

TECHNICAL REPORT

ISO
TR 9819

First edition
1991-10-15

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

iTeh STANDARD PREVIEW

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

ISO/TR 9819:1991

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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 Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.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.

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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.

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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	—

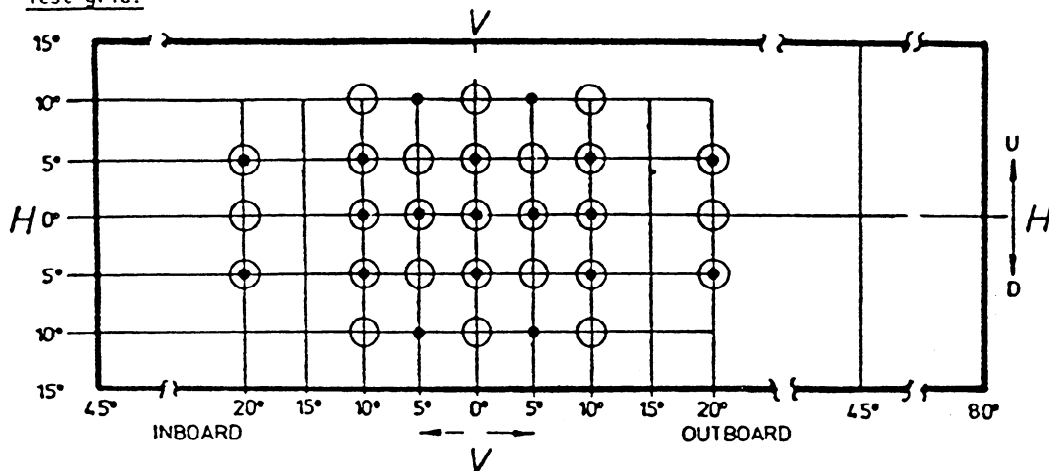
1) Except rear registration plate lamp, sheet 11.

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

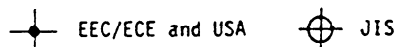
3) These data sheets are still to be finalized regarding harmonization. No final decisions have yet been taken, except on the colour of the side marker lamp (rear) — see sheet 14.

Sheet No. 1	FRONT POSITION LAMP
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Test grid:



Test points:



Test zone: -

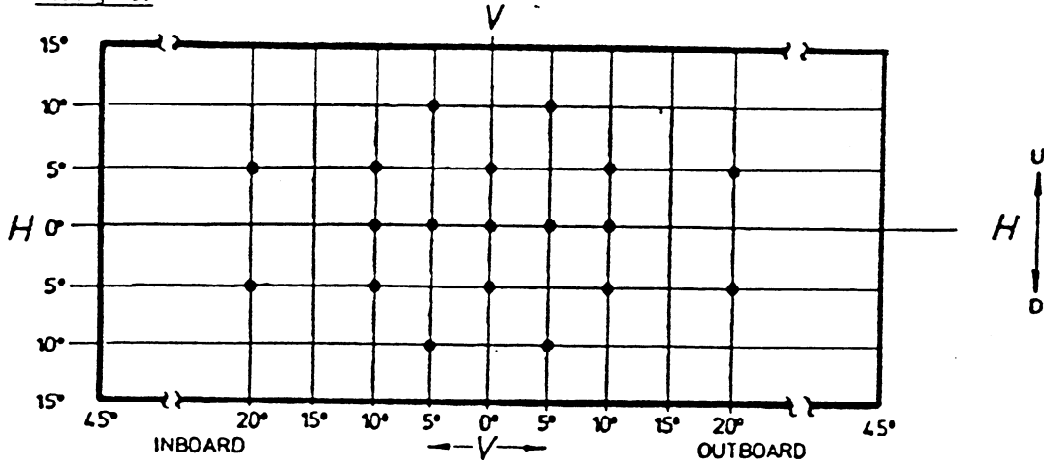
EU = with a luminous intensity of at least 0,05 cd.

PHOTOMETRIC TEST VALUES (cd)							
Test Points		NA Min/Max	EU Min/Max	JAPAN Min/Max			
10 U/D	10 L	-		0,8		0,8	
	5 L	0,8		0,8		-	
	0 L	-	U:125*	-	+60	0,8	U:125*
	5 V	0,8		0,8		-	
	10 R	-		-		0,8	
5 U/D	20 L	0,4		0,4		0,4	
	10 L	0,8		0,8		0,8	
	5 L	-		-		1,4	
	0 V	2,8	U:125*	2,8	+60	2,8	U:125*
	5 R	-		-		1,4	
	10 R	0,8		0,8		0,8	
	20 R	0,4		0,4		0,4	
H	20 L	-		-		0,4	
	10 L	1,4		1,4		1,4	
	5 L	3,6		3,6		3,6	
	0 V	4	125	4	+60	4	125
	5 R	3,6		3,6		3,6	
	10 R	1,4		1,4		1,4	
	20 R	-		-		0,4	
* below H			250				250
+)				+): 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	

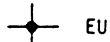
Sheet No. 2	PARKING LAMP
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For sidemounted parking lamps only the outboard test grid shall be considered.

Test grid:



Test points:-



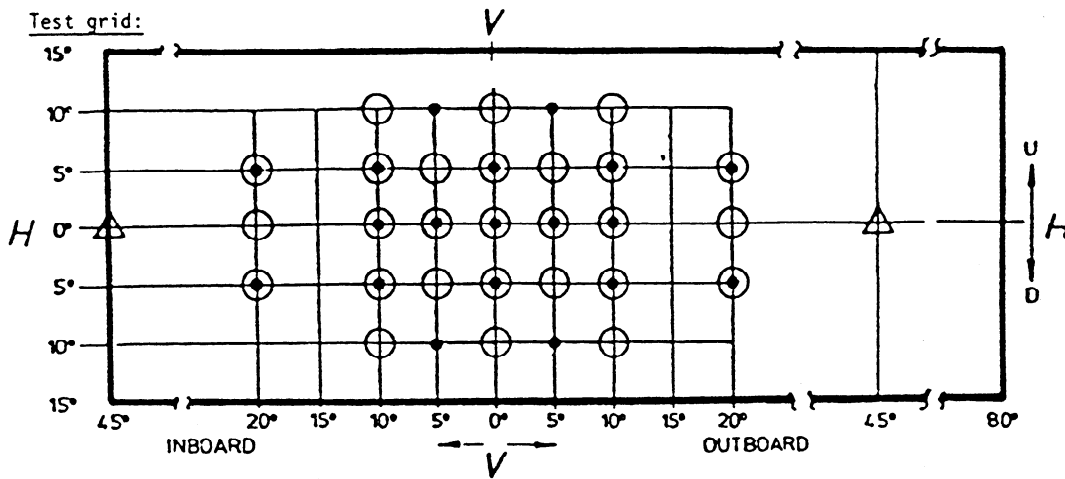
Test zone:



= 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



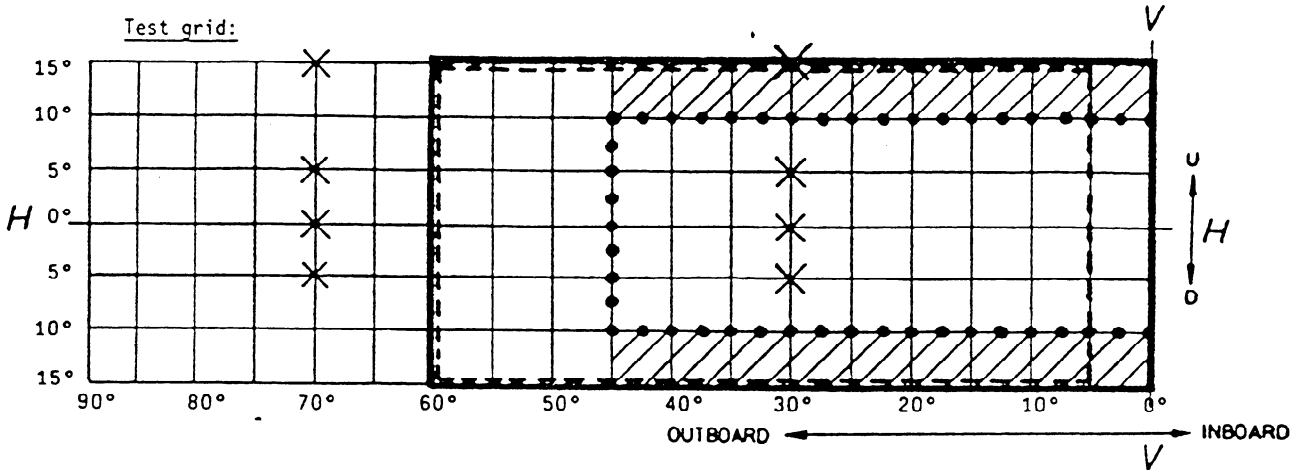
- Test points: EEC/ECE and USA JIS
- Test zone: EU = with a luminous intensity of at least 0,3 cd.
- Effective test angle: NA = angle from which at least 12,5 cm² outer lens surface of the lamp shall be visible.

PHOTOMETRIC TEST VALUES (cd)						
Test Points		NA Min/Max	EU Min/Max	JAPAN Min/Max		
10 U/D	10 L	-	-	25		
	5 L	40	35	-		
	0 V	-	700	60		
	5 R	40	35	-		
	10 R	-	-	25		
5 U/D	20 L	25	17,5	25		
	10 L	75	35	75		
	5 L	-	-	125		
	0 V	175	122,5	175	700	-
	5 R	-	-	125		
	10 R	75	35	75		
	20 R	25	17,5	25		
H	20 L	-	-	35		
	10 L	100	61,2	100		
	5 L	200	157,5	200		
	0 V	200	175	200	700	-
	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)
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(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.

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PHOTOMETRIC TEST VALUES (cd) - 9819-1991

Test Points		NA		EU		JAPAN	
		Min	Max	Min*	Max*	Min*	Max*
15 U	70 L	5	60				
	45 L	-	-	*	200	**	300
	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)

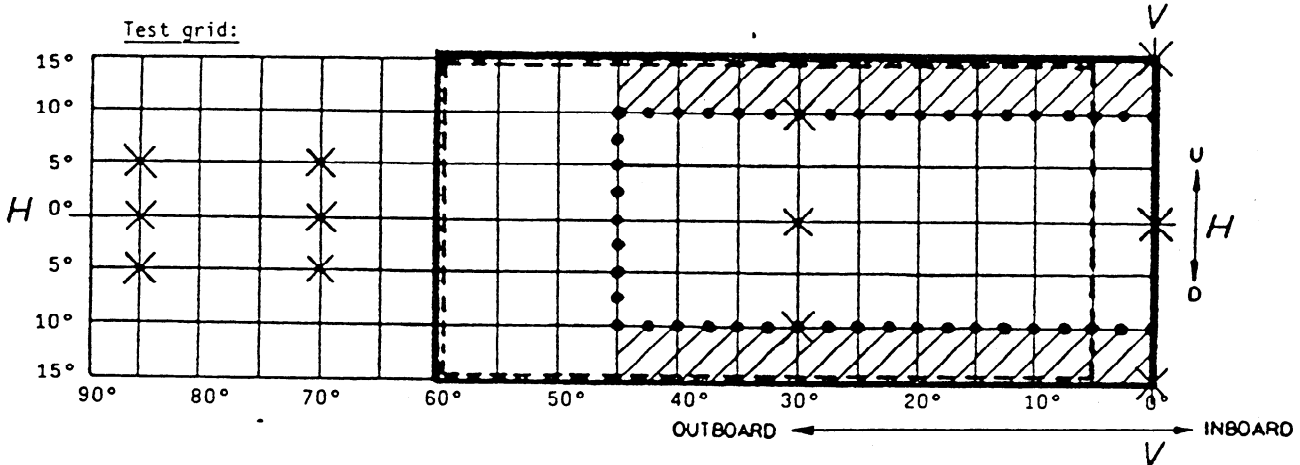
** : for min. intensity see test zones and (not test points)

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

Sheet No. 5	SIDE DIRECTION INDICATOR LAMP (FOR CV)
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(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 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.

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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.