

TECHNICAL REPORT

ISO
TR 9819

First edition
1991-10-15

Road vehicles — Comparison tables of regulations on photometric requirements of light signalling devices

*Véhicules routiers — Tables des réglementations sur les caractéristiques
photométriques des dispositifs de signalisation lumineuse*



Reference number
ISO/TR 9819:1991(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

ISO/TR 9819, which is a Technical Report of type 3, was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Sub-Committee SC 8, *Lighting and signalling*.

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Introduction

0.1 Rationale

This Technical Report intends world-wide harmonization within the Member Bodies of ISO/TC 22 and others using ISO 303. The following points are considered:

- a) The compilation of photometric requirements of light signalling devices consists only of devices specified in ISO 303 regarding location and colour. (Nos. 18 and 19 are new and incorporation into ISO 303 is pending.)
- b) Light signalling devices listed in the tables of the photometric values are either fully harmonized with other national or international requirements or nearest to harmonization (e.g. see sheets 6 and 7).
- c) The latest or current test documents are listed. Test documents are only mentioned without the latest document index or date of issue. Thus the Technical Report will not be outdated by a change of a test document resulting in a new index, etc.
- d) As generally various approved light sources, filament lamps (bulbs) are possible for one light signalling device, the filament lamp documents from NA, EU and the IEC are listed in clause 2. Thus a change of those documents does not outdate the data sheets of this Technical Report.
- e) The colour chosen is either the colour defined in the test document or in ISO 303 and which is harmonized or compatible as far as possible.
- f) The tables of the photometric values are those used for the standard light signalling devices. Devices with more than one compartment or a special location, e.g., front direction indicator lamp, are considered in clause 3. Thus exemptions of ISO 303 as well as the appropriate test documents are taken into account.
- g) The tables of luminous intensities are for the design of light signalling devices as well as testing. For production sample(s), see note 1.
- h) Canada has announced that they are in the process of harmonizing with Europe and the USA; therefore the data sheets are already updated.
- i) USA, FMVSS 108 and Canada CMVSS 108 have no specific requirements for "optional devices": the appropriate SAE Standard has therefore also been listed when the device is optional.
- j) The photometric test procedure, the test grid with the left (L) and right (R) test points and the laboratory accuracy guideline are explained in the SAE Standards.
- k) This document is not an exhaustive catalogue of all national and international regulations, but is based on common data.

0.2 Sources

This Technical Report is a compilation of specifications of North America (NA), Europe (EU) and Japan, for use when light signalling devices as specified in ISO 303 are designed, tested or assessed. It gives the differences between the listed requirements and may be used for further harmonization.

NOTE 1 Photometric characteristics of lights are not within the mandate of ISO. Instead, photometric characteristics are being considered by a Working Group which was appointed jointly by the International Organization for Standardization (Technical Committee ISO/TC 22, *Road vehicles*), the International Commission on Illumination (Committee CIE TC 4-10, *Automobile lighting systems*) and the International Electrotechnical Commission (Technical Committee IEC/TC 34, *Lamps and related equipment*).

This Working Group met for the first time in Brussels in 1952, and has been named "Groupe de Travail Bruxelles 1952 (G.T.B.)". G.T.B. drafted all the ECE Regulations and EEC-Directives dealing with lighting devices which are cited in the "data sheets".

In the USA and Canada, the SAE developed the relevant SAE Standards which were eventually totally or partially integrated into both MVSS 108.

In Japan the JIS D 5500 was similarly developed by the Japanese Standards Association.

STANDARDSISO.COM : Click to view the full PDF of ISO/TR 9819:1991

Road vehicles — Comparison tables of regulations on photometric requirements of light signalling devices

1 Scope

This Technical Report establishes a comparison of regulations on the requirements for light signalling devices to be installed into road vehicles and their trailers. It may be applied in the lack of detailed specifications to choose the photometric requirements or standard for the appropriate lamps regarding their design data and design test values. Sample(s) of light signalling devices taken from production or stock, etc. are to be tested in compliance with the appropriate test documents under "performance requirements" in NA and "conformity of production" in EU.

2 References

ISO 303, *Road vehicles — Installation of lighting and light signalling devices for motor vehicles and their trailers.*

ISO 7227, *Road vehicles — Lighting and light signalling devices — Vocabulary.*

IEC 809, *Lamp for road vehicles. Dimensional electrical and luminous requirements.*

IEC 810, *Lamp for road vehicles. Performance requirements.*

ECE/R37 *Filament lamps for use in approved lamp units.*

SAE J 573, *Lamp bulbs and sealed beam headlamp units*

SAE J 575, *Tests for motor vehicle lighting devices. "Photometry test".*

SAE J 1330, *Photometry laboratory accuracy guidelines.*

3 Tables of photometric requirements of light signalling devices with one compartment

Specifications for light signalling devices with one compartment are given in the following individual sheets.

For light signalling devices with more than one compartment, see ISO 303, appropriate clauses and the appropriate test document(s). For different values needed for special location, as for the front direction indicator lamp, see also the appropriate test document(s).

Each data sheet consists of

- a table with an angular grid of the photometric test points and the photometric test zone(s), and the effective test angles;¹⁾
- a table of the design luminous intensities which are required in NA (USA and Canada), EU (ECE and EEC) and Japan (JIS);^{1), 2)}
- a table of the appropriate test document(s) and colour(s): only the latest test document(s) should be consulted.

4 Data sheets of photometric requirements

The following data sheets are given in this Technical Report:

Light signalling device	Sheet No.	ISO 303, page No.
Front position lamp	1	16
Parking lamp	2	18
Front direction indicator lamp	3	20
Side direction indicator lamp for PV	4	22
Side direction indicator lamp for CV	5	22
Rear direction indicator lamp ³⁾	6	24
Stop lamp ³⁾	7	26
Rear position lamp	8	28
Rear fog lamp	9	30
Reversing lamp	10	32
Rear registration plate lamp and plate area	11	34
Rear, front and side reflex reflector	12	36, 38, 42, 52
Side marker lamp (front/intermediate) ³⁾	13	40, 44
Side marker lamp (rear) ³⁾	14	40
End outline marker lamp (front)	15	46
End outline marker lamp (rear)	16	46
Identification lamp (front/rear)	17	48
Daytime running lamp (rear) ³⁾	18	—
Centre high-mounted stop lamp (for PV) ³⁾	19	—

1) Except rear registration plate lamp, sheet 11.

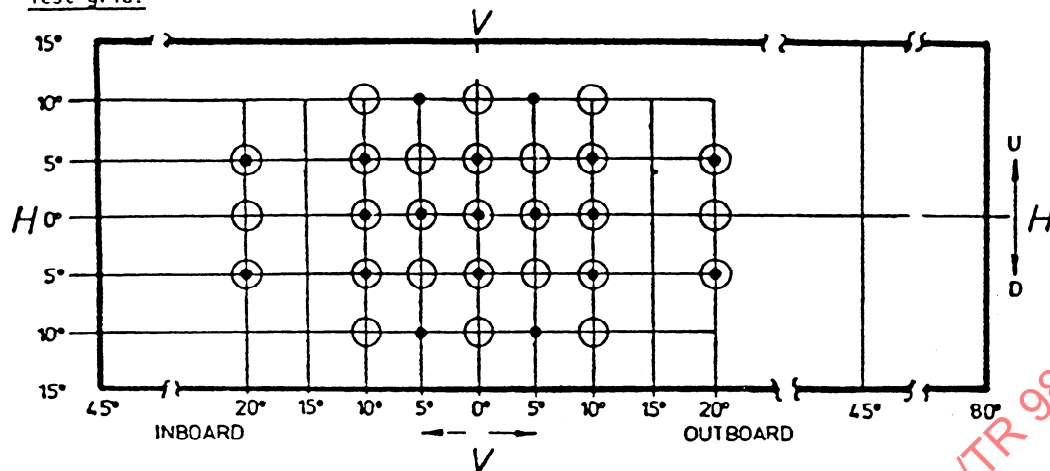
2) Except rear, front and side reflex reflectors, sheet 12.

3) These data sheets are still to be finalized regarding harmonization. No final decisions have yet been taken, except on the colour of the side marker lamp (rear) — see sheet 14.

Sheet No. 1

FRONT POSITION LAMP

Test grid:



Test points:



EEC/ECE and USA



JIS

Test zone: -



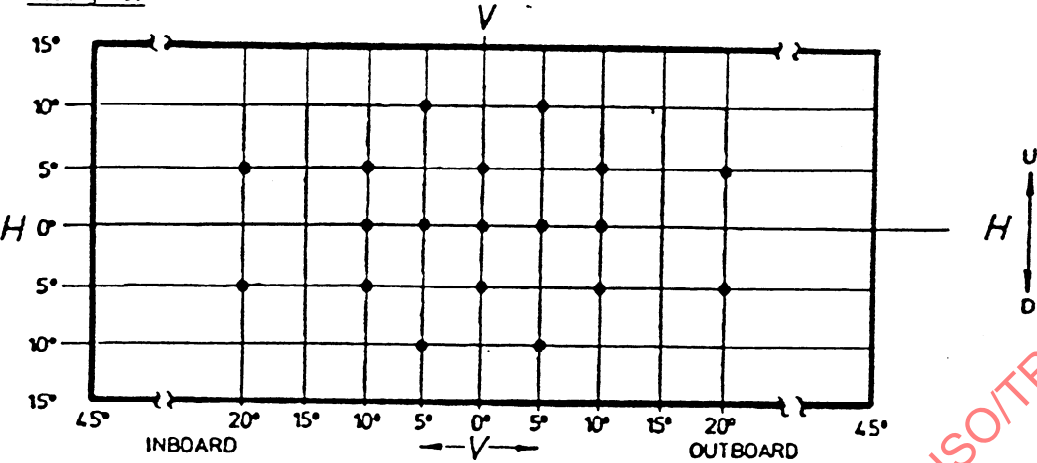
EU = with a luminous intensity of at least 0,05 cd.

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	10 L	-	U:125*	-	+) 60	0,8	U:125*
	5 L	0,8		0,8		-	
	0 L	-		-		0,8	
	5 V	0,8		0,8		-	
	10 R	-		-		0,8	
5 U/D	20 L	0,4	U:125*	0,4	+) 60	0,4	U:125*
	10 L	0,8		0,8		0,8	
	5 L	-		-		1,4	
	0 V	2,8		2,8		2,8	
	5 R	-		-		1,4	
	10 R	0,8		0,8		0,8	
	20 R	0,4		0,4		0,4	
H	20 L	-	125	-	+) 60	0,4	125
	10 L	1,4		1,4		1,4	
	5 L	3,6		3,6		3,6	
	0 V	4		4		4	
	5 R	3,6		3,6		3,6	
	10 R	1,4		1,4		1,4	
	20 R	-		-		0,4	
* below H			250				250
+) All test points.				+): 100 cd when lamp is incorporated into headlamp.			
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/758 ECE R7		JIS D 5500	
Colour		White or Yellow		White or Se- lective Yellow		White	

Sheet No. 2	PARKING LAMP
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For sidemounted parking lamps only the outboard test grid shall be considered.

Test grid:



Test points:-



Test zone:

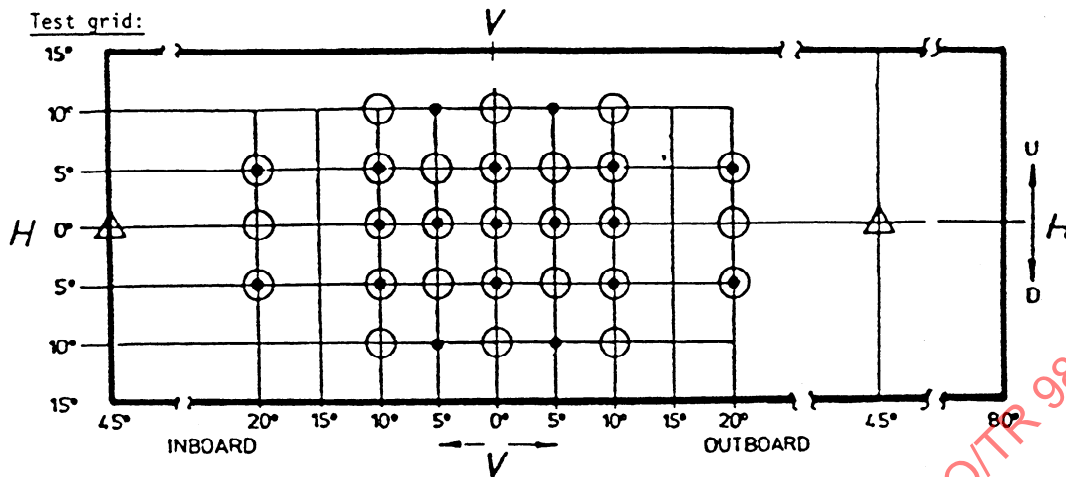


= Test zone with a luminous intensity of at least 0,05 cd., a max. of 60 cd toward the front and a max. of 30 cd toward the rear.

PHOTOMETRIC TEST VALUES (cd)					
Test Points		NA Min/Max	EU Min/Max		JAPAN Min/Max
10 U/D	10 L		-	Front	
	5 L		0,4	60	
	0 V		-	-	
	5 R		0,4	Rear	
	10 R		-	30	
5 U/D	20 L		0,2		
	10 L		0,4	Front	
	5 L		-	60	
	0 V		1,4	-	
	5 R		-	Rear	
	10 R		0,4	30	
	20 R		0,2		
H	20 L		-		
	10 L		0,7	Front	
	5 L		1,8	60	
	0 V		2,0	-	
	5 R		1,8	Rear	
	10 R		0,7	30	
	20 R		-		
Test documents			EEC 77/540 ECE R 77		
Color			White to the front, Red to the rear		

Sheet No. 3

FRONT DIRECTION INDICATOR LAMP



Test points: ● EEC/ECE and USA ⊗ JIS

Test zone: — EU = with a luminous intensity of at least 0,3 cd.

Effective test angle: △ NA = angle from which at least 12,5 cm² outer lens surface of the lamp shall be visible.

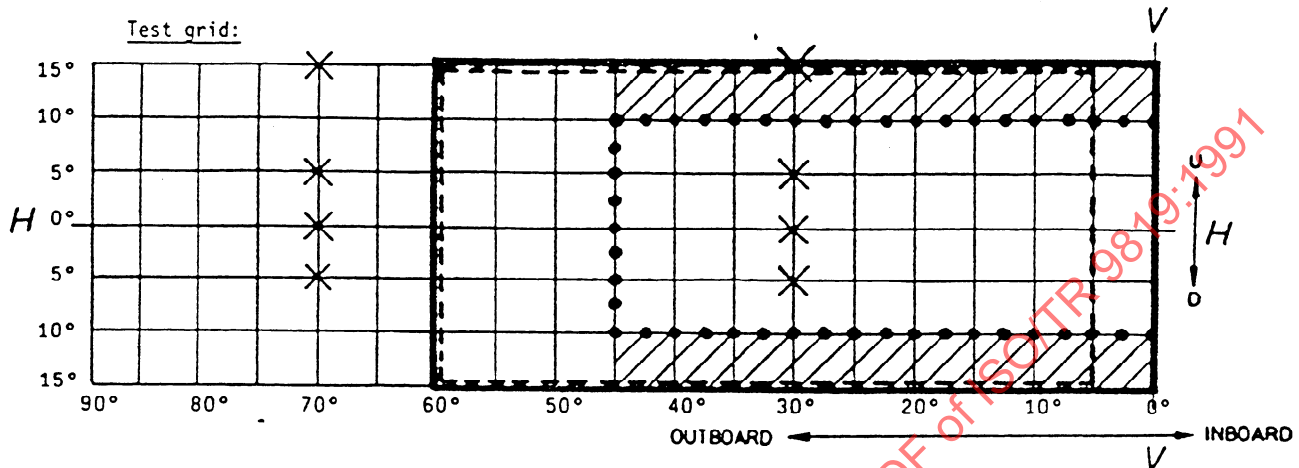
PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	10 L	-		-	700	25	-
	5 L	40		35		-	
	0 V	-	-	-		60	
	5 R	40		35		-	
	10 R	-		-		25	
5 U/D	20 L	25		17,5	700	25	-
	10 L	75		35		75	
	5 L	-		-		125	
	0 V	175	-	122,5		175	
	5 R	-		-		125	
	10 R	75		35		75	
	20 R	25		17,5		25	
H	20 L	-		-	700	35	-
	10 L	100		61,2		100	
	5 L	200		157,5		200	
	0 V	200	-	175		200	
	5 R	200		157,5		200	
	10 R	100		61,2		100	
	20 R	-		-		35	
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/759 ECE R6		JIS D 5500	
Colour		Yellow		Yellow		Yellow	

Sheet No. 4

SIDE DIRECTION INDICATOR LAMP (FOR PV)

(For all vehicles in EU, for veh. with length $< 9,1$ m in USA and < 6 m in Jap.)

The table and the test point grid are applicable for lamps to be located on the left hand side of the vehicle. For the right hand side, the symmetric values are to be used.



Test points:



USA

Test zones:



EU = with a max. luminous intensity of 200 cd.



EU = with a min. luminous intensity of 0,6 cd.



JIS = with a max. luminous intensity of 300 cd and a min. of 1,0 cd.



JIS = with a max. luminous intensity of 300 cd and a min. of 0,3 cd.

PHOTOMETRIC TEST VALUES (cd)

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min*/Max*		JAPAN Min*/Max*	
15 U	70 L	5	60	*	200	**	300
	45 L	-	-				
	30 L	5	60				
5 U	70 L	15	60	*	200	**	300
	30 L	15	60				
H	70 L	15	60	*	200	**	300
	30 L	15	60				
5 D	70 L	15	60	*	200	**	300
	30 L	15	60				
Test documents		***		EEC 76/759 ECE R6		JIS D 5500	
Colour		Yellow		Yellow		Yellow	

Min*: for EU and JIS only test zone(s).

Max*: for EU and JIS only test zone(s).

*: for min. intensity see test zone (not test points)

**: for min. intensity see test zones and (not test points)

***): SAE J 914, no MVSS 108 requirements.

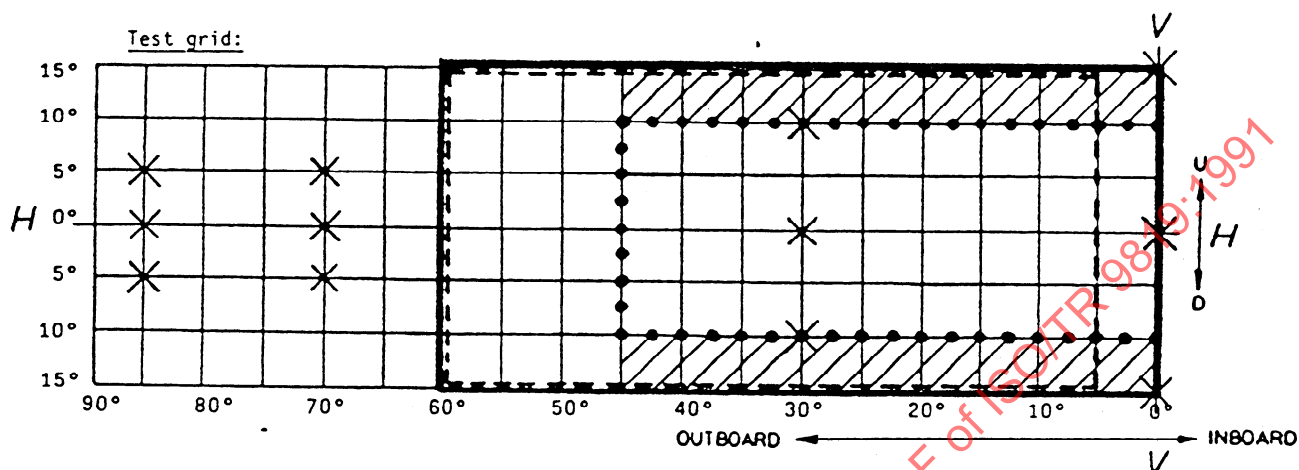
Sheet No. 5

SIDE DIRECTION INDICATOR LAMP (FOR CV)

(For all vehicles in EU, for veh. with length $> 9,1$ m in USA and > 6 m in Jap.)

This table is applicable for lamps to be located on the left hand side of the vehicle. For the right hand side, the symmetric values are to be used.

Test grid:



Test points:



USA

Test zones:



EU = with a max. luminous intensity of 200 cd.



EU = with a min. luminous intensity of 0,6 cd.



JIS = with a max. luminous intensity of 300 cd and a min. of 3,0 cd.



JIS = with a max. luminous intensity of 300 cd and a min. of 0,7 cd.

PHOTOMETRIC TEST VALUES (cd)

Test Points		NA Min/Max		EU Min*/Max*		JAPAN Min*/Max*	
15 U/D	0	20	300	*	200	**	300
10 U/D	30 L	20	300	*	200	**	300
5 U/D	85 L	40	300	*	200	**	300
	70 L	30					
H	85 L	50					
	70 L	30	300	*	200	**	300
	30 L	30					
	0	30					
Test documents		***		EEC 76/759 ECE R6		JIS D 5500	
Colour		Yellow		Yellow		Yellow	

Min*: for EU and JIS only test zone(s).

Max*: for EU and JIS only test zone(s).

*: for min. intensity see test zone  (not test points)

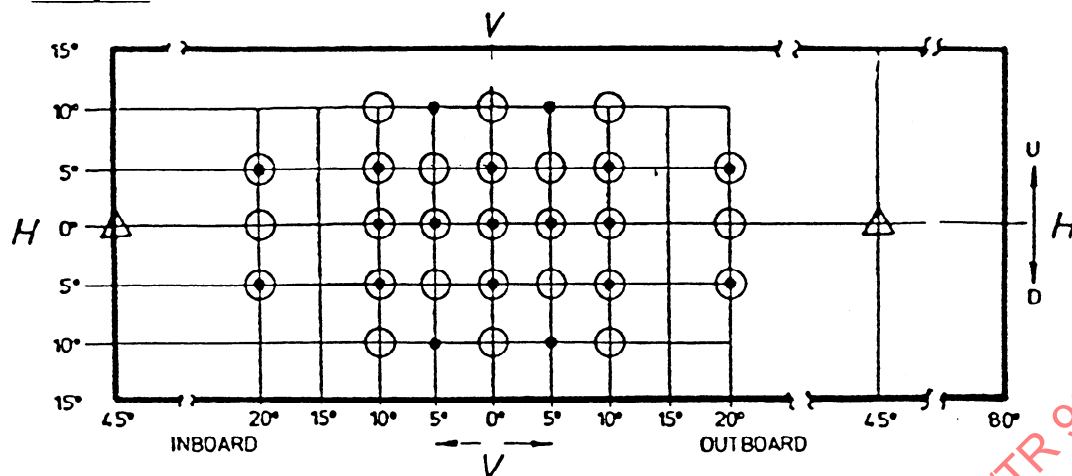
***: for min. intensity see test zones  and  (not test points)

***): SAE J 914, no MVSS 108 requirements.

Sheet No. 6

REAR DIRECTION INDICATOR LAMP

Test grid:



Test points:

● EEC/ECE and USA ⊕ JIS

Test zone: -

— EU = with a luminous intensity of at least 0,3 cd.

Effective test angle:

△ NA = angle from which at least 12,5 cm² outer lens surface of the lamp shall be visible.

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	10 L	-		-		25	
	5 L	26		10		-	
	0 V	-	750	-	200*	60	750
	5 R	26		10		-	
	10 R	-		-		25	
5 U/D	20 L	16,2		5		25	
	10 L	48,7		10		75	
	5 L	-		-		125	
	0 V	113,7	750	35	200*	175	750
	5 R	-		-		125	
	10 R	48,7		10		75	
H	20 R	16,2		5		25	
	20 L	-		-		35	
	10 L	65		17,5		100	
	5 L	130		45		200	
	0 V	130	750	50	200*	200	750
	5 R	130		45		200	
	10 R	65		17,5		100	
	20 R	-		-		35	
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/759 ECE R6		JIS D 5500	
Colour		Yellow**		Yellow		Yellow	

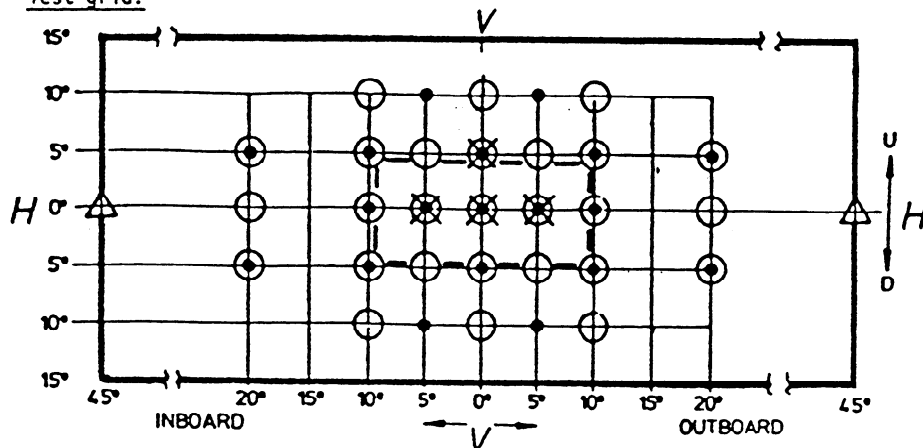
*: 350 cd proposed by GTB instead of 200 cd, to harmonize with NA. GTB/CE 1816, 15.05.1980. Currently discussed by GRE/WP29 June 4, 1986 GTB/CE 2165: 260 cd proposed by UK without a luminance test.

** : US and CAN also allows "RED" with the photometric values of the STOP LAMP.

Sheet No. 7

STOP LAMP

Test grid:



Test points:

EEC/ECE and USA JIS

Test zone:

EU = with a luminous intensity of at least 0.3 cd.

Effective test angle:

NA = angle from which at least 12,5 cm² outer lens surface of the lamp shall be visible.

Incorporated stop and rear position-lamp

EU: If a stop-lamp is incorporated with a rear position-lamp, the ratio between the luminous intensities actually measured of the two lights when turned on simultaneously and the intensity of the red rear position light when turned on alone should be at least 5:1 in the field delimited by the straight horizontal lines passing through $\pm 5^\circ$ V and the straight vertical lines passing through $\pm 10^\circ$ H of the light distribution table:

NA; Jap.: Test points 5:1 and Test points 3:1

If a rear position-lamp is incorporated with a stop-lamp, the stop-lamp candlepower shall not be less than three times the candlepower of the rear position-lamp at any test point; except that at H-V, H-5L, H-5R, and 5 U-V, the stop-lamp candlepower shall not be less than five times the candlepower of the rear position-lamp.

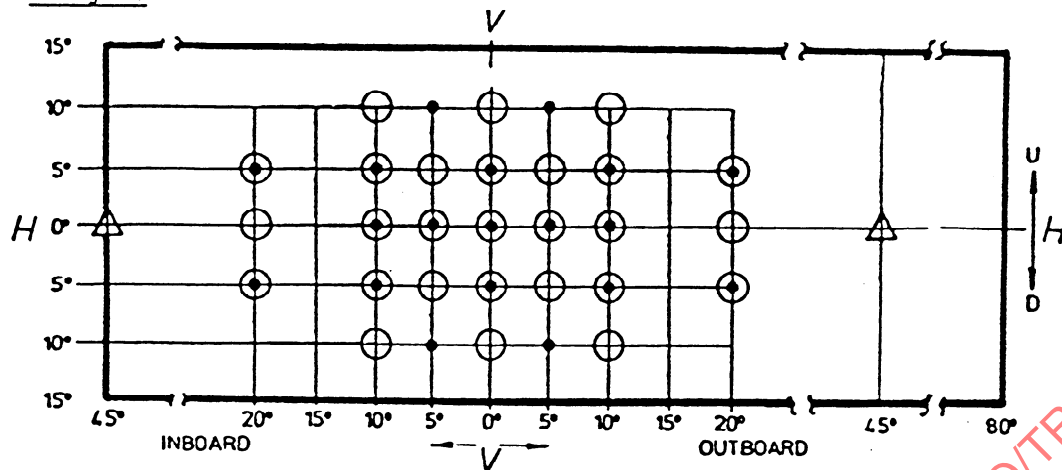
PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	10 L	16	300	-	100*	10	300
	5 L			8		-	
	0 V			-		25	
	5 R			8		-	
	10 R			-		10	
5 U/D	20 L	10	300	4	100*	10	300
	10 L	30		8		30	
	5 L	-		-		50	
	0 V	70		28		70	
	5 R	-		-		50	
	10 R	30		8		30	
	20 R	10		4		10	
H	20 L	40	300	-	100*	15	300
	10 L			14		40	
	5 L			36		80	
	0 V			40		80	
	5 R			36		80	
	10 R			14		40	
	20 R			-		15	
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/758 ECE R7		JIS D 5500	
Colour		Red		Red		Red	

100* : 185 cd proposed by GTB instead 100 cd to harmonize with NA. GTB/CE 1816, 15.5.1980 Currently discussed by GRE/WP29 June 4, 1986 GTB/CE 2165: 150 cd proposed by UK without a luminance test.

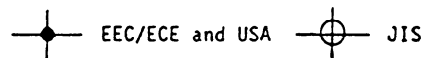
Sheet No. 8

REAR POSITION LAMP

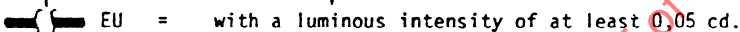
Test grid:



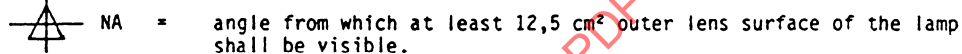
Test points:



Test zone: -



Effective test angle:



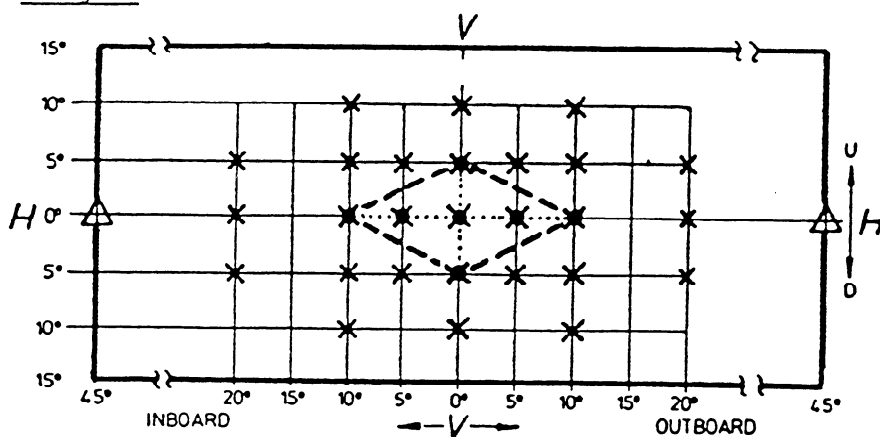
Incorporated stop and rear position-lamp: see page 31.

PHOTOMETRIC TEST VALUES (cd)						
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max
10 U/D	10 L	-	18	-	12	0,3
	5 L	0,4		0,8		-
	0 V	-		-		0,5
	5 R	0,4		0,8		-
	10 R	-		-		0,3
5 U/D	20 L	0,3	18	0,4	12	0,3
	10 L	0,8		0,8		0,8
	5 L	-		-		1,3
	0 V	1,8		2,8		1,8
	5 R	-		-		1,3
	10 R	0,8		0,8		0,8
H	20 R	0,3	18	0,4	12	0,3
	20 L	-		-		0,4
	10 L	0,8		1,4		0,8
	5 L	2,0		3,6		2,0
	0 V	2,0		4		2,0
	5 R	2,0		3,6		2,0
	10 R	0,8		1,4		0,8
* below H	20 R	-		-		0,4
						no Max
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/758 ECE R7		JIS .D 5500
Colour		Red		Red		Red

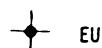
Sheet No. 9

REAR FOG LAMP

Test grid:



Test points:



EU



USA

Test zone:

--- EU = with a luminous intensity of at least 75 cd.

Test lines:

... EU = Along these lines luminous intensity at least 150 cd.

Effective test angle:



NA = angle from which the signal from the lamp shall be visible.

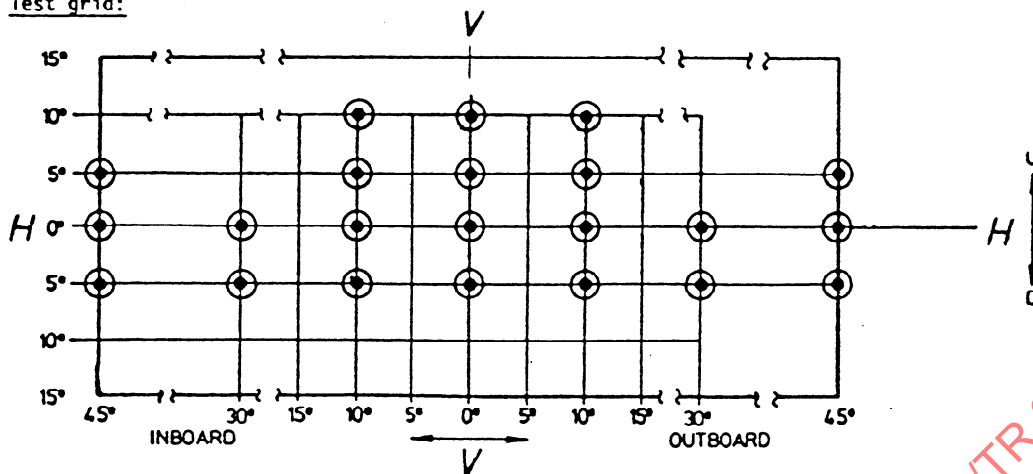
PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	10 L	10	300	-	-	-	-
	5 L	16		-		-	
	0 V	25		-		-	
	5 R	16		-		-	
	10 R	10		-		-	
5 U/D	20 L	10	300	-	300	-	300
	10 L	30		-		-	
	5 L	50		-		-	
	0 V	70		150		150	
	5 R	50		-		-	
	10 R	30		-		-	
	20 R	10		-		-	
H	20 L	15	300	-	300	-	300
	10 L	40		150		150	
	5 L	80		150		150	
	0 V	80		150		150	
	5 R	80		150		150	
	10 R	40		150		150	
	20 R	15		-		-	
Test documents		*)		EEC 77/738 ECE R38		Blue Book V-27	
Colour		Red		Red		Red	

*) : SAE J 1319, no MVSS 108 requirements.

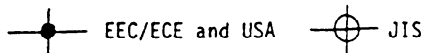
Sheet No. 10

REVERSING LAMP

Test grid:



Test points:



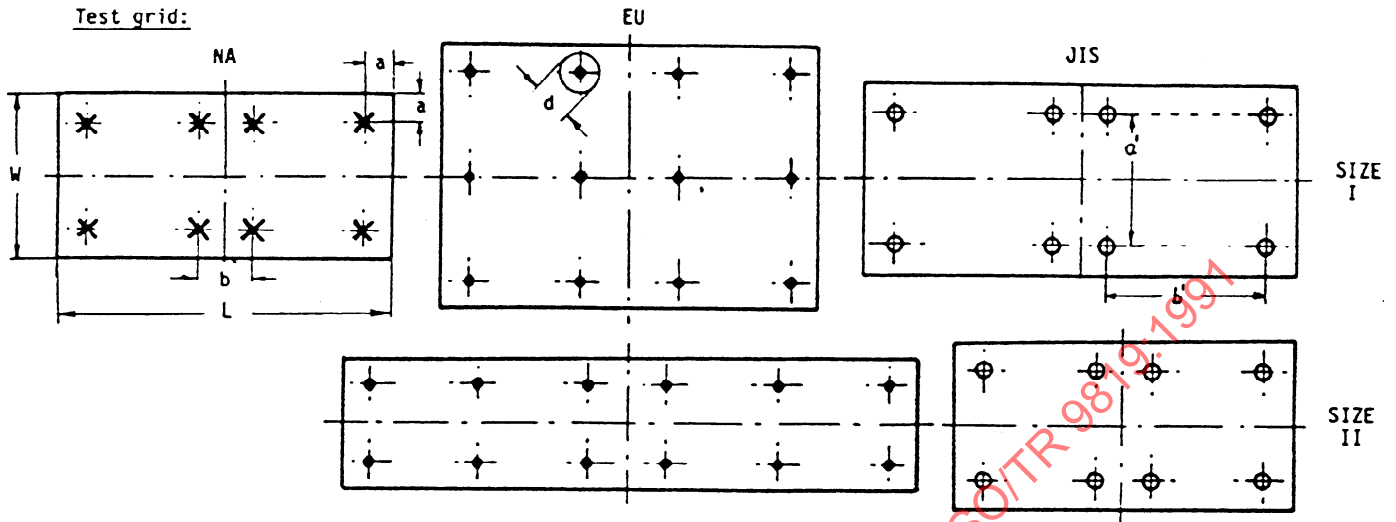
PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA* Min/Max		EU Min/Max		JAPAN* Min/Max	
10 U	10 L	10		10		10	
	5 L	-		-		-	
	0 V	15	300	15	300	15	300
	5 R	-		-		-	
	10 R	10		10		10	
5 U	45 L	15		15		15	
	10 L	20		20		20	
	5 L	-		-		-	
	0 V	25	300	25	300	25	300
	5 R	-		-		-	
	10 R	20		20		20	
H and 5 D	45 R	15		15		15	
	45 L	15		15		15	
	30 L	25		25		25	
	10 L	50		50		50	
	0 V	80	300*	80	300*	80	300*
	10 R	50		50		50	
* below H	30 R	25		25		25	
	45 R	15		15		15	
* below H		no max		600		5000	
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 77/539 ECE R23		JIS D 5500	
Colour		White		White		White	

NA* (For the lamp for vehicles with only one lighting device the min-values must be doubled while the
 JAP* (max-values must be below 500 cd.

Sheet No. 11

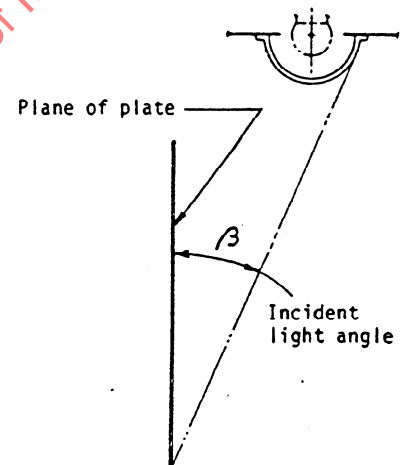
REAR REGISTRATION PLATE LAMP AND PLATE AREA

Test grid:



DIMENSIONS (mm)		NA	EU	JIS
LxW	Size I	300 x 150	340 x 240	440 x 220
	Size II	-	520 x 120	330 x 165
a/a'	Size I	25/-	25/-	-/120
	Size II	-	-	-/100
b/b'	Size I	50/-	90/-	50/145
	Size II	-/-	70/-	50/100
d diameter of test circles		25	25	25

PHOTOMETRIC TEST VALUES				
		NA	EU	JIS
min. values	Size I	8 lx	2,5 cd/m ²	8 lx
	Size II	-	2,5 cd/m ²	8 lx
Uniformity ratio, max.		20	*)	20
Incident light angle min. value		8°	8°	8°



*) Max. uniformity ratio (only EU):

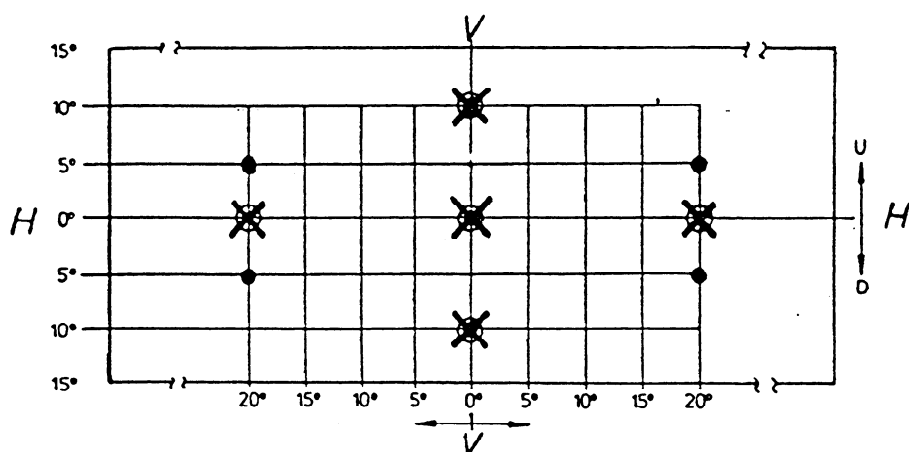
$$\frac{B_2 - B_1}{\text{distance } 1-2 \text{ in cm}} \leq 2 \times \frac{B_0}{\text{cm}}$$

B_2 and B_1 = luminance measured at any two points 1 and 2.

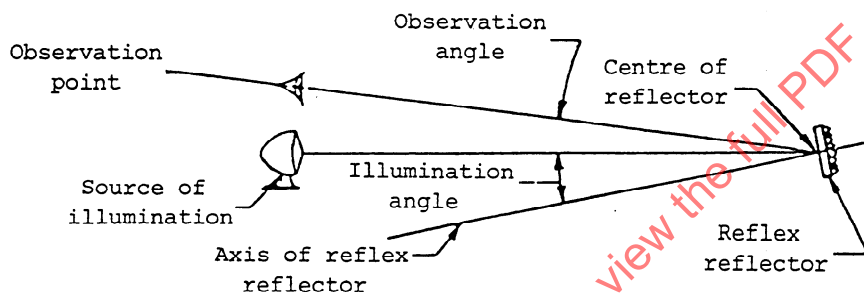
B_0 = minimum luminance measured at the various points.

Test documents	US FMVSS 108 SAE J 587, Oct. 81 CAN CMVSS 108	EEC 76/760 ECE R4	Blue Book V-27
Colour	White	White	White

Test grid of the illumination angles:



⊕ EEC/ECE * USA ⊙ JIS



PHOTOMETRIC TEST VALUES (coefficient of luminous intensity = mcd/lx)					
Observation angle (vertical plane only)	Illumination angle		NA	EU	JAPAN
	L/R	U/D	min	min	min
12' (0,2°)	0°	0°	420		420
	0°	10°	280		280
	20°	0	140		140
20'	0°	0°	-	300	-
	0°	10°	-	200	-
	20°	5°	-	100	-
1°30' (1,5°)	0°	0°	6	5	6
	0°	10°	5	2,8	5
	20°	0°	3	-	3
	20°	5°	-	2,5	-

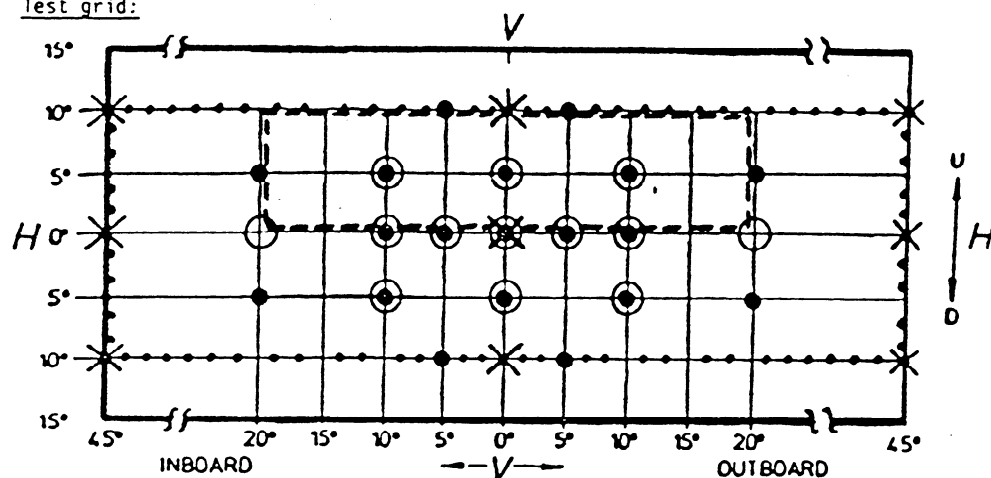
Test documents		US FMVSS 108 SAE J 594 f CAN CMVSS 108	EEC 76/757 ECE R3	JIS D 5500
Colour*	Rear: Side: Front:	Red Yellow White	Red Yellow White	Red Red or Amber Amber or White

* : The indicated photometric test values are applicable for red (rear) reflex reflectors. The values for yellow reflex reflectors shall be 2,5 times and those for white reflex reflectors 4 times the indicated values for red reflex reflectors (see also colour-table, Amber = Yellow).

Sheet No. 13

SIDE MARKER LAMP, FRONT AND INTERMEDIATE

Test grid:



Test points:

• EEC/ECE * USA ○ JIS

Test zone:

••••• EU = with a luminous intensity of at least 0,60 cd for SM2. (+)
 ••••• EU = with a luminous intensity of a max. of 24 cd for SM1 and SM2. (+)
 — — — JIS = with a luminous intensity of a max.

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU* Min/Max		JAPAN Min/Max	
10 U/D	45 L	0,62		-		-	
	30 L	-		-		-	
	10 L	-		-		-	
	5 L	-		0,8		-	
	0 V	0,62	-	-	24	-	U:125*
	5 R	-		0,8		-	
	10 R	-		-		-	
	30 R	-		-		-	
	45 R	0,62		-		-	
5 U/D	20 L	-		0,4		-	
	10 L	-		0,8		0,62	
	5 L	-		-		-	
	0 V	-	-	2,8	24	0,62	U:125*
	5 R	-		-		-	
	10 R	-		0,8		0,62	
	20 R	-		0,4		-	
H	45 L	0,62		-		-	
	30 L	-		-		-	
	20 L	-		-		0,62	
	10 L	-		1,4		0,62	
	5 L	-		3,6		0,62	
	0 V	0,62	-	4	24	0,62	125
	5 R	-		3,6		0,62	
	10 R	-		1,4		0,62	
	20 R	-		-		0,62	
	30 R	-		-		-	
	45 R	0,62		-		-	
* below H							250
Test documents		US FMVSS 108 CAN CMVSS 108		GTB-Prop./ECE* Draft GRE/R78, Rev. 1 v. 86		JIS D 5500	
Colour		Yellow		Yellow		Amber	

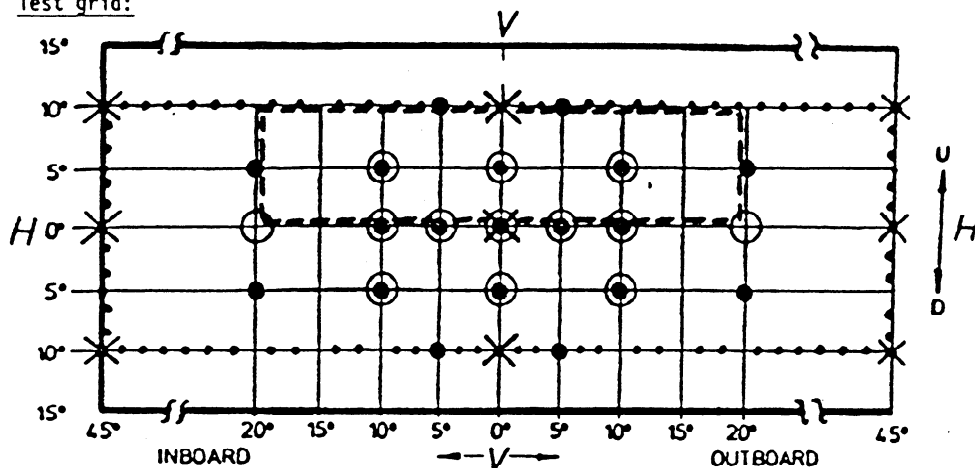
(+) Note:
 Category SM1 for CV
 Category SM2 for PV

EU*:
 Table for SM1 only

Sheet No. 14

SIDE MARKER LAMP (REAR)

Test grid:



Test points:

• EEC/ECE * USA ⊗ JIS

Test zone:

• • • • • EU = with a luminous intensity of at least 0,30 cd for SM2. (+)
 • • • • • EU = with a luminous intensity of a max. of 12 cd for SM1 and SM2. (+)
 - - - JIS = with a luminous intensity of a max.

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU* Min/Max		JAPAN Min/Max	
10 U/D	45 L	0,25		-		-	
	10 L	-		-		-	
	5 L	-		0,4		-	
	0 V	0,25	15	-	12	-	U:15*
	5 R	-		0,4		-	
	10 R	-		-		-	
	45 R	0,25		-		-	
5 U/D	20 L	-		0,3		-	
	10 L	-		0,8		0,25	
	5 L	-		-		-	
	0 V	-	15	1,8	12	0,25	U:15*
	5 R	-		-		-	
	10 R	-		0,8		0,25	
	20 R	-		0,3		-	
H	45 L	0,25		-		-	
	20 L	-		-		0,25	
	10 L	-		0,8		0,25	
	5 L	-		2,0		0,25	
	0 V	0,25	15	2,0	12	0,25	15
	5 R	-		2,0		0,25	
	10 R	-		0,8		0,25	
	20 R	-		-		0,25	
	45 R	0,25		-		-	
* below H						no Max	

(+) Note:
 Category SM1 for CV
 Category SM2 for PV
 EU*:
 Table for SM1 only

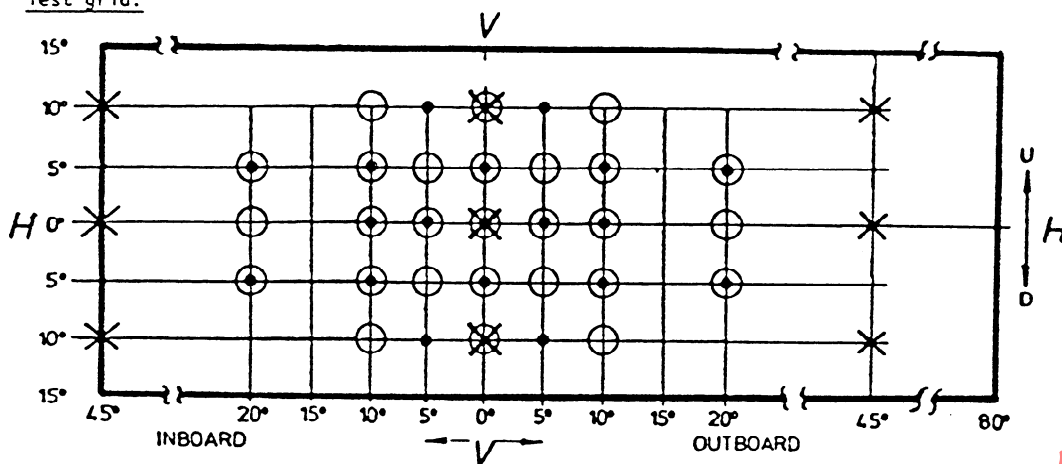
Test documents	US FMVSS 108 CAN CMVSS 108	ECE R, Draft (see sheet No.13)	JIS D 5500
Colour	Red	currently 1) Yellow, same as front and intermediate	Red

- 1) : Final Draft of ECE/GRE
 However, if the rearmost device is grouped or combined or reciprocally incorporated with the rear position lamp, the rear end-outline marker lamp, the rear fog lamp or the stop lamp it can emit red light.

Sheet No. 15

END OUTLINE MARKER LAMP (FRONT)

Test grid:



Test points:

EEC/ECE
 USA
 JIS

Test zone: -

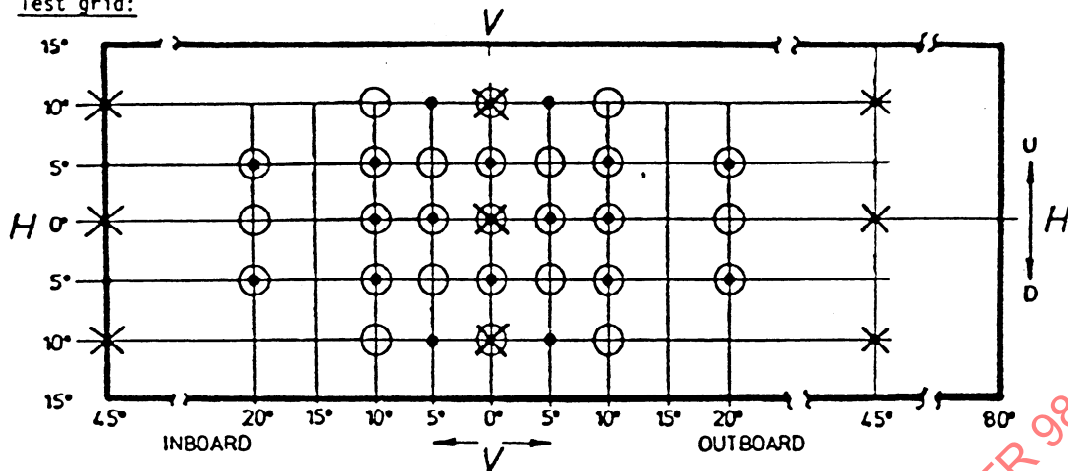
EU = with a luminous intensity of at least 0,05 cd.

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	45 L	0,62		-		0,8	U:125*
	10 L	-		-		-	
	5 L	-		0,8		-	
	0 V	0,62	-	-	60	0,6	
	5 R	-		0,8		-	
	10 R	-		-		0,8	
	45 R	0,62		-		-	
5 U/D	20 L	-		0,4		0,4	U:125*
	10 L	-		0,8		0,8	
	5 L	-		-		1,5	
	0 V	-		2,8	60	2,8	
	5 R	-		-		1,5	
	10 R	-		0,8		0,8	
	20 R	-		0,4		0,4	
H	45 L	0,62		-		0,4	125
	20 L	-		-		1,4	
	10 L	-		1,4		3,6	
	5 L	-		3,6		4	
	0 V	0,62	-	4	60	4	
	5 R	-		3,6		3,6	
	10 R	-		1,4		1,4	
	20 R	-		-		0,4	
	45 R	0,62		-		-	
* below H						250	
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/758 ECE R7		JIS D 5500	
Colour		Yellow		White or Yellow or Selec.Yellow		White or Yellow or Selec.Yellow	

Sheet No. 16

END OUTLINE MARKER LAMP (REAR)

Test grid:



Test points:

EEC/ECE
 USA
 JIS

Test zone: -

EU = with a luminous intensity of at least 0,05 cd.

PHOTOMETRIC TEST VALUES (cd)

Test Points		NA Min/Max		EU Min/Max		JAPAN Min/Max	
10 U/D	45 L	0,25	15	-	12	-	U:15*
	10 L	-		-		0,3	
	5 L	-		0,8		-	
	0 V	0,25		-		0,5	
	5 R	-		0,8		-	
	10 R	-		-		0,3	
	45 R	0,25		-		-	
5 U/D	20 L	-	15	0,4	12	0,3	U:15*
	10 L	-		0,8		0,8	
	5 L	-		-		1,3	
	0 V	-		2,8		1,8	
	5 R	-		-		1,3	
	10 R	-		0,8		0,8	
	20 R	-		0,4		0,3	
H	45 L	0,25	15	-	12	-	15
	20 L	-		-		0,4	
	10 L	-		1,4		0,8	
	5 L	-		3,6		2,0	
	0 V	0,25		4		2,0	
	5 R	-		3,6		2,0	
	10 R	-		1,4		0,8	
	20 R	-		-		0,4	
	45 R	0,25		-		-	
* below H						no Max	
Test documents		US FMVSS 108 CAN CMVSS 108		EEC 76/758 ECE R7		JIS D 5500	
Colour		Red		Red		Red	