

UN No. 48

NTSEL

National Traffic Safety
and Environment Laboratory

KENICHI YAMAMOTO

Test vehicle

- Conditions of test vehicle

		Condition
Unladen vehicle (2.4.)	Passenger	none
	Load	only spare wheel and tools normally carried
	Oil	full supply or specified amount
Tire	Tire pressure	specified value
Movable part	Movable component	normal condition of use
Seat	Seat position	normal condition of use (design standard position)



▪ Verification of identity between Lamp Device

Device	Type	Device	Type
Headlamp	***	Rear fog lamp	***
...	***	...	***
...	***	...	***
...	***	...	***
Front fog lamp	***	Rear retro-reflector	***
Side direction-indicator lamp	***	...	***
...	***	...	***

- Verification of lamp type and approval mark
(If no approval mark, approval certificate or application form is verified.)

Certificate of test facility

1. List of facilities (example)

Measurement device name	Type	Serial No.	Make	Calibration date	Calibration cycle
Illuminometer	IM-600M	1123*****	TOPCON CORPORATION	2016/2/6	2 years
...

2. Calibration certificate



Certificate of test facility used for test is verified before test.

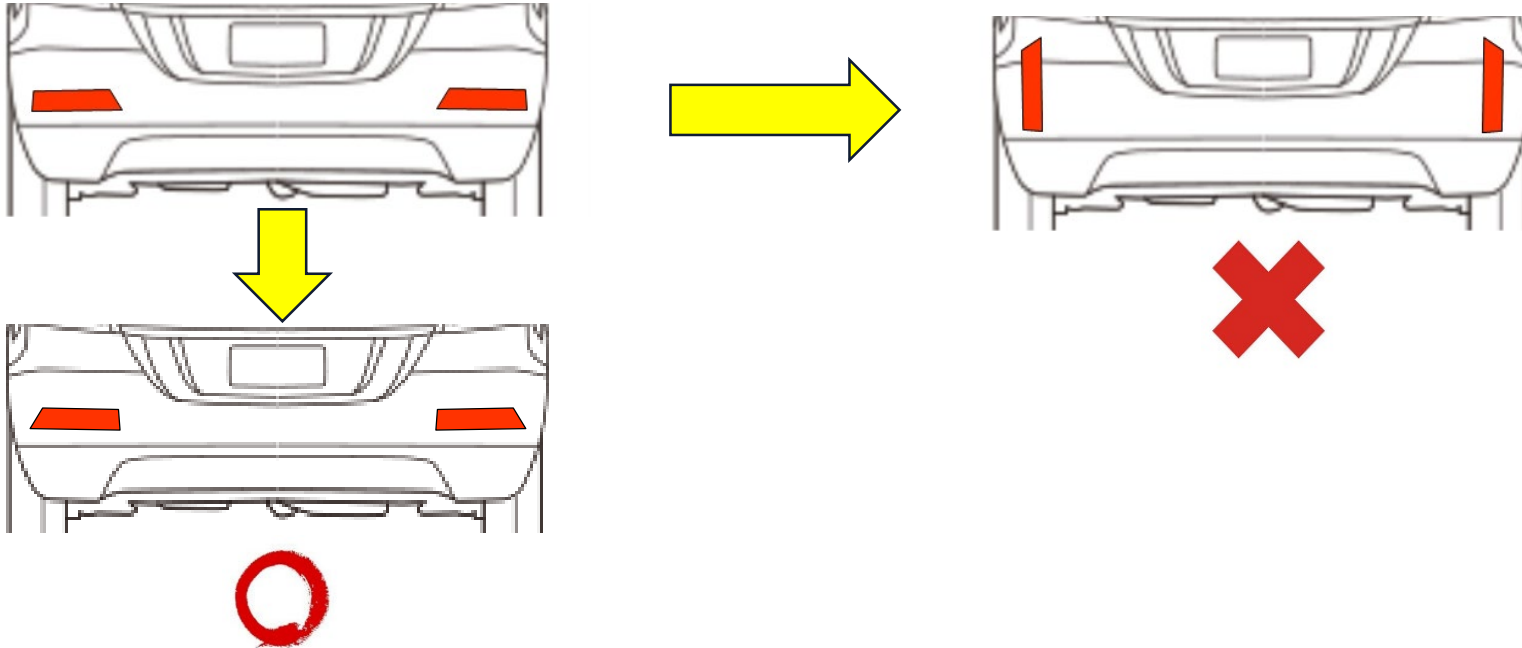
5. General specifications

5.3.Axis direction of the signal lamps

Point

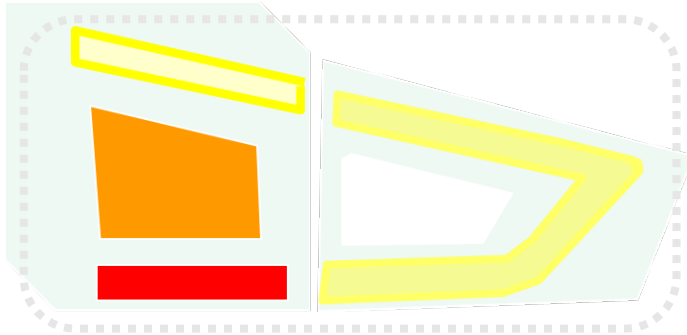
Reverse installation of left-right (asymmetric) lamps

Example) Mounting direction of back reflector



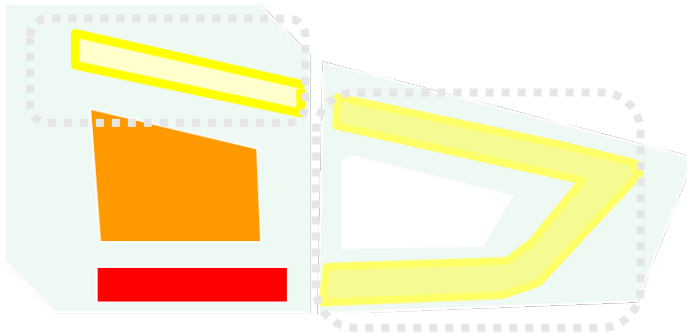
However, except at the time of
request for interference

2.7.30.1 Type “Y” lamp



- Separate apparent surfaces
- Separate lamp bodies
- Same function
- Y lamp shall meet the requirements when all lamps are operated together.

2.7.32 Type “D” lamp

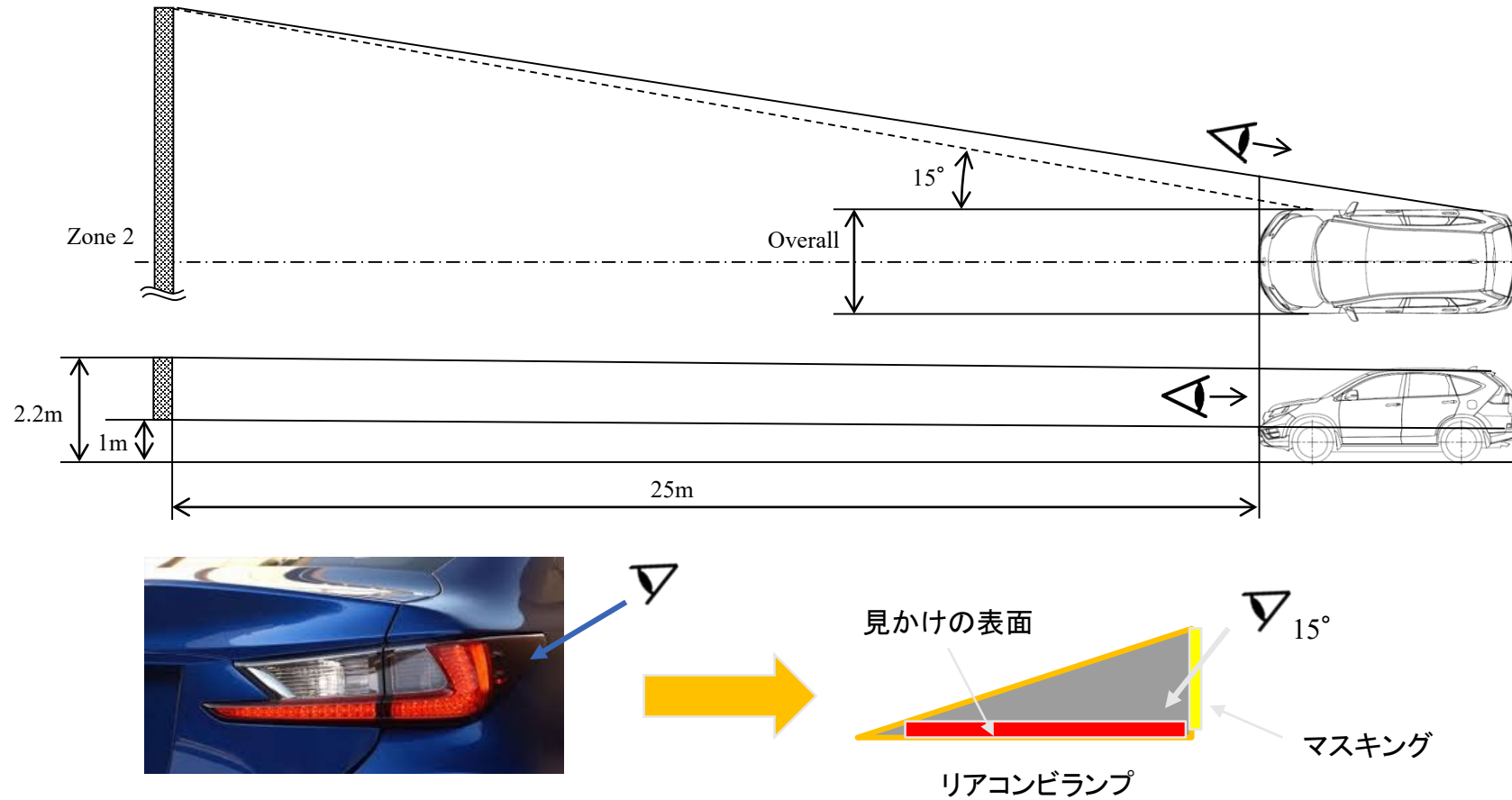


-D lamp means independent lamps, approved as separate devices in such a way that they are allowed to be used either independently or in an assembly of two lamps to be considered as a "single lamp".

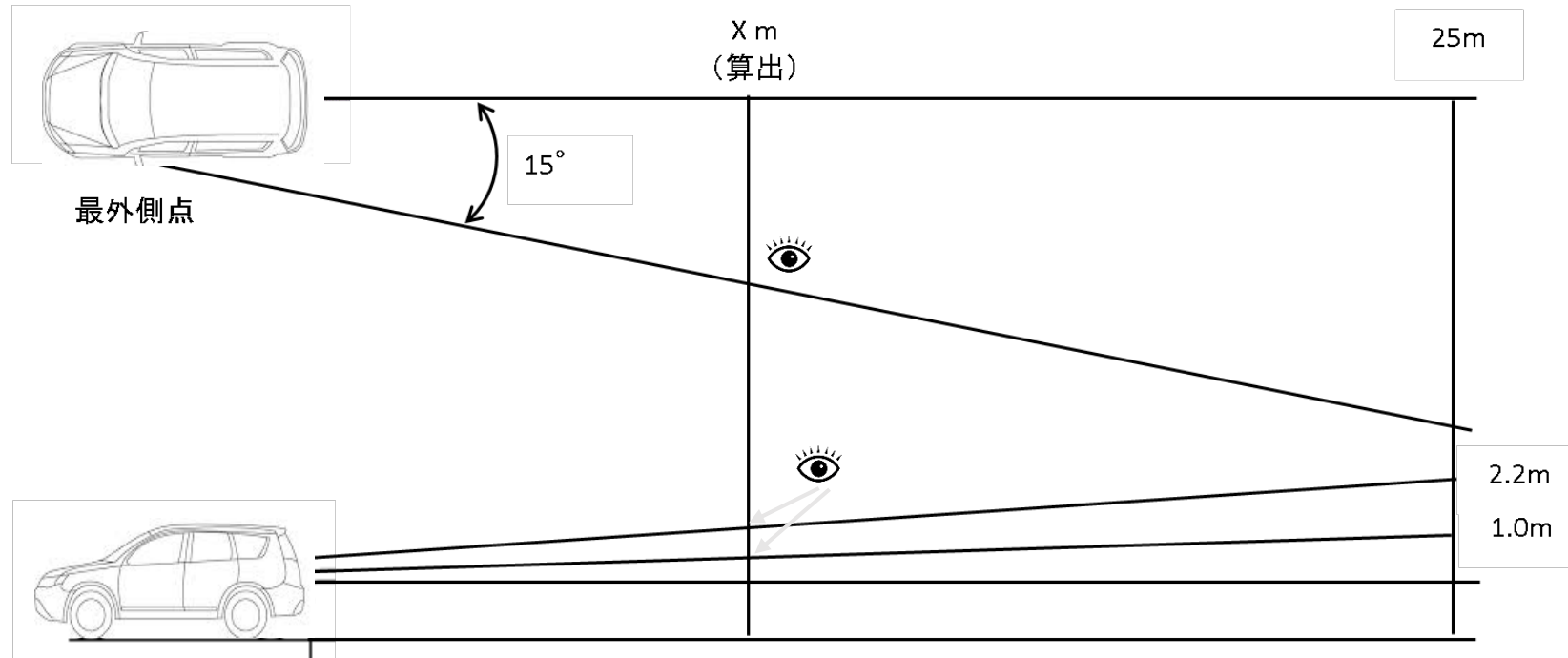
-When an assembly of two independent lamps to be type approved as "D" lamps having the same function is deemed to be a single lamp, it shall comply with the requirements for:

- (a) Maximum intensity if all lamps together are lit;
- (b) Minimum intensity if either lamp has failed.

5.10.1. For the visibility of red light towards the front of a vehicle, with the exception of a red rearmost side-marker lamp, there shall be no direct visibility of the apparent surface of a red lamp if viewed by an observer moving within Zone 1 as specified in Annex 4;



5.10.2 No white light visible to the rear



▪ The Regulation specifies visibility from 25m behind the vehicle; however, visibility distance can be made closer by calculation.

This is also applicable to 5.10.1 "No red light visible to the front."

5.18.4. When the vertical angle of geometric visibility below the horizontal may be reduced to 5 deg. (lamp at less than 750 mm above the ground measured according to the provisions of paragraph 5.8.1. above) the photometric field of measurements of the installed optical unit may be reduced to 5 deg. below the horizontal.

6.	Autorité déléguée: <i>Assigned authority:</i>	Société Nationale de Certification et d'Homologation L-5201 Sandweiler
	Service technique chargé des essais: <i>Technical service responsible for conducting approval tests:</i>	TUV Rheinland Luxembourg GmbH 2a, Kalchauerstrasse L-1852 Luxembourg
7.	Date du procès-verbal d'essai: <i>Date of test report issued by that service:</i>	23.02.2015
8.	Numéro du procès-verbal d'essai: <i>Number of test report issued by that service:</i>	83-R6-18329/15
9.	Description sommaire 2/: <i>Concise description 2/:</i>	
	- Catégorie/categorie 2/:	4, 1a, 1b, 2a, 2b, 3, 4, 5, 6
	- Nombre et catégorie: <i>Number, category:</i>	one WY21W, filament lamp
	- Fonction(s) assurée(s) par un feu interdépendant faisant partie d'un système de feux interdépendants: <i>Function(s) produced by an interdependent lamp forming part of an interdependent lamps system:</i>	not applicable
	- Tension et puissance: <i>Voltage and wattage:</i>	12V 21W
	- Code d'identification propre au module d'éclairage: <i>Light source module specific identification code:</i>	not applicable
	- Uniquement pour une hauteur de montage limitée à 750 mm au-dessus au sol 2/: <i>Only for limited mounting height of equal to or less than 750 mm above the ground 2/:</i>	oui / non yes / no
	- Caractéristiques géométriques de montage et variantes éventuelles: <i>Geometrical conditions of installation and relating variations, if any:</i>	see drawing of the information document
	- Le dispositif de régulation électronique de la source lumineuse ou le régulateur d'intensité: <i>Application of an electronic light source control gear/ variable intensity control:</i>	not applicable
	a) fait partie du feu 2/: <i>a) being part of the lamp 2/:</i>	oui / non yes / no
	b) ne fait pas partie du feu 2/: <i>b) being not part of the lamp 2/:</i>	oui / non yes / no

- **Uniquement pour une hauteur de montage limitée à 750 mm au-dessus au sol 2/:**
Only for limited mounting height of equal to or less than 750 mm above the ground 2/:

oui / ~~non~~

yes / ~~no~~

If approval is granted under relaxed 750mm requirement, installation height of 750mm or less is verified.

5.28. General provisions relating to geometric visibility

5.28.3. If, when the lamp is installed, any part of the apparent surface of the lamp is hidden by any further parts of the vehicle, proof shall be furnished that the part of the lamp not hidden by obstacles still conforms to the photometric values prescribed for the approval of the device.

E13*07R00*07R02*24703*00

6.	Autorité déléguée: Assigned authority:	Société Nationale de Certification et d'Homologation L-5201 Sandweiler
	Service technique chargé des essais: Technical service responsible for conducting approval tests:	Luxcontrol SA B.P. 349 L-4004 Esch-sur-Alzette
7.	Date du procès-verbal délivré par ce service: Date of test report issued by that service:	18.05.2016
8.	Numéro du procès-verbal délivré par ce service: Number of test report issued by that service:	LCA 52 0057 414 16
9.	Brève description: Concise description:	
9.1.	Par catégorie de feu: By category of lamp:	S1
	- Pour montage à l'extérieur ou à l'intérieur, ou les deux 2/: For mounting either outside or inside or both 2/:	outside
	- Couleur de la lumière émise 2/: Colour of light emitted 2/:	rouge, blanc red, white
	- Nombre, catégorie et type de la ou des sources lumineuses: Number, category and kind of light source(s):	6, --, non-replaceable light source (LED)
	- Tension et puissance: Voltage and wattage:	12V, 1.1W
	- Code d'identification propre au module d'éclairage: Light source module specific identification code:	not applicable
	- Uniquement pour une hauteur de montage limitée, égale ou inférieure à 750 mm au-dessus du sol 2/: Only for limited mounting height of equal to or less than 750 mm above the ground 2/:	oui / non yes / no
	- Caractéristiques géométriques de montage et variantes éventuelles: Geometrical conditions of installation and relating variations, if any:	see information document

- **Caractéristiques géométriques de montage et variantes éventuelles:** see information document
Geometrical conditions of installation and relating variations, if any:

If verification with certificate is not possible, test report or application form is used to verify application for obstacles.

6.Individual specifications

▪ Presence

▪ Number

▪ Arrangement

▪ Position

▪ Geometric visibility

▪ Orientation

▪ Electrical connections

▪ Tell-tale

▪ Other requirements

2. 個別規定
Individual

項 番号 Oper ation No.	項目 Item	装備 Equipp ed	取付位置及 び個数 Installati on position and number of lights	幾何学的視 認角 Geometric visibility	方向 Direction	電気結線 Electrical connection s	点灯操作状態表示装 置 又は 点灯作動状態表示装 置 Tell-Tail		その他の要 件 Other requiremen ts	備考 Remark s
4.1	走行用前照灯 Headlamps (main -beam)		適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail		適・否 Pass・Fail	適・否 Pass・Fail	
4.2	すれ違い用前照 灯 Headlamps(dippe d-beam)		適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	有・無 Y / N	適・否 Pass・Fail	適・否 Pass・Fail	
4.3	前部霧灯 Front fog lamps	有・無 Y / N	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail		適・否 Pass・Fail	適・否 Pass・Fail	
4.4	側方照射灯 Cornering lamps	有・無 Y / N	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	—	—	適・否 Pass・Fail	
4.5	後退灯 Reversing lamps		適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	適・否 Pass・Fail	有・無 Y / N	適・否 Pass・Fail	—	
4.6	方向指示器 Direction		適・否 Pass・Fail	適・否 Pass・Fail	—	適・否 Pass・Fail		適・否 Pass・Fail	適・否 Pass・Fail	

6. Individual specifications

■ Tell-tale of dipped-beam headlamp

6.2.8.2. A visual tell-tale whether flashing or not is mandatory:

(a) In the case where the whole beam or the kink of the elbow of the cut-off is moved to produce bend lighting; or

(b) If one or more LED modules are used to produce the principal dipped-beam, except when they are wired so that the failure of any one LED module causes all of them to stop emitting light.



Verification carried out regardless of applicability
(This can be skipped if case above can be proved
by document with circuit diagram)

Structure of Check Sheet

Separate Check Sheets according to test type is recommended

- There are numerous check items for electrical connections requirement
- Test vehicle differs depending on test items
- Test content differs depending on lamp setting of application vehicle

Category	Paragraph	Test requirement	Reasons for separate sheet
①	5.	General specifications	- Items to be checked per test - Combine paragraphs 5 and 6 for a simplified, single Check Sheet
	6.	Individual specifications (excludes some parts of electrical connections requirements) Attached1	
②	Annex 5, 6	Levelling Attached Table2	The items do not require a test every time. Numerous check items Different test sites, different test vehicles
③	6.23. 6.25.	ESS RECAS	
④	6.22.7.	Electrical connections of AFS Attached Table3, 4	
⑤	Annex 12	AHS,ADB Attached Table5	



For details, please refer to TRIAS, which is used in Japan.

■ ESS Dynamic test check sheet

Test pattern	①		②	③	④	⑤
	Check activation	Check deactivation	Check non-operation	Check non-operation	Check deactivation	Check activation
Initial braking speed	over 50km/m	—	over 50km/m	less than 50km/m	over 50km/m	over 50km/m
Deceleration	braking at over 6m/s ²	after ESS activation, deactivation by reducing deceleration	braking at less than 6m/s ²	braking at over 60m/s ²	braking at over 6m/s ²	braking at over 6m/s ²
Others	—		—	—	hazard ON during EE activation	direction indicator ON
Checking of ESS activation	activated at over 6m/s ² and over 50km/h	deactivated before 2.5m/s ²	non-operational at less than 6m/s ² (vehicle speed over 50km/h)	non-operational at 50km/h or less (over 6m/s ²)	switched to hazard	ESS activated even when direction indicator is ON
Judgment	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail
Frequency of illumination	Frequency 4.0±1.0Hz (3.0 – 4.0Hz for filament light source)					
Judgment	Pass/Fail					

■ Checking installation position

- Vehicle is placed on surface plate.
- Each measurement point is marked on the surface plate using weight, etc.
- Each marking is measured with set squares and various scales

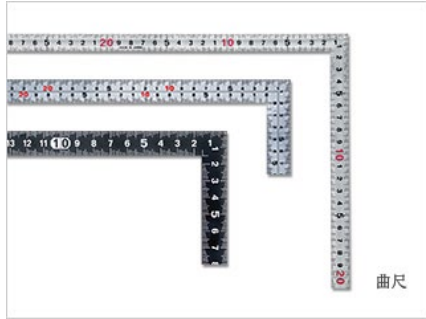


Marking of each measurement point



Checking of headlight installation height

■ Main equipment used for checking installation position

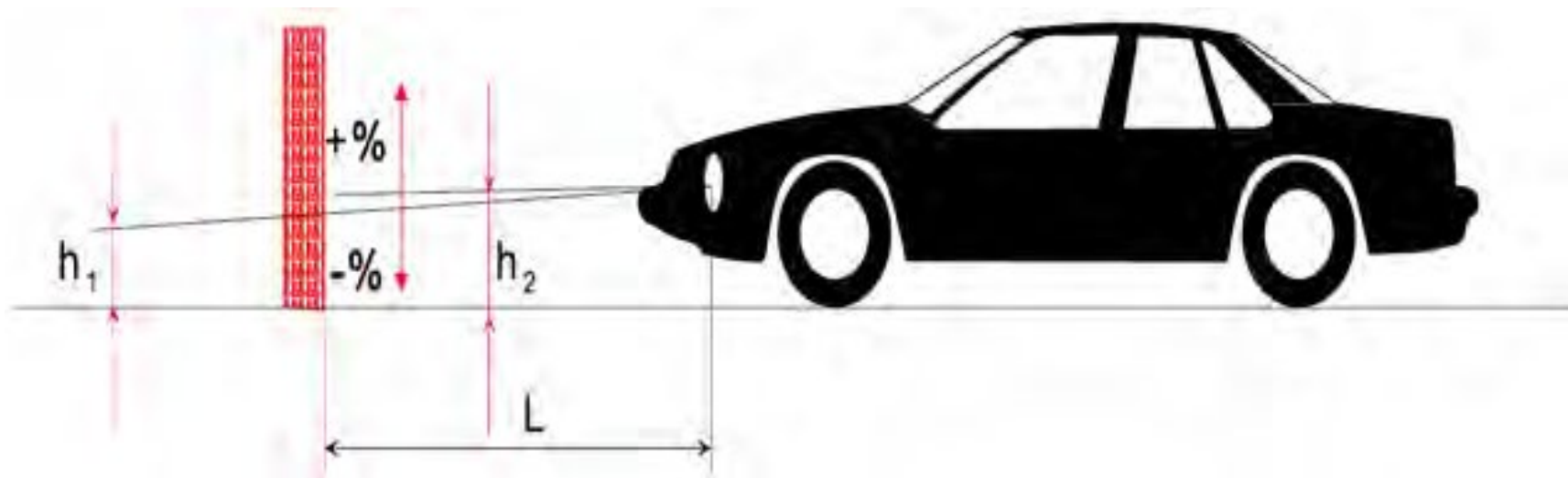


6.2.6.2. Headlamp levelling device

6.2.6.3. Measuring procedure

6.2.6.3.1. After adjustment of the initial inclination, the vertical inclination of the dipped-beam, expressed in per cent, shall be measured in static conditions under all the loading conditions defined in [Annex 5](#).

6.2.6.3.2. The measurement of the variation of dipped-beam inclination as a function of load shall be carried out in accordance with the test procedure set out in [Annex 6](#).



6.1.9.3.

Automatic activation and deactivation of the main-beam headlamps:

6.1.9.3.1. The sensor system used to control the automatic activation and deactivation of the main-beam headlamps, as described in paragraph 6.1.7.1., shall comply with the following requirements:

- 6.1.9.3.1.1. Angle of view
- 6.1.9.3.1.2. Detection distance

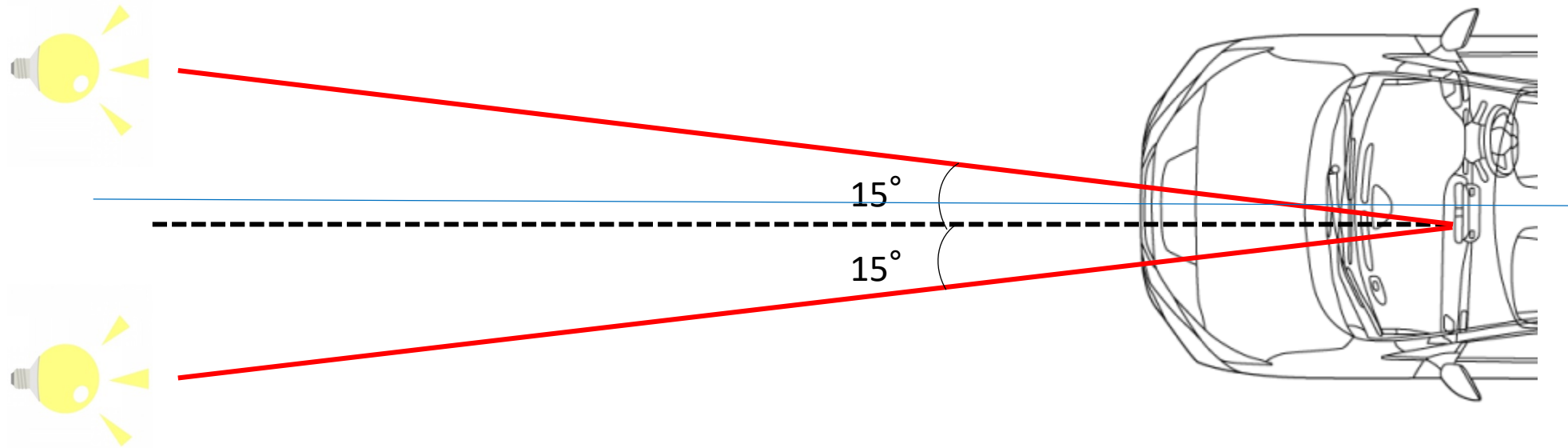
6.1.9.3.2. shall not cause discomfort, distraction or glare.

6.1.9.3.3. The overall performance

6.1.9.3.1.1. The boundaries of the minimum fields in which the sensor is able to detect light emitted from other vehicles defined in paragraph 6.1.7.1. above are defined by the angles indicated below.

6.1.9.3.1.1.1.

Horizontal angles: 15 deg. to the left and 15 deg. to the right

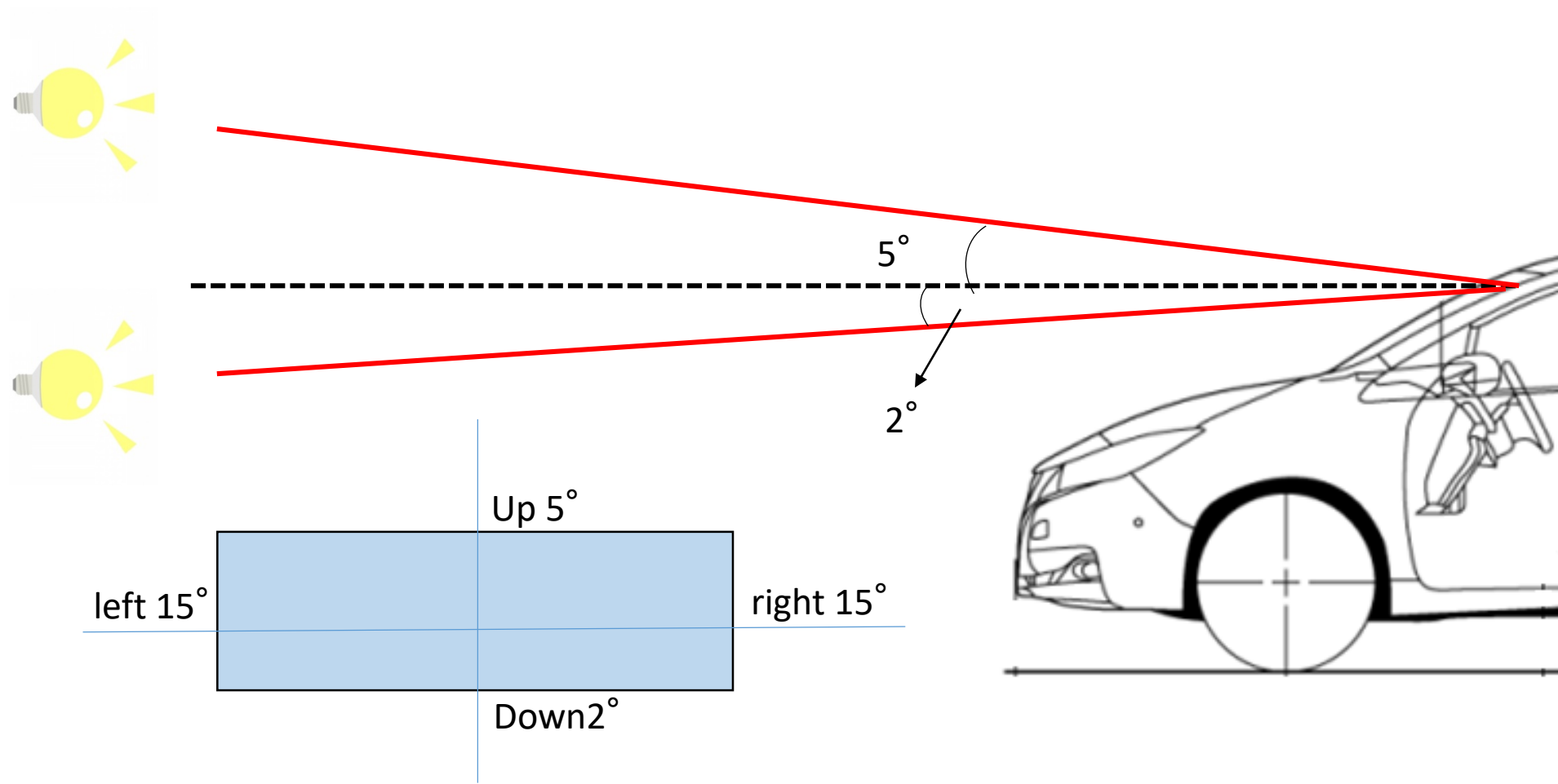


These angles are measured from the center of the sensor aperture relative to a horizontal straight line through its center and parallel to the longitudinal median plane of the vehicle.

6.1.9.3.1.1.1.

Vertical angles:

Upward angle	5 deg.		
Mounting height of the sensor (centre of sensor aperture above the ground)	Less than 2 m	Between 1.5 m and 2.5 m	Greater than 2.0 m
Downward angle	2 deg.	2 deg. to 5 deg.	5 deg.

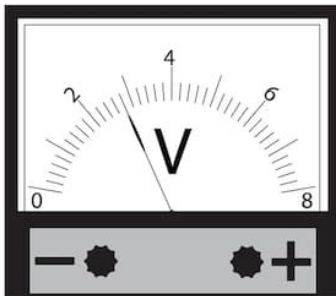


6.1.9.3.5.

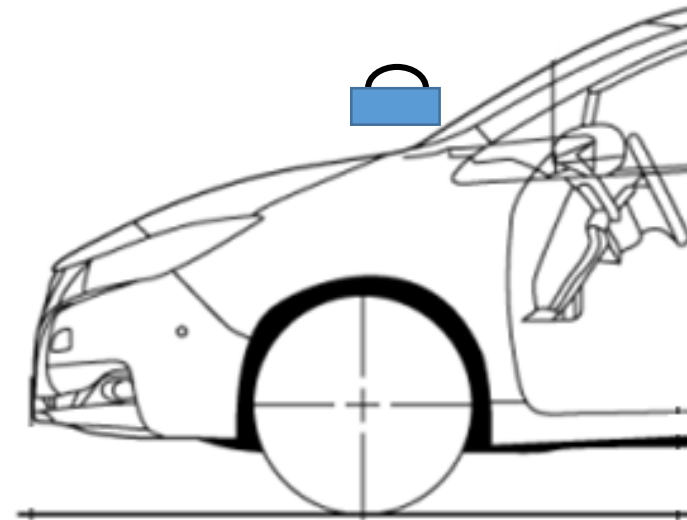
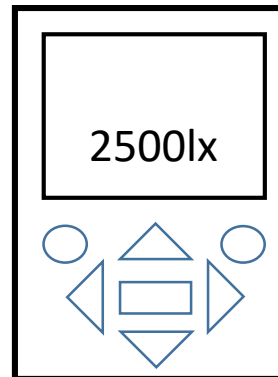
Moreover, they shall be switched OFF automatically when the illuminance produced by ambient lighting conditions exceeds 7000 lx.



???? lx switched OFF



Illuminometer



Annex 12

Test drive

1.1.The test drive shall be carried out in clear atmosphere¹ and with clean head-lamps

1.2.The test course shall comprise test sections with traffic conditions, at speed corresponding to the relevant type of road, as described in Table 1 below:

Table 1

Test Section	Traffic conditions	Road type		
		Urban areas	Multi-lane road, e.g. motorway	Country road
	Speed	50 +/- 10 km/h	100 +/- 20 km/h	80 +/- 20 km/h
	Average percentage of the full test course length	10 per cent	20 per cent	70 per cent
A	Single oncoming vehicle or single preceding vehicle in a frequency so that the main beam will switch ON and OFF.		X	X
B	Combined oncoming and preceding traffic situations, in a frequency so that the main beam will switch ON and OFF.		X	X
C	Active and passive overtaking manoeuvres, in a frequency so that the main beam will switch ON and OFF.		X	X
D	Oncoming bicycle, as described in paragraph 6.1.9.3.1.2.			X
E	Combined oncoming and preceding traffic situations	X		

1.3. Urban areas shall comprise roads with and without illumination.

1.4. Country roads shall comprise sections having two lanes and sections having four or more lanes and shall include junctions, hills and/or slopes, dips and winding roads.

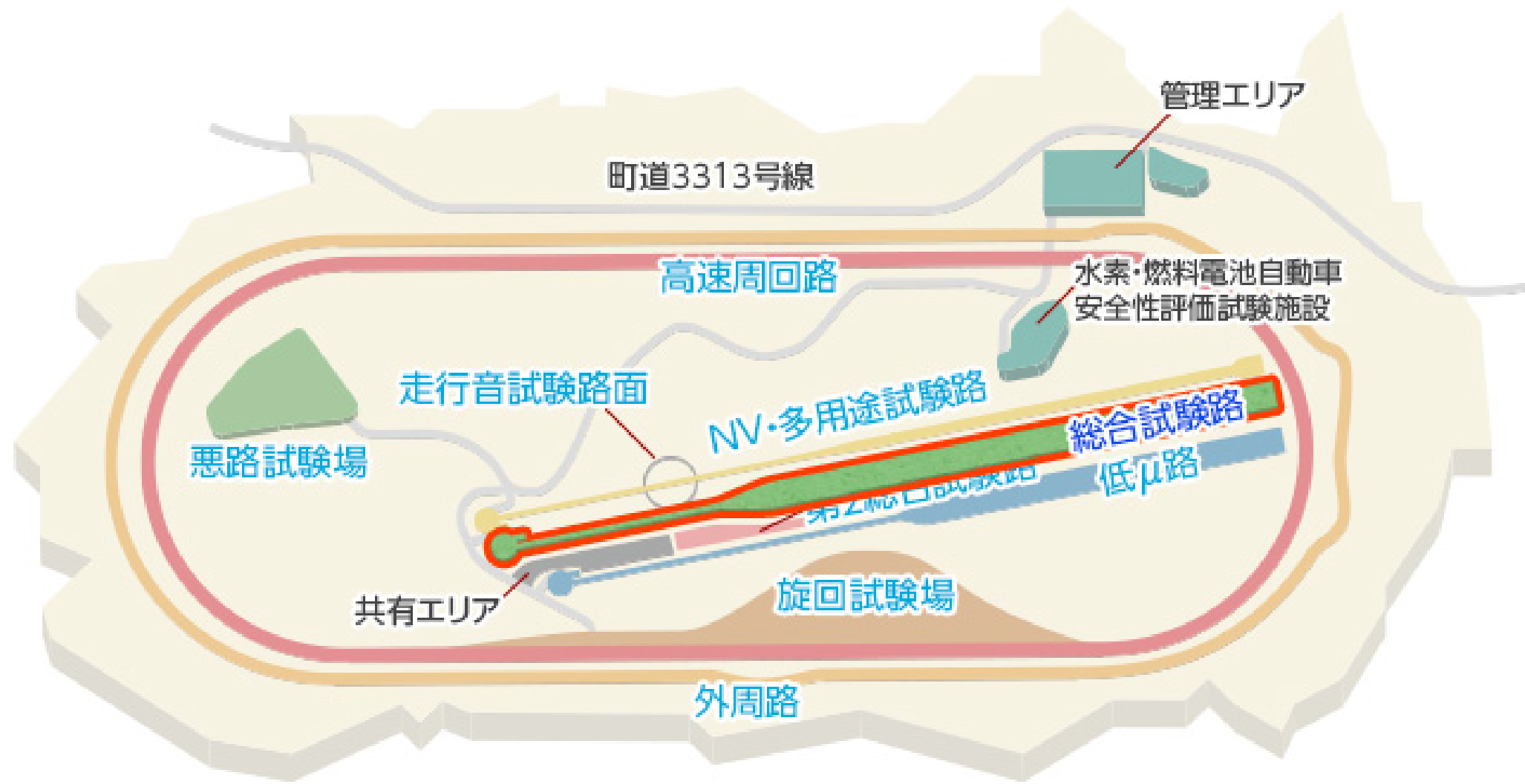
1.5. Multi-lane roads (e.g. motorways) and country roads shall comprise sections having straight level parts with a length of more than 600 m. Additionally they shall comprise sections having curves to the left and to the right.

1.6. Dense traffic situations shall be taken into account."



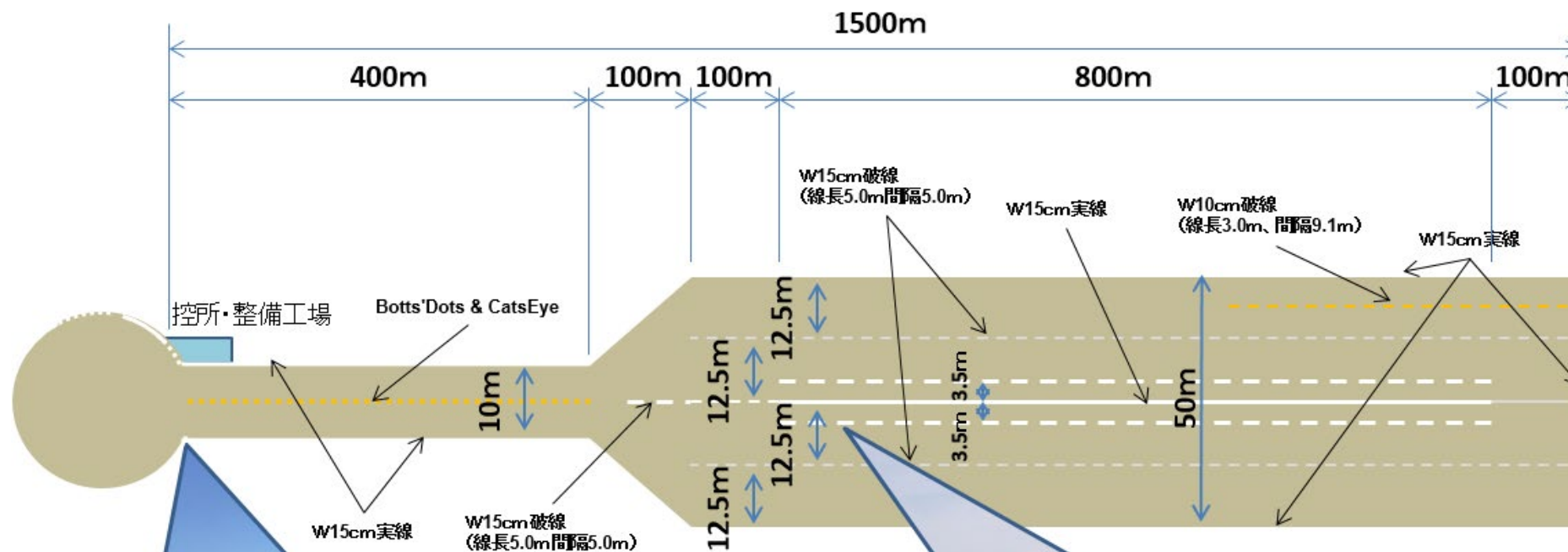
JARI PROVING GROUND

(<http://www.jari.or.jp/tabid/36/Default.aspx>)



総合試験路

(区画線レイアウト)



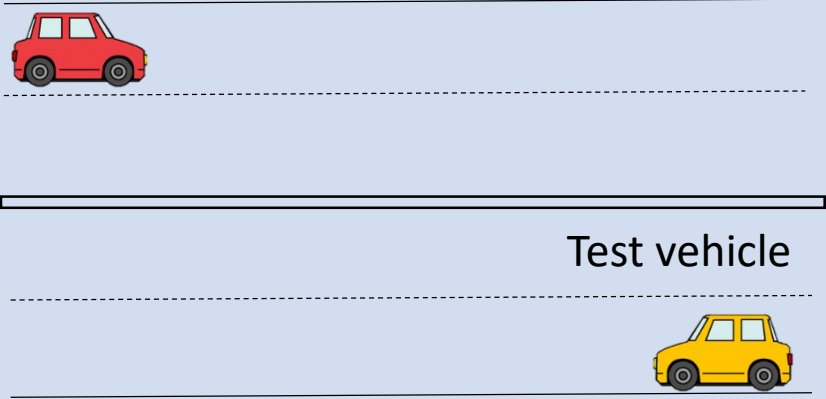
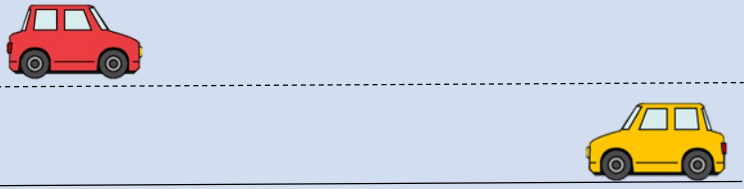
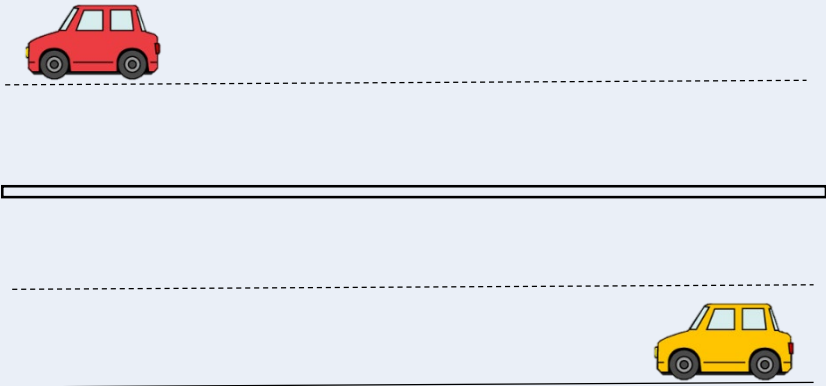

外周路



Test section A

Table 1

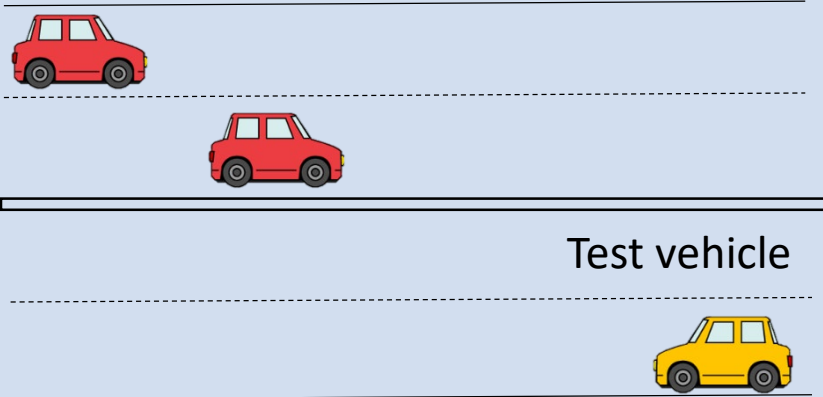
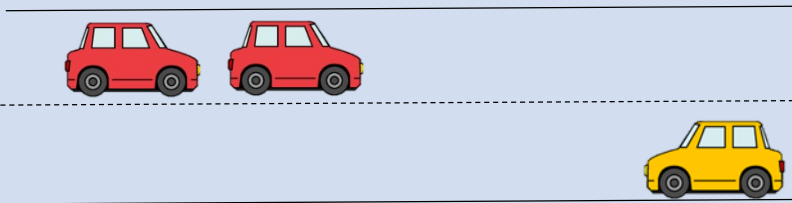
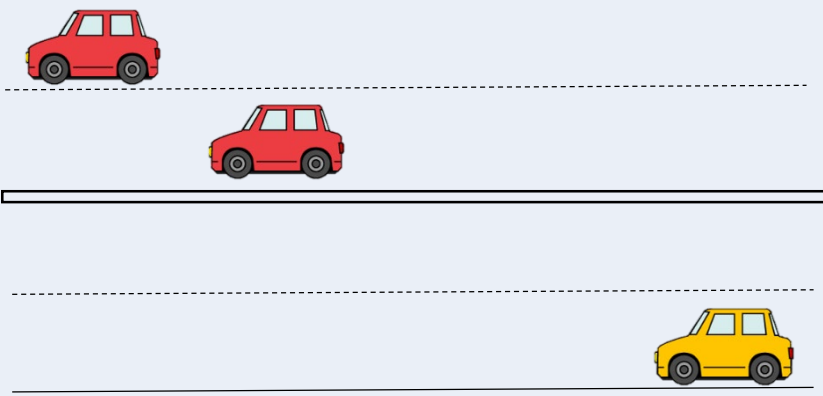
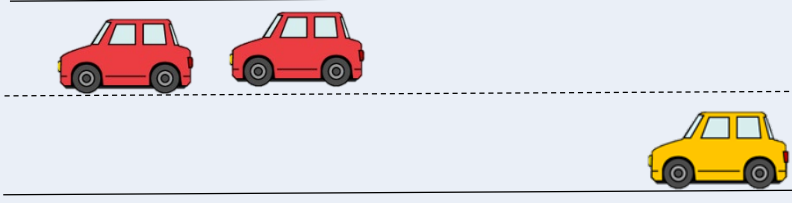
Test Section	Traffic conditions	Road type		
		Urban areas	Multi-lane road, e.g. motorway	Country road
	Speed	50 +/- 10 km/h	100 +/- 20 km/h	80 +/- 20 km/h
	Average percentage of the full test course length	10 per cent	20 per cent	70 per cent
A	Single oncoming vehicle or single preceding vehicle in a frequency so that the main beam will switch ON and OFF		X	X

	Multi-lane road.e.g. motorway (80~120km/h)	Country road (60~100km/h)
Oncoming vehicle	 <p>Test vehicle</p>	at least 400 m 
Preceding vehicle	 <p>Test vehicle</p>	at least 100 m 

Test section B

Table 1

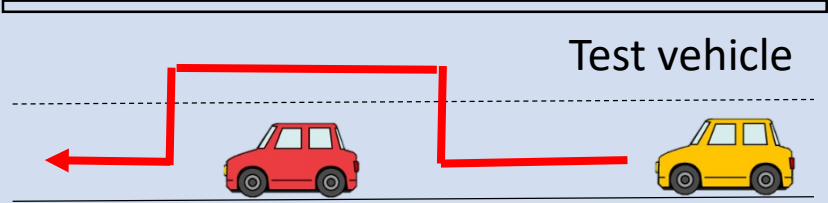
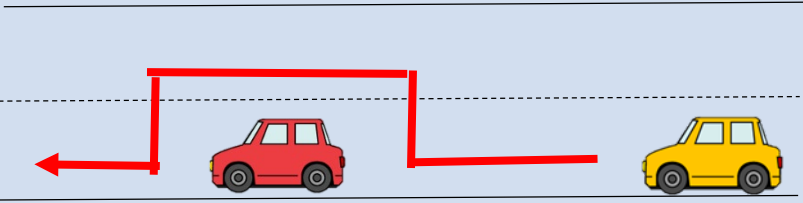
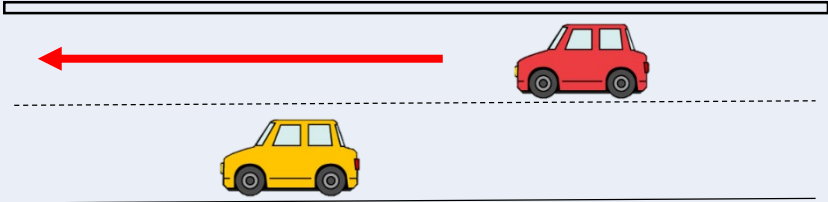
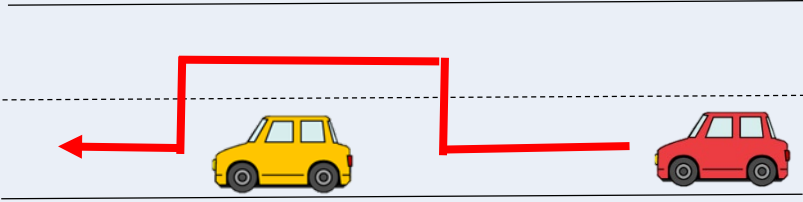
Test Section	Traffic conditions	Road type		
		Urban areas	Multi-lane road, e.g. motorway	Country road
	Speed	50 +/- 10 km/h	100 +/- 20 km/h	80 +/- 20 km/h
	Average percentage of the full test course length	10 per cent	20 per cent	70 per cent
B	Combined oncoming and preceding traffic situations, in a frequency so that the main beam will switch ON and OFF.		X	X

	Multi-lane road.e.g. motorway (80~120km/h)	Country road (60~100km/h)
Combined Oncoming vehicle	 <p>Test vehicle</p>	
Combined Preceding vehicle		

Test section C

Table 1

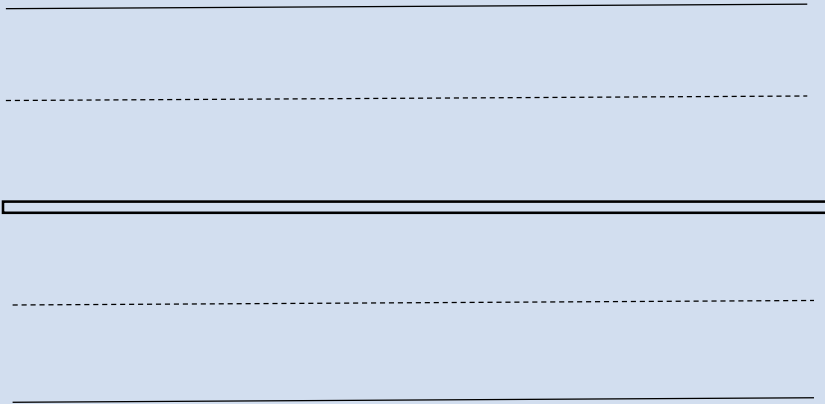
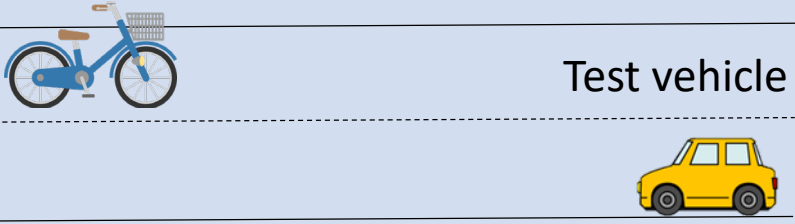
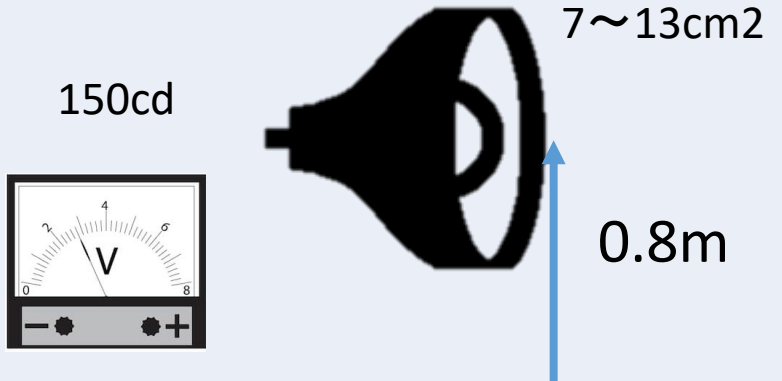
Test Section	Traffic conditions	Road type		
		Urban areas	Multi-lane road, e.g. motorway	Country road
	Speed	50 +/- 10 km/h	100 +/- 20 km/h	80 +/- 20 km/h
	Average percentage of the full test course length	10 per cent	20 per cent	70 per cent
C	Active and passive overtaking manoeuvres, in a frequency so that the main beam will switch ON and OFF.		X	X

	Multi-lane road.e.g. motorway (80~120km/h)	Country road (60~100km/h)
Active overtaking manoeuvres		
Passive Overtaking manoeuvres		

Test section D

Table 1

Test Section	Traffic conditions	Road type		
		Urban areas	Multi-lane road, e.g. motorway	Country road
	Speed	50 +/- 10 km/h	100 +/- 20 km/h	80 +/- 20 km/h
	Average percentage of the full test course length	10 per cent	20 per cent	70 per cent
D	Oncoming bicycle, as described in paragraph 6.1.9.3.1.2.			X

	Multi-lane road.e.g. motorway (80~120km/h)	Country road (60~100km/h)
Oncoming bicycle		<p>at least 75 m</p> 
About Bicycle lamp	<ul style="list-style-type: none"> ▪ white lamp ▪ Luminous intensity of 150 cd ▪ light emitting area of 10 cm² +/- 3 cm² ▪ height above a ground of 0.8 m. 	

Test section E

Table 1

Test Section	Traffic conditions	Road type		
		Urban areas	Multi-lane road, e.g. motorway	Country road
	Speed	50 +/- 10 km/h	100 +/- 20 km/h	80 +/- 20 km/h
	Average percentage of the full test course length	10 per cent	20 per cent	70 per cent
E	Combined oncoming and preceding traffic situations	X		

	Urban areas (40~60km/h) with illumination	Urban areas (40~60km/h) without illumination
Oncoming vehicle		
Preceding vehicle		
Combined oncoming and preceding		

6.2.7.5. Dipped-beam headlamps may be switched ON or OFF automatically. However, it shall be always possible to switch these dipped-beam headlamps ON and OFF manually.

6.2.7.6. The dipped-beam headlamps shall be switched ON and OFF automatically relative to the ambient light conditions (e.g. switch ON during night-time driving conditions, tunnels, etc.) according to the requirements of **Annex 13**.

Annex 13

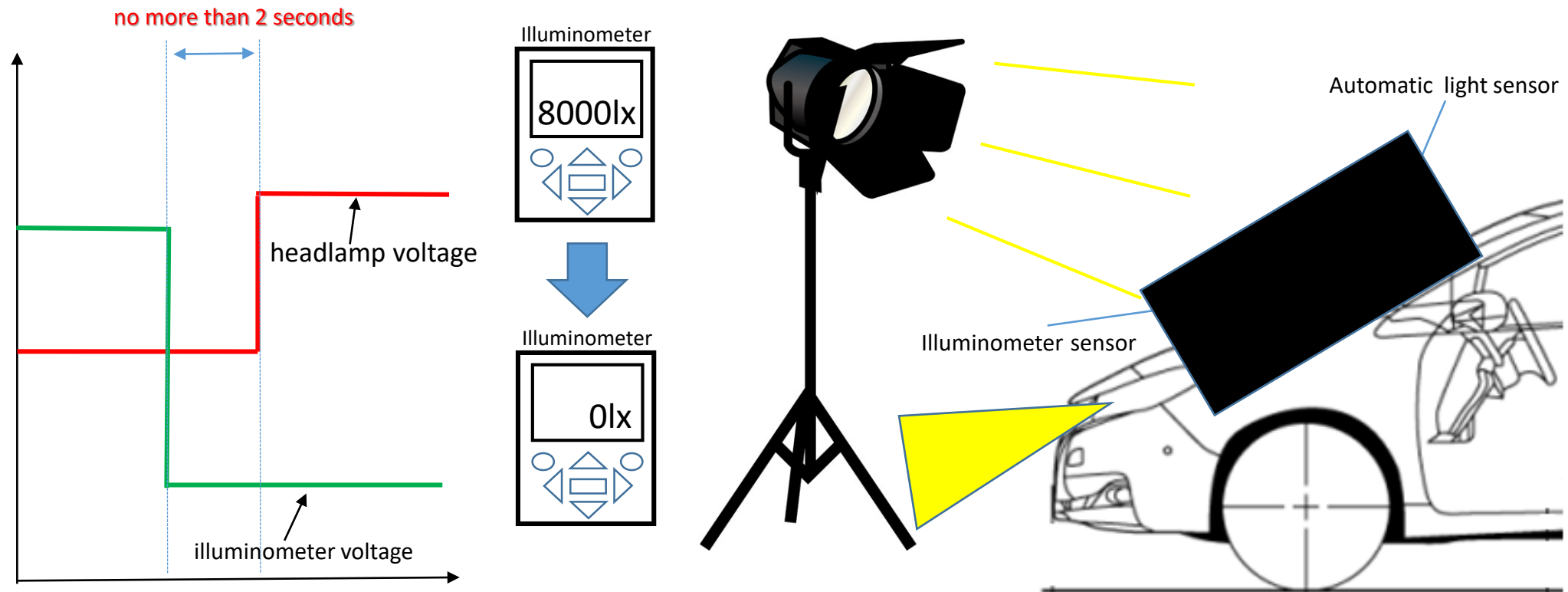
Automatic switching conditions dipped-beam headlamps

Automatic switching conditions dipped-beam headlamps ¹		
Ambient light outside the vehicle ²	Dipped-beam headlamps	Response time
less than 1,000 lux	ON	no more than 2 seconds
between 1,000 lux and 7,000 lux	at manufacturer's discretion	at manufacturer's discretion
more than 7,000 lux	OFF	more than 5 seconds, but no more than 300 seconds

Annex 13

Automatic switching conditions dipped-beam headlamps

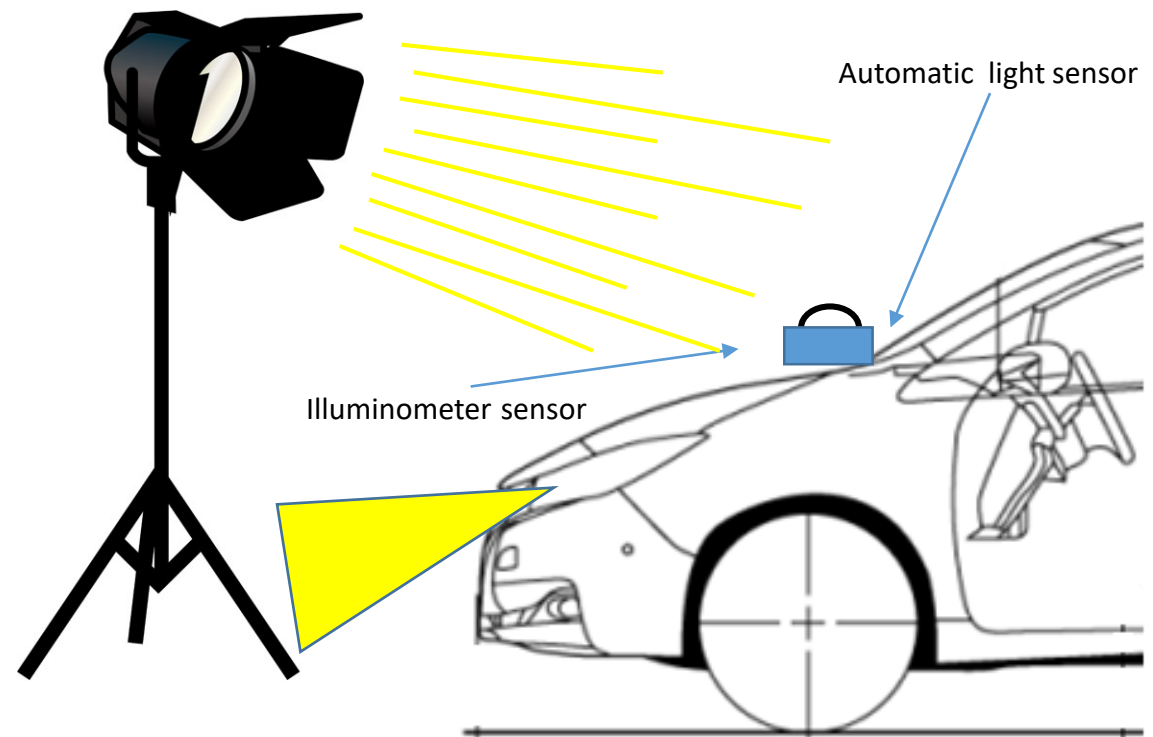
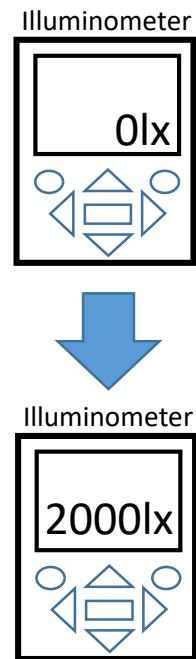
Automatic switching conditions dipped-beam headlamps ¹		
Ambient light outside the vehicle ²	Dipped-beam headlamps	Response time
less than 1,000 lux	ON	no more than 2 seconds
between 1,000 lux and 7,000 lux	at manufacturer's discretion	at manufacturer's discretion
more than 7,000 lux	OFF	more than 5 seconds, but no more than 300 seconds



Annex 13

Automatic switching conditions dipped-beam headlamps

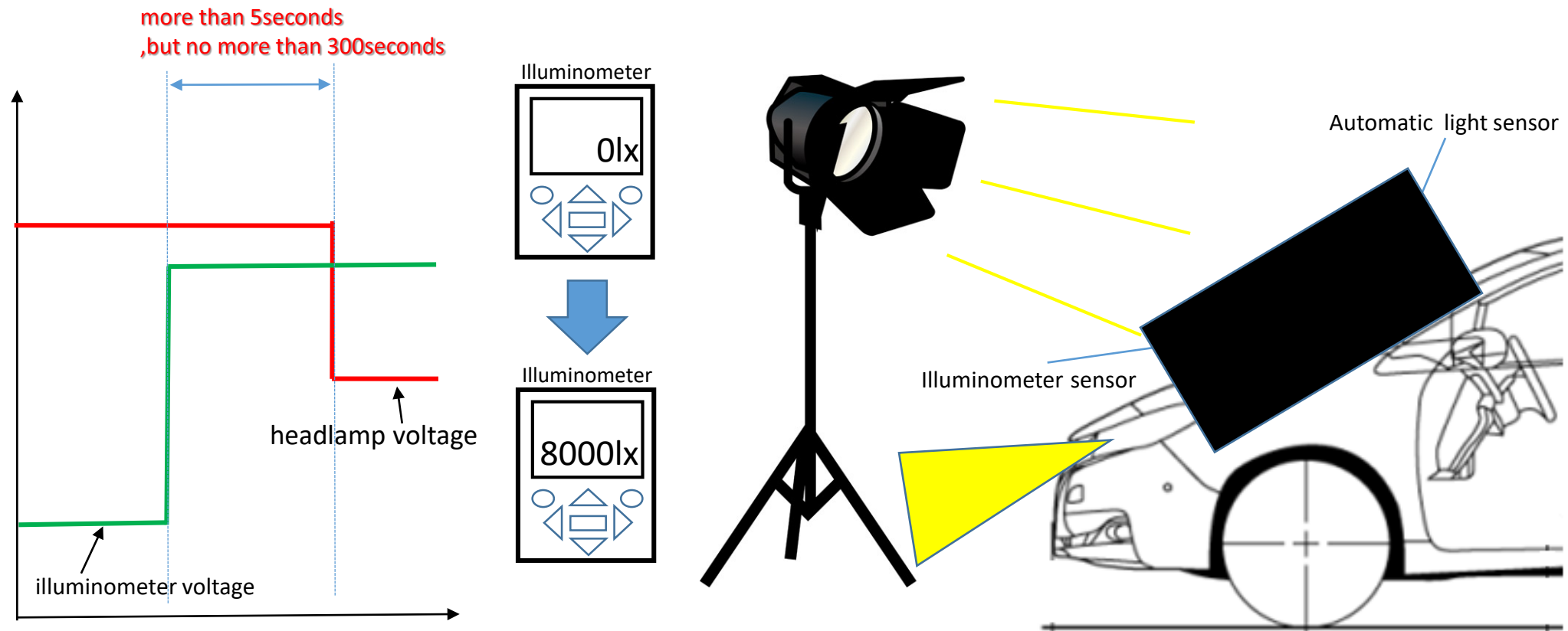
Automatic switching conditions dipped-beam headlamps ¹		
Ambient light outside the vehicle ²	Dipped-beam headlamps	Response time
less than 1,000 lux	ON	no more than 2 seconds
between 1,000 lux and 7,000 lux	at manufacturer's discretion	at manufacturer's discretion
more than 7,000 lux	OFF	more than 5 seconds, but no more than 300 seconds



Annex 13

Automatic switching conditions dipped-beam headlamps

Automatic switching conditions dipped-beam headlamps ¹		
Ambient light outside the vehicle ²	Dipped-beam headlamps	Response time
less than 1,000 lux	ON	no more than 2 seconds
between 1,000 lux and 7,000 lux	at manufacturer's discretion	at manufacturer's discretion
more than 7,000 lux	OFF	more than 5 seconds, but no more than 300 seconds



6.23. Emergency stop signal

6.23.1. Presence

Optional

The emergency stop signal shall be given by the simultaneous operation of **all the stop or direction-indicator lamps** fitted as described in paragraph 6.23.7.

6.23.2. Number

As specified in paragraph 6.5.2. or 6.7.2.

6.23.3. Arrangement

As specified in paragraph 6.5.3. or 6.7.3.

6.23.4. Position

As specified in paragraph 6.5.4. or 6.7.4.

6.23.5. Geometric visibility

As specified in paragraph 6.5.5. or 6.7.5.

6.23.6. Orientation

As specified in paragraph 6.5.6. or 6.7.6.

6.5. Direction-indicator lamp

or

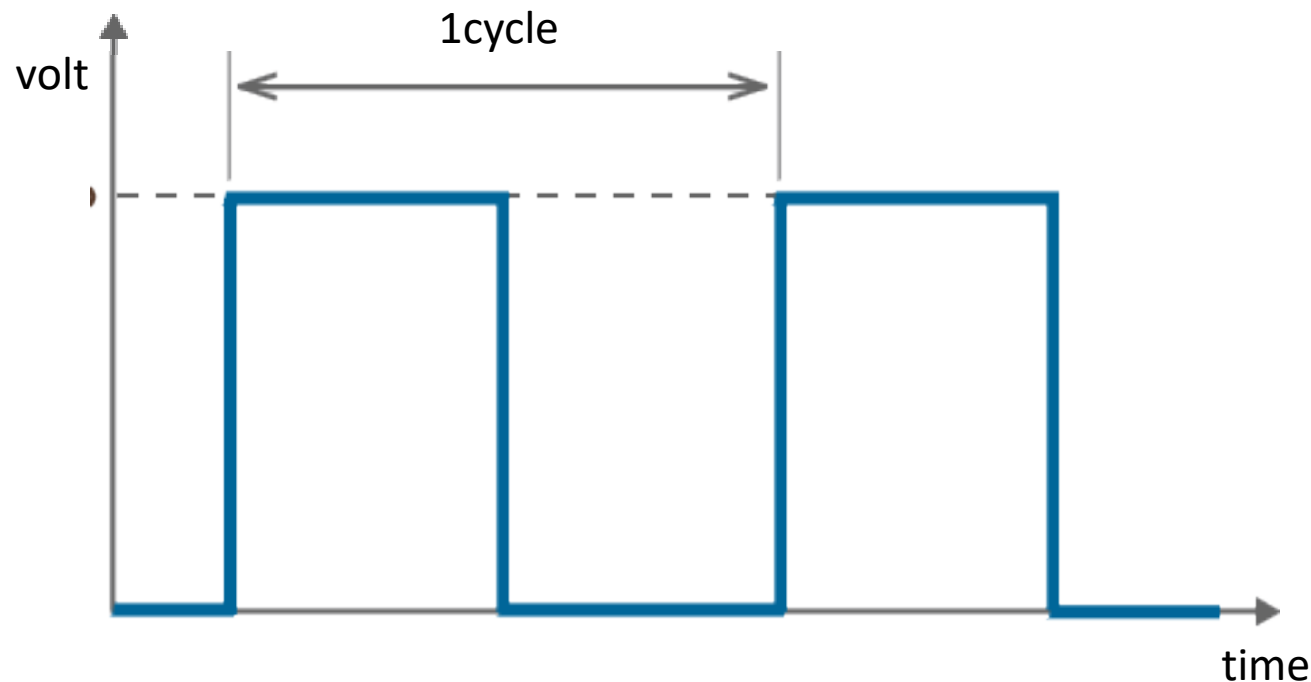
6.7. Stop lamp



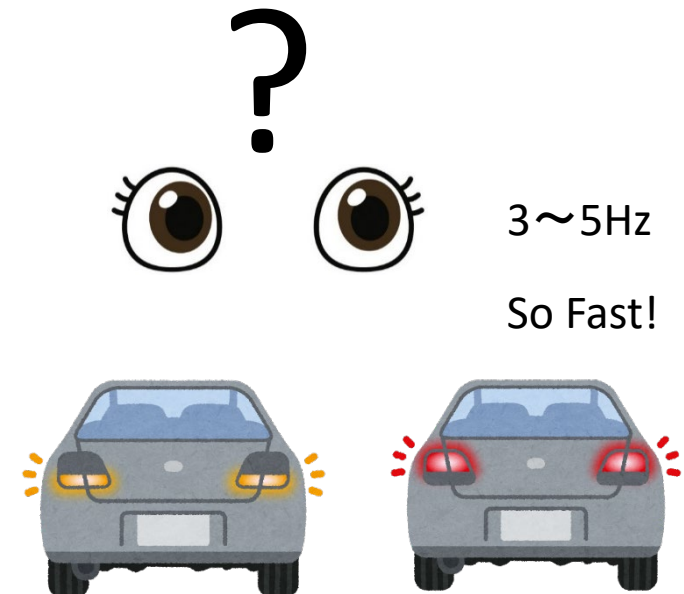
6.23.7. Electrical connections

6.23.7.1. All the lamps of the emergency stop signal shall flash in phase at a frequency of **4.0 +/-1.0 Hz**.

6.23.7.1.1. However, if any of the lamps of the emergency stop signal to the rear of the vehicle use **filament light sources** the frequency shall be **4.0 +0.0/-1.0 Hz**.



It's easy 1~2Hz



6.23.7.2. The emergency stop signal shall operate independently of other lamps.

6.23.7.3. The emergency stop signal shall be activated and deactivated automatically.

6.23.7.3.1. The emergency stop signal shall be **activated** only when the vehicle speed is above 50 km/h and the braking system is providing the emergency braking logic signal defined in Regulations Nos. 13 and 13-H.

6.23.7.3.2. The emergency stop signal shall be automatically **deactivated** if the emergency braking logic signal as defined in Regulations Nos. 13 and 13-H is no longer provided or if the hazard warning signal is activated.

R13h

2.23. "*Emergency braking signal*": logic signal indicating emergency braking as specified in paragraph 5.2.23. of this Regulation.

5.2.23. When a vehicle is equipped with the means to indicate emergency braking, activation and de-activation of the emergency braking signal shall only be generated by the application of the service braking system when the following conditions are fulfilled: 7

5.2.23.1. The signal shall not be activated when the vehicle deceleration is below 6 m/s² but it may be generated at any deceleration at or above this value, the actual value being defined by the vehicle manufacturer.

The signal shall be de-activated at the latest when the deceleration has fallen below 2.5 m/s².

5.2.23.2. The following conditions may also be used:

(a) The signal may be generated from a prediction of the vehicle deceleration resulting from the braking demand respecting the activation and de-activation thresholds defined in paragraph 5.2.23.1. above;

or

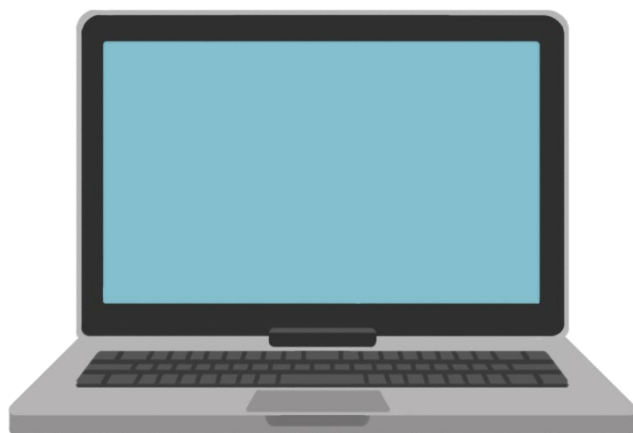
(b) The signal may be activated at a speed above 50 km/h when the antilock system is fully cycling (as defined in paragraph 2. of Annex 6).

The signal shall be deactivated when the antilock system is no longer fully cycling.

■ ESS Dynamic test check sheet



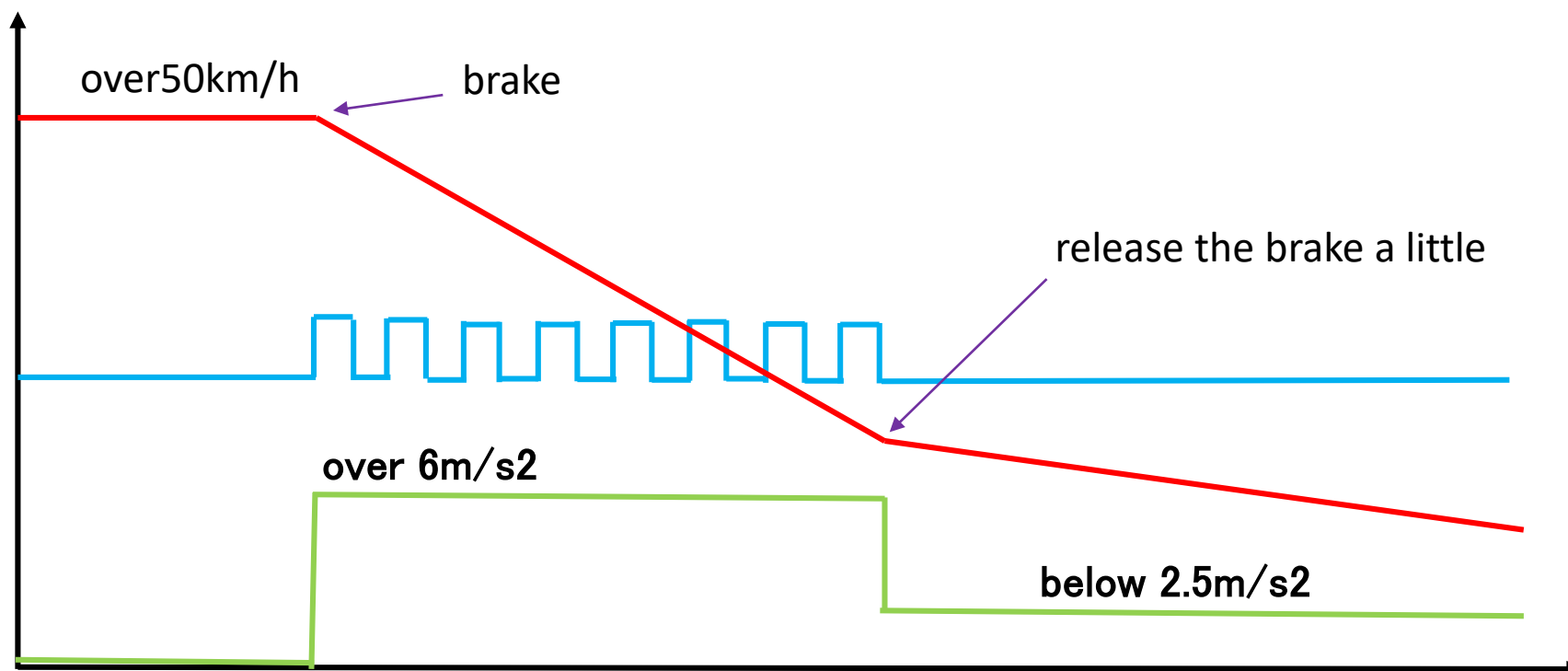
Test pattern	①		②	③	④	⑤
	Check activation	Check deactivation	Check non-operation	Check non-operation	Check deactivation	Check activation
Initial braking speed	over 50km/m	—	over 50km/m	less than 50km/m	over 50km/m	over 50km/m
Deceleration	braking at over 6m/s ²	after ESS activation, deactivation by reducing deceleration	braking at less than 6m/s ²	braking at over 6m/s ²	braking at over 6m/s ²	braking at over 6m/s ²
Others	—		—	—	hazard ON during ESS activation	direction indicator ON
Checking of ESS activation	activated at over 6m/s ² and over 50km/h	deactivated below 2.5m/s ²	non-operational at less than 6m/s ² (vehicle speed over 50km/h)	non-operational at 50km/h or less (over 6m/s ²)	switched to hazard	ESS activated even when direction indicator is ON
Judgment	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail
Frequency of illumination	Frequency 4.0±1.0Hz (3.0 – 4.0Hz for filament light source)					
Judgment	Pass/Fail					



vehicle speed

stop or hazard signal

Deceleration



END