indicated in Annex F to this standard.

8. TEST PROCEDURE

- 8.1. *All measurements, photometric and colorimetric shall be carried out With An uncoloured or coloured standard light source of the category Prescribed for the device, supplied with the voltage:*
 - (a) *In the case of filament lamps, that is necessary to produce the reference luminous flux required for that category of filament lamp;*
 - (b) *In the case of LED light sources of 6.75 V or 13.5 V; the luminous flux value produced shall be corrected. The correction factor is the ratio between the objective luminous flux and the mean value of the luminous flux found at the voltage applied;*
 - (c) *In the case of lamps with non-replaceable light sources: 6.75 V and 13.5 V respectively;*
 - (d) *In the case of a system that uses an electronic light source control gear being part of the lamp³ 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;*
 - (e) *In the case of a system that uses an electronic light source control gear not being part of the lamp, the voltage declared by the manufacturer shall be applied to the input terminals of the lamp.*
- 8.2. *The test laboratory shall require from the manufacturer the light source control gear needed to supply the light source and the applicable functions.*

8.3. *Reserved*

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

9. COLOUR OF LIGHT EMITTED

Stop lamps and rear position lamps shall emit red light, front position lamps shall emit white light or amber light, direction indicators shall emit amber light. *For the measurement of* colour of the light emitted inside the field of the light distribution grid defined at paragraph 2 of *Annex D the test procedure described in paragraph 8. of this Regulation shall be applied* Outside this field no sharp variation of colour shall be observed.

However, for lamps equipped with non-replaceable light sources *filament lamps and others*), the colorimetric characteristics should be verified with the light sources present in the lamps at a voltage of 6.75 V, 13.5 V or 28.0 V.

- 9.1 Use of white or amber coloured Front Position Lamps are governed by prescriptions in AIS-009

10. CONFORMITY OF PRODUCTION

- 10.1 The conformity of production procedures shall comply with those set out in the AIS-037 with the following requirements:
- 10.1.1 Lamps approved under this standard shall be so manufactured as to-conform to the type approved by meeting the requirements set forth in:
- 10.1.1.1 Intensity of light emitted (See 7).
- 10.1.1.2 Colour of light emitted (See 9).
- 10.2 Devices with apparent defects are disregarded.
- 10.3 The reference mark is disregarded.
- 10.4 The minimum requirements under this standard shall be so manufactured as to conform to the type for Conformity of Production control procedures set forth in Annex H to this standard for front and rear position lamps, direction indicator lamps and stop lamps and Annex E of AIS 012 Part 6 and its amendments for reversing lamps and shall be complied with.
- 10.5 The minimum requirements for sampling by the testing agency set forth in Annex J to this standard for front and rear position lamps, direction indicator lamps and stop lamps and Annex F of AIS 012 Part 6 and its amendments for reversing lamps and shall be complied with.”
- 10.6 The normal frequency of these verifications shall be once every two years.

11. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

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

12. Reserved

13. Reserved

14. EXTENSION OF TYPE APPROVAL

14.1 Details given in 9 of part 1 of this standard are applicable to this part also.

15. TRANSITIONAL PROVISIONS

[Transitional provision clauses to be reviewed based on notification status for AIS 10 (Part 3) Rev. 1 standard.]

15.1 At the request of the applicant, type approvals for compliance to AIS-010 (Part 3) (Rev.1):2010, shall be granted by test agencies from 27th October 2010 (date of adoption in CMVR-TSC). Such type approvals shall be deemed to be compliance to Annex A or Annex B of AIS-010:2004.

15.2 At the request of applicant, type approval to the compliance to Annex A or Annex B AIS-010:2004 shall be granted up to the notified date of implementation of AIS-010 (Part 3) (Rev.1):2010.

15.3 Type approvals issued for compliance to Annex A or Annex B of AIS-010 : 2004 shall be extended to approval of AIS-010 (Part 3) (Rev.1):2010 subject to satisfactory compliance of the following:

15.3.1 Marking as per 4.0 and sub-clauses for 5.0 applicable for marking.

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

15.3.3 In the case of front direction indicator lamps of categories, 11, 11a, and 11b, the photometric requirements, in particular those prescribed in 7.11 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 A or Annex B of AIS-010:2004.

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-010 (Part 3) (Rev.1):2010. Such extensions shall be deemed to be compliance to AIS-010:2004.

- 15.4.2 In the case of 15.2, extensions shall be granted subject to conditions of AIS-010:2004 till the notified date of implementation of AIS-010(Part 3) (Rev.1):2010.

- 15.5 Type approvals for compliance to AIS-037, already been granted, shall continue to be valid for AIS-010 (Part 3) (Rev.1):2010.

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 LIGHTING AND LIGHT SIGNALLING DEVICES 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 front position lamps, rear position lamps, stop lamps, direction indicators rear-registration-plate illuminating devices and Reversing Lamp to this standard, the following test shall be carried out by testing agency

- 16.1.1 Photometric requirements measured with a standard filament lamp as referred to in 8 above shall be at least 80 per cent of the minimum values specified and shall not exceed 120 per cent of the maximum values specified in 7.0.

- 16.1.2 Colourimetric requirements shall be specified in 9.0 within the limits specified.

[Clauses to be reviewed.]

17. AMENDMENTS TO ECE REGULATIONS AFTER THE LEVEL DESCRIBED IN 0.3 OF FOREWORD

- 17.1 Supplements

Note : 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.

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

- 17.2 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.

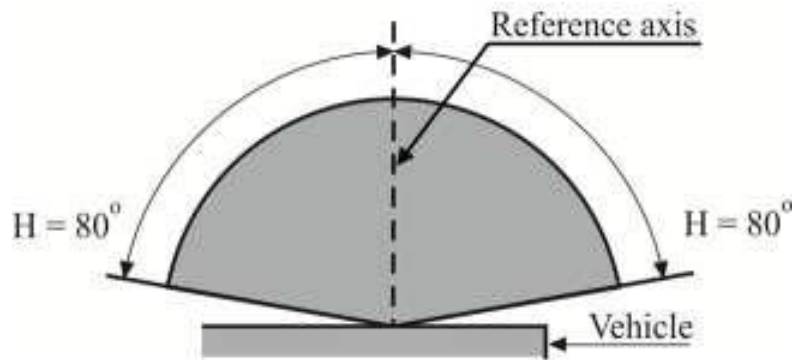
ANNEX A
(See 7.4)

MINIMUM HORIZONTAL (H) AND MINIMUM VERTICAL (V)
ANGLES FOR SPATIAL LIGHT DISTRIBUTION

1. Front position lamps

$$V = +15^{\circ} / -10^{\circ}$$

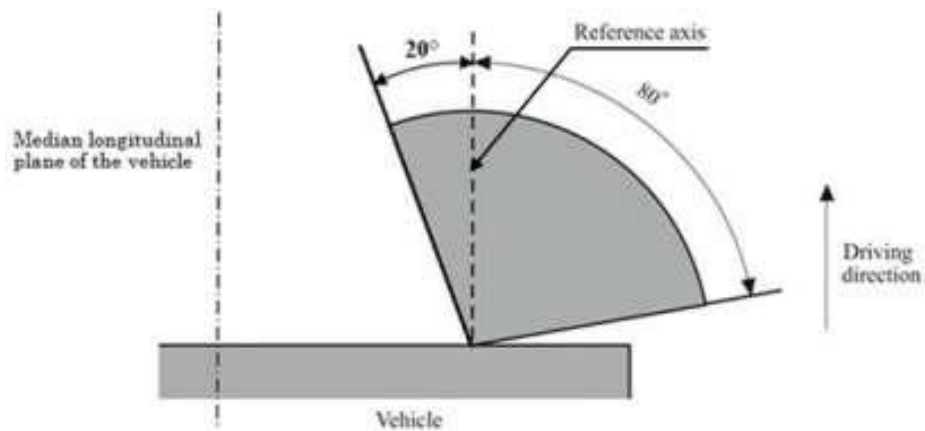
However, in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the angle of 10° below the horizontal may be reduced to 5°.



Front position lamps (for a pair of lamps)

$$V = + 15^{\circ} / - 10^{\circ}$$

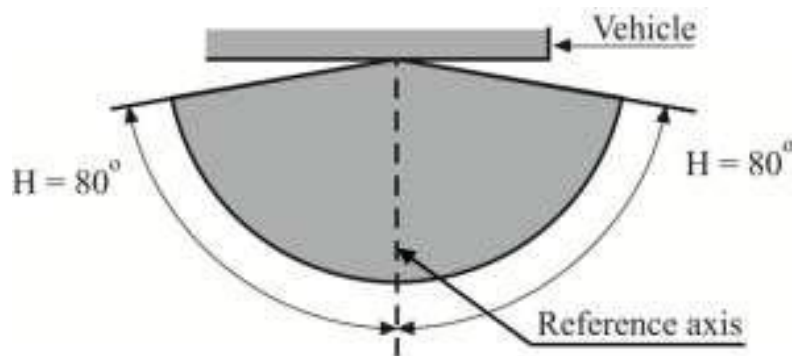
However, in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the angle of 10° below the horizontal may be reduced to 5°.



2. Rear position lamps

$$V = +15^{\circ}/-10^{\circ}$$

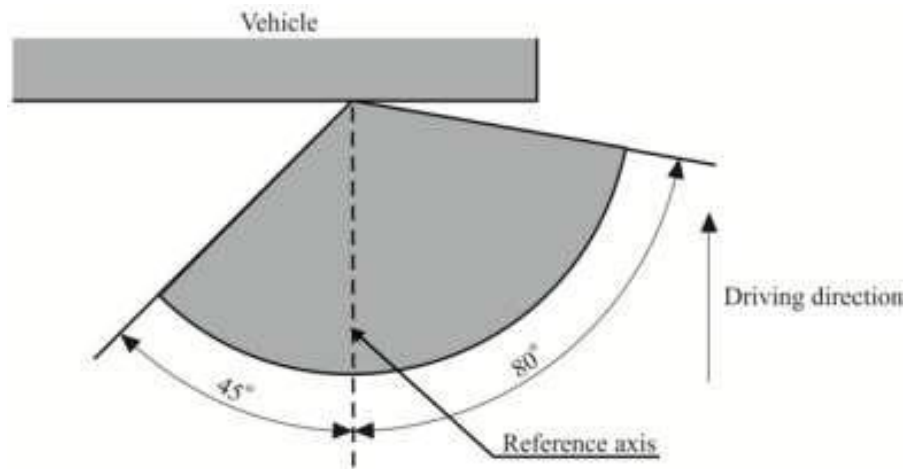
However, in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the angle of 10° below the horizontal may be reduced to 5°.



Rear position lamps (for a pair of lamps)

$$V = +15^{\circ} / -10^{\circ}$$

However, in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the angle of 10° below the horizontal may be reduced to 5°.



However, in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the inward angle of 45° may be reduced to 20° under the H plane.

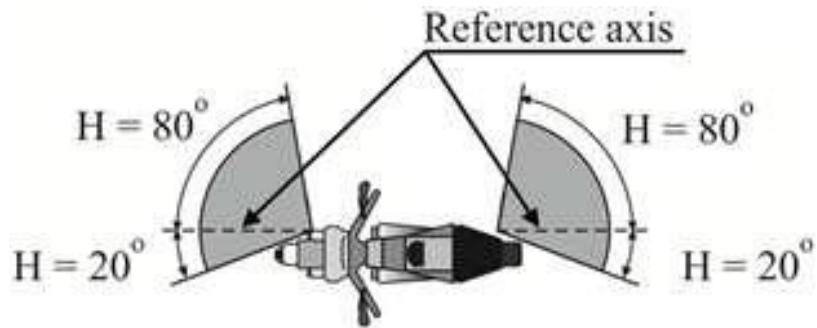
3. Direction indicators of categories 11, 11a, 11b, 11c and 12

$$V = \pm 15^\circ$$

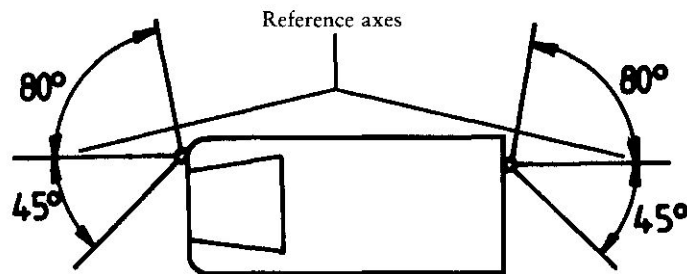
Minimum horizontal angles of light distribution in space:

Categories 11, 11a, 11b and 11c:	direction indicators for the front of the vehicle;
Category 11:	for use at a distance not less than 75 mm from the passing beam headlamp;
Category 11a:	for use at a distance not less than 40 mm from the passing beam headlamp;
Category 11b:	for use at a distance not less than 20 mm from the passing beam headlamp;
Category 11c:	for use at a distance less than 20 mm from the passing beam headlamp.

For two-wheel vehicles



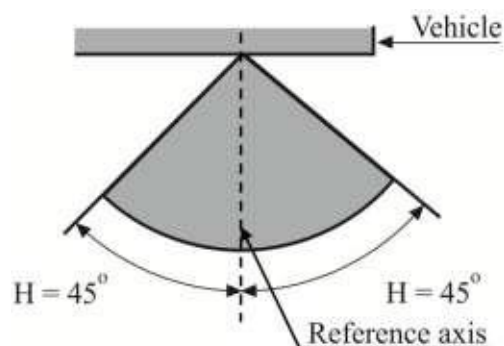
For three-wheel vehicles



4. Stop lamps

$$V = +15^\circ / -10^\circ$$

However, in the case where a device is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the angle of 10° below the horizontal may be reduced to 5° .



However, in the case of a pair of lamps, the inboard geometric visibility requirement is deemed to be satisfied if the lamps conform to the photometric values prescribed in the field of light distribution for the approval of the device.

ANNEX B (Reserved)

ANNEX C (Reserved)

ANNEX D

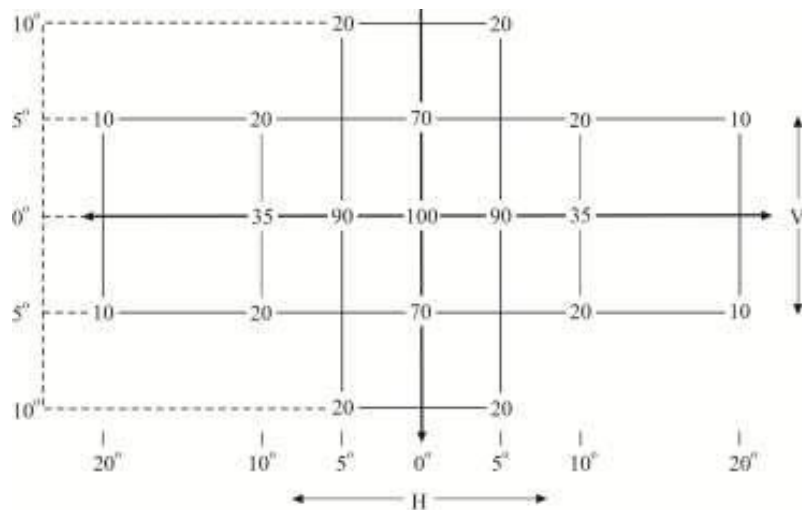
(See 7.5, 7.7.2, 7.7.3, 7.9 and 9)

PHOTOMETRIC MEASUREMENTS

D-1. Measurement methods

- D-1.1. During photometric measurements, stray reflections shall be prevented by appropriate masking.
- D-1.2. Should the results of measurements be challenged, measurements shall be carried out in such a way as to meet the following requirements:
- D-1.2.1. The distance of measurements shall be such that the law of the inverse of the square of the distance is applicable;
- D-1.2.2. The measuring equipment shall be such that the angular aperture of the receiver viewed from the reference centre of the lamp is between $10'$ and 1° ;
- D-1.2.3. 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 $15'$ from the direction of observation.
- D-1.3. 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 in the field of the reference axis specified by the manufacturer.

D-2. Standard luminous intensity distribution table



D-2.1. The direction $H = 0^\circ$ and $V = 0^\circ$ 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 measurements, the minimum intensities as a percentage of the minimum required in the axis for each lamp (in the direction $H = 0^\circ$ and $V = 0^\circ$).

D-2.2. Within the field of light distribution of D-2, schematically shown as a grid, the light pattern should be substantially uniform so that the light intensity in each direction of a part of the field formed by the grid lines meets at least the lowest minimum percentage value being shown on the grid lines surrounding the questioned direction.

D-2.3 *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 degrees downwards.*

D-3. Test conditions

The photometric performance shall be checked:

D-3.1. For non-replaceable (fixed) filament lamps or other light sources:

With the light sources present in the lamp, in accordance with the relevant subparagraph of paragraph 8.1 of this regulation.

D-3.2. For replaceable filament lamps:

when equipped with filament lamps at 6.75 V, 13.5 V the luminous intensity (luminance) values produced shall be corrected.

For filament lamps 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 or 13.5 V).

For LED light sources the correction factor is the ratio between the objective luminous flux and the mean value of the luminous flux found at the voltage applied (6.75 V or 13.5 V).

The actual luminous fluxes of each **light source** used shall not deviate more than ± 5 per cent from the mean value

Alternatively *and in case of filament lamps only*, 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.

D-3.3. For any signalling lamps, 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; direction indicators shall be operated in the flashing mode ($f = 1.5$ Hz, duty factor 50 per cent). 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
(Reserved)

ANNEX F
(See 7.10)

**PHOTOMETRIC MEASUREMENTS FOR THE
REAR-REGISTRATION-PLATE ILLUMINATING DEVICE**

F-1. Space to be illuminated

Devices shall be designed in such a way as to illuminate a position measuring at least 50 X 150.

F-2. Colour of the light

The light of the illuminating device shall be sufficiently colourless in order not to modify noticeably the colour of the rear-registration-plate.

F-3. Angle of incidence

The manufacturer of the illuminating device shall specify one or more or a field of positions in which the device is to be fitted in relation to the space for the registration plate; when the lamp is placed in the position(s) specified by the manufacturer the angle of incidence of the light on the surface of the plate does not exceed 82° at any point of the surface to be , this angle being measured from the mid-point of the edge of the illuminating surface of the device which is furthest from the surface of the plate. If there is more than one illuminating device, the foregoing requirement shall apply only to the part of the plate intended to be illuminated by the device concerned.

The device shall be so designed that no light is emitted directly towards the rear, with the exception of red light if the device is combined or grouped with a rear lamp.

F-4. Measuring procedure

Luminance measurements shall be made on a piece of clean white blotting paper with a minimum diffuse reflection factor of 70 per cent, having the same dimensions as the registration plate, placed in the position normally occupied by it and 2 mm in front of its holder.

Luminance measurements shall be made perpendicular to the surface of the paper at the points shown in F-5. of this annex, each point representing a circular area of 25 mm in diameter.

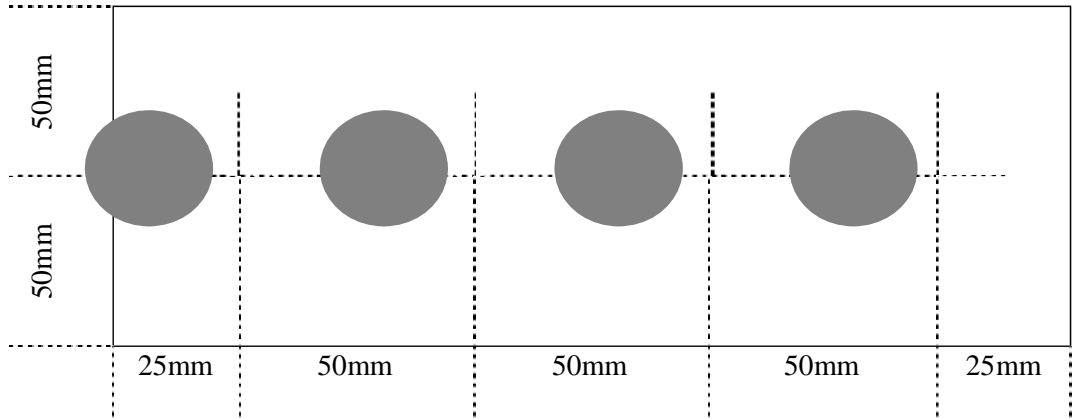
For an illuminating device not equipped with filament lamps, the luminance values measured after one minute and after 30 minutes of operation shall comply with the minimum requirements. The luminance distribution after one minute of operation can be calculated from the luminance distribution after 30 minutes of operation, by applying at

each test point the ratio of luminance values measured at one point after one minute and after 30 minutes of operation.

F-5. Photometric characteristics

At each of the points of measurement shown below, the luminance B shall be not less than 2 cd/m^2 .

Figure F1 – Points for measurement (See F-4)



The gradient of the luminance between the values B1 and B2, measured at any two points 1 and 2 selected from among those mentioned above, shall not exceed $2 \times B_0/\text{cm}$, B0 being the minimum luminance measured at the various points, that is to say

$$\frac{B_2 - B_1}{\text{distance 1 - 2 in cm}} \leq 2 \times B_0/\text{cm}$$

ANNEX G

(See 3.1)

**INFORMATION AND SAMPLES TO BE SUBMITTED AT THE
TIME OF APPLICATION FOR TYPE APPROVAL**

At the time of application, the manufacturer shall declare to the testing agency the Information given below:

- G-1** Manufacturer's name & address
- G-2** Telephone No
- G-3** FAX. No.
- G-4** E mail address
- G-5** Contact person
- G-6** Plant/(s) of manufacture.
- G-7** the purpose or purposes for which the device submitted for approval is intended;
- G-8** in the case of a front position lamp, indication that it is intended to emit white light;
- G-9** in the case of a direction indicator: the category.
- G-10** Drawings, in sufficient detail to permit identification of the type of device and showing in what geometrical position(s) the device may be mounted on the vehicle; the axis of observation to be taken as the axis of reference in the tests(horizontal angle $H = 0^\circ$, vertical angle $V = 0^\circ$) and the point to be taken as the centre of reference in the said tests; the drawings shall show the position intended for symbols approval mark.
- G-11** A brief technical description giving details, in particular, with the exception of lamps with non-replaceable light source/Light source module:
 - (a) the category or categories of filament lamp(s) prescribed in AIS-034 and its amendments
 - (b) *the category or categories of LED light sources prescribed in AIS-130 and its amendments*
 - (c) the light source module specific identification code.
- G-12** Two devices
- G-13** Colour of light emitted (Red/White/Amber/Selective Yellow)
- G-14** Material of Lens: Glass/plastic

- G-15** In case the light source is replaceable, Category, rated voltage and quantity
- G-16** 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 or, in the case of a rear registration plate lamp, that the device may be fitted in more than one or a field of positions in relation to the space to be occupied by the registration plate; these different conditions of installation (or different positions) shall be indicated in the application form / test report

ANNEX H
(See 10.4)
MINIMUM REQUIREMENTS FOR CONFORMITY OF PRODUCTION
CONTROL PROCEDURES

H 1.0 GENERAL

- H1.1. 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.
- H1.2. 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:

For Front and Rear Position
Lamp, Direction Indicator
Lamp and Stop lamp

Clauses 7 and 8

For Rear registration
illuminating device

Clauses F-5 and F-2 of Annex F

- H1.2.1 No measured value deviates unfavorably by more than 20 per cent from the values prescribed in this standard.
- H1.2.2. 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 light source.
- H 1.3. The chromaticity coordinates shall be complied when tested under conditions of paragraph 7.0 of this standard.

H 2.0 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.

H2.1. Nature of tests

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

H2.2. Methods used in tests

H2.2.1. Tests shall generally be carried out in accordance with the methods set out in this standard.

H2.2.2. 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.

H2.2.3. The application of paragraphs H 2.2.1. and H 2.2.2. requires regular calibration of test apparatus and its correlation with measurements made by a testing agency.

H2.2.4. In all cases the reference methods shall be those of this standard, particularly for the purpose of administrative verification and sampling.

H2.3. 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.

H2.4. 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.

H2.5. 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 percent, the minimum probability of passing a spot check in accordance with Annex J (first sampling) would be 0.95.

ANNEX J
(See 10.5)
MINIMUM REQUIREMENTS FOR SAMPLING BY A
TESTING AGENCY

J1.0 GENERAL

- J1.1. 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.
- J1.2. 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:

For Front and Rear Position Lamp, Direction Indicator Lamp and Stop lamp	Clauses 7 and 8
For Rear registration Illuminating device	Clauses F-5 and F-2 of Annex F

- J1.2.1. No measured value deviates unfavorably by more than 20 per cent from the values prescribed in this standard.
- J1.2.2. 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 *light source*.
- J1.2.3. Lamps with apparent defects are disregarded.
- J1.3. The chromaticity coordinates shall be complied when tested under conditions of paragraph 7. of this standard.

J2.0 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.

J2.1. The conformity is not contested

- J2.1.1. 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:

J2.1.1.1. 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

J2.1.1.2. sample B

B1: both lamps 0 per cent

J2.1.2. or, if the conditions of paragraph J1.2.2. for sample A are fulfilled.

J2.2 The conformity is contested

J2.2.1. 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:

J2.2.1.1. 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

J2.2.1.2. 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 percent

J2.2.2. or, if the conditions of paragraph G1.2.2. for sample A are not fulfilled.

J2.3 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:

J2.3.1. sample A

A4: one lamp not more than 20 per cent one lamp more than 30 per cent

A5: both lamps more

J2.3.2. 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

J2.3.3 or, if the conditions of paragraph G1.2.2. for samples A and B are not fulfilled.

J3.0 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.

J3.1. The conformity is not contested

J3.1.1. 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:

J3.1.1.1. 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

J3.1.1.2. sample D

D1: in the case of 2 both lamps 0 per cent J3.1.2. or, if the conditions of paragraph

J1.2.2. for sample C are fulfilled.

J3.2. The conformity is contested

J3.2.1. 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:

J3.2.1.1. 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

J3.2.1.2. or, if the conditions of paragraph J1.2.2. for sample C are not fulfilled.

J 3.3 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:

J3.3.1. 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

J3.3.2. sample D

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

J3.3.3. or, if the conditions of paragraph J1.2.2. for samples C and D are not fulfilled

Figure 1

