



**BRUXELLES MOBILITÉ**  
**BRUSSEL MOBILITEIT**

**SERVICE PUBLIC RÉGIONAL DE BRUXELLES**  
**GEWESTELIJKE OVERHEIDSDIENST BRUSSEL**

Directie Verkeersveiligheid, Vooruitgangstraat 80 bus 1, 1035 Brussel  
Direction Sécurité Routière, Rue du Progrès 80 boîte 1, 1035 Bruxelles  
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Index du dossier de réception d'une homologation par type en application d'un Règlement  
*Index to the information package of a type approval with regard to a Regulation*

Dernière Série d'amende- ments applicable <i>Last applicable Series of amendments</i>	N° de la réception de base et mise à jour <i>Base approval and update No</i>	Extension N° <i>Extension No</i>	Révision N° <i>Revision No</i>	Date d'émission <i>Issue date</i>	Fiche de renseignements <i>Information document</i>	
					Référence <i>Reference</i>	Nombre de pages <i>Number of pages</i>
3-02	00	-	-	20.04.2016	LUCIDITY 26023N / 00	9

Vu pour être annexé à la fiche de réception,  
*Approved and to be attached to the approval certificate,*  
Le Directeur,  
*The Director,*

Laurence LEROY

N° d'homologation mis à jour : <i>Approval No</i>	E6-3R-020745	BEVASYS : 201600154
Mise à jour N° : <i>Update No</i>	00	Date d'émission : <i>Issue date</i>
	20.04.2016	

[www.bruxellesmobilitate.irisnet.be](http://www.bruxellesmobilitate.irisnet.be)

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**COMMUNICATION CONCERNANT L'HOMOLOGATION D'UN TYPE DE DISPOSITIF**  
*COMMUNICATION CONCERNING THE APPROVAL OF A TYPE OF RETRO-REFLECTING DEVICE*  
**CATADIOPTRIQUE EN APPLICATION DU REGLEMENT N° 3-02**  
*PURSUANT TO REGULATION No 3-02*

**N° d'homologation : E6-3R-020745**  
*Approval No.*

**Marque d'homologation :**  
*Approval mark*

R1-S1 2a IIIA AR F1  
02 01 02 00 00



1. Marque de fabrique ou de commerce du dispositif : LUCIDITY  
*1. Trade name or mark of the device*

2. Désignation du type de dispositif par le fabricant : 26023N  
*2. Manufacturer's name for the type of device*

3. Nom et adresse du fabricant :  
*3. Manufacturer's name and address*

Lucidity Enterprise Co., Ltd.  
No. 18, Gongye 1st Road, Annan District, 70955  
Tainan City, Taiwan R. O. C.

4. Nom et adresse du mandataire du fabricant (le cas échéant) : -  
*4. If applicable, name and address of manufacturer's representative*

5. Dispositif soumis à l'homologation le : 28.03.2016 ~ 31.03.2016  
*5. Submitted for approval on*

6. Service technique chargé des essais :  
*6. Technical service responsible for conducting approval tests*

AIB VINCOTTE INTERNATIONAL  
Jan Olieslagerslaan 35  
1800 VILVOORDE  
BELGIUM

7. Date du procès-verbal d'essai : 20.04.2016  
*7. Date of test report*

8. Numéro du procès-verbal d'essai : H1560495391/591  
*8. Number of test report*





9. Description sommaire : voir fiche de renseignements  
9. Concise description : see information document

~~Isolé~~ / fait partie d'un ensemble de dispositifs <sup>1</sup> :  
~~In isolation~~ / part of an assembly of devices <sup>1</sup>

Couleur de la lumière émise : ~~blanc~~ / rouge / ~~jaune-amber~~ <sup>1</sup>  
Colour of light emitted : ~~white~~ / red / ~~amber~~ <sup>1</sup>

Montage en tant que partie intégrante d'un feu intégré dans la carrosserie d'un véhicule : ~~oui~~ / non <sup>1</sup>  
Installation as an integral part of a lamp which is integrated into the body of a vehicle : ~~yes~~ / no <sup>1</sup>

Conditions géométriques du montage et variantes éventuelles : voir fiche de renseignements  
Geometric conditions of installation and relating variations, if any

10. Position de la marque d'homologation : sur la lampe  
10. Position of the approval mark : on the lamp
11. Motif(s) de l'extension d'homologation (le cas échéant) : -  
11. Reason(s) for extension (if applicable)
12. Homologation accordée / ~~étendue~~ <sup>1</sup>  
12. Approval granted / ~~extended~~ <sup>1</sup>
13. Lieu : Bruxelles  
13. Place
14. Date : 20.04.2016  
14. Date
15. Signature :  
15. Signature

AU NOM DU MINISTRE :  
ON BEHALF OF THE MINISTER  
Pour le Directeur Général,  
For the Director General,  
Le Directeur,  
The Director,



Laurence LEROY

16. Les documents ci-après, portant le numéro d'homologation indiqué ci-dessus peuvent être obtenus sur demande :  
16. The following documents, bearing the approval numbers shown above, are available on request

<sup>1</sup> Biffer la mention inutile - Strike out what does not apply





**AIB-VINÇOTTE International n.v.**

Head office: Diamant Building – A. Reyerslaan 80 – B-1030 Brussels

Company number : BE 0462.513.222 – HRB : 621315 – Internet : [www.vincotte.com](http://www.vincotte.com)☒ Safety, quality and environmental services

ISO/IEC 17020 Accredited inspection body - Accreditation certificate BELAC No. 016-INSP

**AUTOMOTIVE CERTIFICATION**

Business Class Kantorenpark – Jan Olieslagerslaan 35 – B-1800 Vilvoorde

Telephone : +32 (0)2/674.58.85 – Fax : +32 (0)2/674.59.62

E-mail: [homologation@vincotte.be](mailto:homologation@vincotte.be)**1. SUBJECT : RETRO-REFLECTING DEVICES**

R3-02

<b>2. REF. :</b>	Report number : <b>H1560495391/591</b>	No. of pages : 1 of 18	No. of annexes : -
	Bevasys : 201600154	Approval No. : (0745 00)	Update : 00

**3. GENERALITIES :**

Make of Device : LUCIDITY

Commercial Type : -

Manufacturer's Type : 26023N

Name and address of the manufacturer :

Lucidity Enterprise Co., Ltd.

No. 18, Gongye 1st Road, Annan District, 70955

Tainan City, Taiwan R. O. C.

<b>4. TESTS :</b>	Date and place : 2016.03.28 to 2016.03.31
	Lucidity Enterprise Co., Ltd – Photometric Laboratory
	Applied document(s) : LUCIDITY 26023N / 00
	AVI Inspector : LU Wan-Ching
	Persons witnessing the tests : LU Wan-Ching
	Location of E-mark : On the lamp

**5. CONCLUSIONS :**

The tests were carried out according to the following specifications :

- UNECE Regulation No. 3 incorporating supplement 14 to the 02 series of amendments.

The models presented comply with the requirements to be applied.

Date : 2016.04.20

Signature :

AIB-Vincotte International nv/ta  
LU Wan-Ching  
Automotive Certification



## DESCRIPTION OF THE TESTED RETRO REFLECTOR

Retro-reflector type : Rear Retro-reflector which is in part of an assembly of device  
Retro-reflector category : IIIA  
Retro-reflector color : Red

## GENERAL SPECIFICATIONS

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
Retro-reflecting devices must be so constructed that they function satisfactorily and will continue to do so in normal use. In addition, they must not have any defect in design or manufacture that is detrimental to their efficient operation or to their maintenance in good condition.	6.1.	X	
The components of retro-reflecting devices must not be capable of being easily dismantled.	6.2.	X	
Retro-reflecting optical units may not be replaceable.	6.3.	X	
The outer surface of retro-reflecting devices must be easy to clean. Hence it must not be a rough surface; any protuberances it may exhibit must not prevent easy cleaning.	6.4.	X	
For devices of Class IVA their means of fixation shall be such that they allow a stable and durable connection between the device and the vehicle.	6.5.		X
There shall be no access to the inner surface of the retro-reflectors when in normal use.	6.6.	X	

## SPECIAL SPECIFICATIONS (TESTS)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
Retro-reflecting devices must also satisfy the conditions as to dimensions and shape, and the colorimetric, photometric, physical and mechanical requirements set forth in Annexes 5 to 11 and 13 of this Regulation. The test procedures are described in Annex 4 (Class IA, IIIA), Annex 14 (Class IVA) and Annex 16 (Class IB, IIIB).	7.1.	X	
Depending on the nature of the materials of which the retro-reflecting devices and, in particular, their optical units, are made, the competent authorities may authorise laboratories to omit certain unnecessary tests, subject to the express reservation that such omission must be mentioned under "Remarks" on the form notifying approval.	7.2.	X	



## TEST PROCEDURE CLASS IA AND CLASS IIIA (ANNEX 4)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
The applicant shall submit for approval ten samples which shall be tested in the chronological order indicated in Annex 12.	1.	X	
After verification of the general specifications (paragraph 6 of the Regulation) and the specifications of shape and dimensions (Annex 5), the ten samples shall be subjected to the heat resistance test described in Annex 10 to this Regulation and at least one hour after this test examined as to their colorimetric characteristics and CIL (Annex 7) for an angle of divergence of 20' and an illumination angle $V = H = 0^\circ$ or if necessary, in the position defined in Annex 7, § 4 and § 4.1. The two retro-reflecting devices giving the minimum and maximum values shall then be fully tested as shown in Annex 7. These two samples shall be kept by the laboratories for any further checks which may be found necessary. The other eight samples shall be divided into four groups of two :	2.	X	
<u>First group</u> :		X	
The two samples shall be subjected successively to the water penetration test (Annex 8, § 1.1.) and then, if this test is satisfactory, to the tests for resistance to fuels and lubricants (Annex 8, § 3 and 4).			
<u>Second group</u> :		X	
The two samples shall, if necessary, be subjected to the corrosion test (Annex 8, § 2), and then to the abrasive-strength test of the rear face of the retro-reflecting device (Annex 8, § 5).			
<u>Third group</u> :			X
The two samples shall be subjected to the test for stability in time of the optical properties of retro-reflecting device (Annex 9).			
<u>Fourth group</u> :			X
The two samples shall be subjected to the colour-fastness test (Annex 11).			
After undergoing the tests referred to in the above paragraph, the retro-reflecting devices in each group must have :	3.		
A colour which satisfies the conditions laid down in Annex 6. This shall be verified by a qualitative method and, in case of doubt, confirmed by a quantitative method.	3.1.	X	
A CIL which satisfies the conditions laid down in Annex 7. The verification shall be performed only for an angle of divergence of 20' and an illumination angle of $V = H = 0^\circ$ or, if necessary, in the position specified in Annex 7, § 4 and 4.1.	3.2.	X	



## SPECIFICATIONS OF SHAPE AND DIMENSIONS (ANNEX 5)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<b>Shape and dimensions of retro-reflecting devices in Class IA or IB</b> <p>The shape of the illuminating surfaces must be simple, and not easily confused at normal observation distances, with a letter, a digit or a triangle.</p> <p>The preceding paragraph notwithstanding, a shape resembling the letters or digits of simple form O, I, U or 8 is permissible.</p>	1. 1.1. 1.2.		X
<b>Shape and dimensions of retro-reflecting devices in Classes IIIA and IIIB</b> <p>The illuminating surfaces of retro-reflecting devices in Class IIIA and IIIB must have the shape of an equilateral triangle. If the word "TOP" is inscribed in one corner, the apex of that corner must be directed upwards.</p> <p>The illuminating surface may or may not have at its centre a triangular, non-retro-reflecting area, with sides parallel to those of the outer triangle.</p> <p>The illuminating surface may or may not be continuous. In any case, the shortest distance between two adjacent retro-reflecting optical units must not exceed 15 mm.</p> <p>The illuminating surface of a retro-reflecting device shall be considered to be continuous if the edges of the illuminating surfaces of adjacent separate optical units are parallel and if the said optical units are evenly distributed over the whole solid surface of the triangle.</p> <p>If the illuminated surface is not continuous, the number of separate retro-reflecting optical units including the corner units shall not be less than four on each side of the triangle.</p> <p>The separate retro-reflecting optical units shall not be replaceable unless they consist of approved retro-reflecting devices in Class IA.</p> <p>The outside edges of the illuminating surfaces of triangular retro-reflecting devices in Classes IIIA and IIIB shall be between 150 and 200 mm long. In the case of devices of hollow-triangle type, the width of the sides, measured at right angles to the latter, shall be equal to at least 20 % of the effective length between the extremities of the illuminating surface.</p>	2. 2.1. 2.2. 2.3. 2.4. 2.5. 2.5.1. 2.6.	X        X	        X
<b>Shape and dimensions of retro-reflecting devices in Class IVA</b> <p>The shape of the light emitting surfaces must be simple and not easily confused at normal observation distances with a letter, a digit or a triangle. However, a shape resembling the letters and digits of simple form, O, I, U and 8 is permissible.</p> <p>The light emitting surface of the retro-reflecting device must be at least 25 cm².</p> <p>Compliance with the above specifications shall be verified by visual inspection.</p>	3. 3.1. 3.2. 4.	   X	X



## COLORIMETRIC SPECIFICATIONS (ANNEX 6)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<p>These specifications shall apply only to clear, red or amber retro-reflecting devices.</p> <p>Retro-reflecting devices may consist of a combined retro-reflecting optical unit and filter, which must be so designed that they cannot be separated under normal conditions of use.</p> <p>The colouring of retro-reflecting optical units and filters by means of paint or varnish is not permitted.</p> <p>When the retro-reflecting device is illuminated by CIE standard illuminant A, with an angle of divergence of 1/3 degrees and an illumination angle of <math>V = H = 0</math> degrees, or, if this produces a colourless surface reflection, an angle <math>V = \pm 5</math> degrees, <math>H = 0</math> degrees, the trichromatic coordinates of the reflected luminous flux must be within the limits according to paragraph 2.30. of Regulation No. 48</p> <p>Clear retro-reflecting devices must not produce a selective reflection, that is to say, the trichromatic coordinates "x" and "y" of the standard illuminant "A" used to illuminate the retro-reflecting device must not undergo a change of more than 0.01 after reflection by the retro-reflecting device.</p>	<p>1.</p> <p>1.1.</p> <p>1.2.</p> <p>2.</p> <p>3.</p>	<p>X</p> <p>X</p> <p>X</p>	<p>X</p>



## PHOTOMETRIC SPECIFICATIONS (ANNEX 7)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
When applying for approval, the applicant shall specify one or more or a range of axis of reference, corresponding to the illumination angle $V = H = 0^\circ$ in the table of coefficients of luminous intensity (CIL).	1.	X	
In the case where more than one or a range of different axis of reference are specified by the manufacturer, the photometric measurements shall be repeated making reference each time to a different axis of reference or to the extreme axis of reference of the range specified by the manufacturer.			
For photometric measurements, only the illuminating surface defined by the planes contiguous to the outermost parts of the optical system of the retro-reflecting device as indicated by the manufacturer and contained within a circle of 200 mm diameter for Class IA or IB shall be considered, and the illuminating surface itself shall be limited to 100 cm <sup>2</sup> though the surfaces of the retro-reflecting optical units need not necessarily attain this area. The manufacturer shall specify the perimeter of the area to be used. In the case of Class IIIA, Class IIIB and IVA the whole of the illuminating surfaces shall be considered without limitation as to size.	2.	X	
The CIL values	3.		
Class IA, Class IB, Class IIIA and Class IIIB	3.1.		
The CIL values for red retro-reflecting devices must be at least equal to those in the table shown in § 3.1.1., expressed in millicandelas per lux, for the angles of divergence and illumination shown in the table in § 3.1.1.	3.1.1.	X	
CIL values lower than those shown in the last two columns of the table in § 3.1.1. are not permissible within the solid angle having the reference centre as its apex and bounded by the planes intersecting along the following lines : ( $V = \pm 10^\circ$ , $H = 0^\circ$ ) ( $V = \pm 5^\circ$ , $H = \pm 20^\circ$ )			
CIL values for amber retro-reflecting devices in Class IA or IB must be at least equal to those in the table of § 3.1.1. above multiplied by the coefficient 2.5;	3.1.2.		X
CIL values for colourless retro-reflecting devices in Class IA or IB must be at least equal to those in the table of § 3.1.1. above multiplied by the coefficient 4.	3.1.3.		X
However, in the case where a retro-reflecting device of Class IA, Class IB, Class IIIA or Class IIIB is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the CIL values are verified only up to an angle of $5^\circ$ downwards."	3.2.		X
For devices of Class IVA the CIL values must be at least equal to those in the table shown in § 3.2., expressed in millicandelas per lux, for the angles of divergence and illumination shown.	3.3.		X
However, in the case where a retro-reflecting device of Class IVA is intended to be installed with its H plane at a mounting height less than 750 mm above the ground, the CIL values are verified only up to an angle of $5^\circ$ downwards."	3.4.		X
When the CIL of a retro-reflecting device is measured for an angle $\beta$ of $V = H = 0^\circ$ , it shall be ascertained whether any mirror effect is produced by slightly turning the device. If there is any such effect, a reading shall be taken with an angle $\beta$ of $V = \pm 5^\circ$ , $H = 0^\circ$ . The position adopted shall be that corresponding to the minimum CIL for one of these positions.	4.		X



Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
With an illumination angle $\beta$ of $V = H = 0^\circ$ , or the angle specified in § 4 above, and an angle of divergence of 20' retro-reflecting devices which are not marked "TOP" shall be rotated about their axes of reference to the position of minimum CIL, which must conform to the value specified in § 3 above. When the CIL is measured for the other angles of illumination and divergence, the retro-reflecting device shall be placed in the position corresponding to this value $\varepsilon$ . If the specified values are not attained, the device may be rotated about its axis of reference $\pm 5^\circ$ from that position.	4.1.		
With an illumination angle $\beta$ of $V = H = 0^\circ$ , or the angle specified in § 4 above, and an angle of divergence of 20' retro-reflecting devices marked "TOP" shall be rotated about their axes $\pm 5^\circ$ . The CIL must not fall below the prescribed value in any position assumed by the device during this rotation.	4.2.		
If for the direction $V = H = 0^\circ$ , and for $\varepsilon = 0^\circ$ the CIL exceeds the specified value by 50 % or more, all measurements for all angles of illumination and divergence shall be made for $\varepsilon = 0^\circ$ .	4.3.		



## RESISTANCE TO EXTERNAL AGENTS (ANNEX 8)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applied
<b>Resistance to water and dirt penetration</b>	1.		
Water submersion test	1.1.		
Retro-reflecting devices whether part of a lamp or not, shall be stripped of all removable parts and immersed for 10 minutes in water at a temperature of $50 \pm 5^\circ \text{C}$ , the highest point of the upper part of the illuminating surface being 20 mm below the surface of the water. This test shall be repeated after turning the retro-reflecting device about $180^\circ$ , so that the illuminating surface is at the bottom and the rear face is covered by about 20 mm of water. These optical units shall then be immediately immersed in the same conditions in water at a temperature of $25 \pm 5^\circ \text{C}$ .	1.1.1.	X	
No water shall penetrate to the reflecting surface of the retro-reflecting optical unit. If visual inspection clearly reveals the presence of water, the device shall not be considered to have passed the test.	1.1.2.	X	
If visual inspection does not reveal the presence of water or in case of doubt, the CIL shall be measured by the method described in Annex 4, §3.2., or Annex 14, § 4.2., the retro-reflecting device being first lightly shaken to remove excess water from the outside.	1.1.3.	X	
Alternative test procedure for Class IB and IIIB devices	1.2.		X
As an alternative, at the request of the manufacturer, the following test (moisture and dust test) shall be applied instead of the submersion-test specified in § 1.1. above.			
Moisture test	1.2.1.		
The test evaluates the ability of the sample device to resist moisture penetration from a water spray and determines the drainage capability of those devices with drain holes or other exposed openings in the device.			
Water spray test equipment	1.2.1.1.		
A water spray cabinet with the following characteristics shall be used :			
Cabinet	1.2.1.1.1.		
The cabinet shall be equipped with a nozzle(s) which provides a solid cone water spray of sufficient angle to completely cover the sample device. The centreline of the nozzle(s) shall be directed downward at an angle of $45^\circ \pm 5^\circ$ to the vertical axis of a rotating test platform.			
Rotating test platform	1.2.1.1.2.		
The rotating test platform shall have a minimum diameter of 140 mm and rotate about a vertical axis in the centre of the cabinet.			
Precipitation rate	1.2.1.1.3.		
The precipitation rate of the water spray at the device shall be $2.5 (+ 1.6 / - 0) \text{ mm/min}$ as measured with a vertical cylindrical collector centred on the vertical axis of the rotating test platform. The height of the collector shall be 100 mm and the inside diameter shall be a minimum of 140 mm.			



Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>Water spray test procedure</p> <p>A sample device mounted on a test fixture, with initial CIL measured and recorded shall be subjected to a water spray as follows :</p> <p>Device openings</p> <p>All drain holes and other openings shall remain open. Drain wicks, when used, shall be tested in the device.</p> <p>Rotational speed</p> <p>The device shall be rotated about its vertical axis at a rate of <math>4.0 \pm 0.5 \text{ min}^{-1}</math>.</p> <p>If the retro-reflector is reciprocally incorporated or grouped with signalling or lighting functions, these functions shall be operated at design voltage according to a cycle of 5 min ON (in flashing mode, where appropriate), 55 min OFF.</p> <p>Test duration</p> <p>The water spray test shall last 12 h (12 cycles of 5 / 55 min).</p> <p>Drain period</p> <p>The rotation and the water spray shall be turned OFF and the device allowed to drain for 1 h with the cabinet door closed.</p> <p>Sample evaluation</p> <p>Upon completion of the drain period, the interior shall be observed for moisture accumulation. No standing pool of water shall be allowed to be formed, or which can be formed by tapping or tilting the device. The CIL shall be measured according to the method specified in Annex 4 § 3.2. after having dried the exterior of the device with a dry cotton cloth.</p> <p>Dust exposure test</p> <p>This test evaluates the ability of the sample device to resist dust penetration which could significantly affect the photometric output of the retro-reflector.</p> <p>Dust exposure test equipment</p> <p>Dust exposure test chamber</p> <p>The interior of the test chamber shall be cubical in shape in size 0.9 to 1.5 m per side. The bottom may be "hopper shaped" to aid in collecting the dust. The internal chamber volume, not including a "hopper shaped" bottom shall be 2 m<sup>3</sup> maximum and shall be charged with 3 to 5 kg of test dust. The chamber shall have the capability of agitating the test dust by means of compressed air or blower fans in such a way that the dust is diffused throughout the chamber.</p> <p>The dust</p> <p>The test dust used shall be fine powdered cement in accordance with Standard ASTM C 150-84.<sup>1</sup></p>	<p>1.2.1.2.</p> <p>1.2.1.2.1.</p> <p>1.2.1.2.2.</p> <p>1.2.1.2.3.</p> <p>1.2.1.2.4.</p> <p>1.2.1.2.5.</p> <p>1.2.1.2.6.</p> <p>1.2.2.</p> <p>1.2.2.1.</p> <p>1.2.2.1.1.</p> <p>1.2.2.1.2.</p>		

<sup>1</sup> American Society for Testing and Materials



Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>Dust exposure test procedure</p> <p>A sample device, mounted on a test fixture, with the initial CIL measured and recorded, shall be exposed to dust as follows :</p> <p>Device openings</p> <p>All drain holes and other openings shall remain open. Drain wicks, when used, shall be tested in the device.</p> <p>Dust exposure</p> <p>The mounted device shall be placed in the dust chamber no closer than 150 mm from a wall. Devices with a length exceeding 600 mm shall be horizontally centred in the test chamber. The test dust shall be agitated as completely as possible by compressed air or blower(s) at intervals of 15 min for a period of 2 to 15 s for the duration of 5 hours. The dust shall be allowed to settle between the agitation periods.</p> <p>Measured sample evaluation</p> <p>Upon completion of the dust exposure test, the exterior of the device shall be cleaned and dried with a dry cotton cloth and the CIL measured according to the method specified in Annex 4, § 3.2.</p> <p><b>Resistance to corrosion</b></p> <p>Retro-reflecting devices must be so designed that they retain the prescribed photometric and colorimetric characteristics despite the humidity and corrosive influences to which they are normally exposed. The resistance of the front surface to tarnishing and of the protection of the rear face to deterioration shall be checked, particularly when an essential metal component seems liable to be attacked.</p> <p>The retro-reflecting device, or the lamp if the device is combined with a light, shall be stripped of all removable parts and subjected to the action of a saline mist for a period of 50 hours, comprising 2 periods of exposure of 24 hours each, separated by an interval of 2 hours during which the sample is allowed to dry.</p> <p>The saline mist shall be produced by atomising, at a temperature of <math>35^{\circ} \pm 2^{\circ} \text{C}</math>, a saline solution obtained by dissolving <math>20 \pm 2</math> parts by weight of sodium chloride in 80 parts of distilled water containing not more than 0.02 % of impurities.</p> <p>Immediately after completion of the test, the sample must not show signs of excessive corrosion liable to impair the efficiency of the device.</p> <p><b>Resistance to fuels</b></p> <p>The outer surface of the retro-reflecting device and, in particular, of the illuminating surface, shall be lightly wiped with a cotton cloth soaked in a mixture of 70 vol. % of n-heptane and 30 volume % of toluol.. After about 5 minutes, the surface shall be inspected visually. It must not show any apparent surface changes, except that slight surface cracks will not be objected to.</p>	<p>1.2.2.2.</p> <p>1.2.2.2.1.</p> <p>1.2.2.2.2.</p> <p>1.2.2.2.3.</p> <p>2.</p> <p>2.1.</p> <p>2.2.</p> <p>2.3.</p> <p>2.4.</p> <p>3.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	



Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<b>Resistance to lubricating oils</b> The outer surface of the retro-reflecting device and, in particular, the illuminating surface, shall be lightly wiped with a cotton cloth soaked in a detergent lubricating oil. After about 5 minutes, the surface shall be cleaned. The CIL shall then be measured (Annex 4, § 3.2. or Annex 14, § 4.2.).	4.	X	
<b>Resistance of the accessible rear face of mirror-backed retro-reflecting devices</b> After having brushed the rear face of the retro-reflecting device with a hard nylon brush, a cotton cloth soaked in the mixture, defined in § 3 shall be applied to the said rear face for one minute. The cotton cloth is then removed and the retro-reflecting device left to dry. As soon as evaporation is completed, an abrasion test shall be made by brushing the rear face with the same nylon brush as before. The CIL shall then be measured (Annex 4, § 3.2 or Annex 14, § 4.2.) after the whole surface of the mirror-backed rear face has been covered with Indian Ink.	5. 5.1.  5.2.  5.3.		X



## STABILITY IN TIME OF THE OPTICAL PROPERTIES <sup>1</sup> OF RETRO-REFLECTING DEVICES (ANNEX 9) N.A.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>The authority which granted approval shall have the right to check the stability in time of the optical properties of a type of retro-reflecting device in service.</p> <p>The competent authorities of countries other than the country in which approval was granted may carry out similar checks in their territory. If a type of retro-reflector in use exhibits a systematic defect, the said authorities shall transmit any components removed for examination to the authority which granted approval, with a request for its opinion.</p> <p>In the absence of other criteria, the concept of systematic defect of a type of retro-reflector in use shall be interpreted in conformity with the intention of § 6.1. of this Regulation.</p>	<p>1.</p> <p>2.</p> <p>3.</p>		

<sup>1</sup> Despite the importance of tests to check the stability in time of the optical properties of retro-reflecting devices, it is in the present state of the art not yet possible to assess this stability by laboratory tests of limited duration.

## RESISTANCE TO HEAT (ANNEX 10)

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>The retro-reflecting device shall be kept for 48 consecutive hours in a dry atmosphere at a temperature of <math>65 \pm 2^{\circ} \text{C}</math>.</p> <p>After this test, no cracking or appreciable distortion of the retro-reflecting device and, in particular, of its optical component must be visible.</p>	<p>1.</p> <p>2.</p>	<p>X</p> <p>X</p>	

## COLOUR-FASTNESS <sup>2</sup> (ANNEX 11) N.A.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>The authority which granted approval shall have the right to check the colour-fastness of a type of retro-reflecting device in service.</p> <p>The competent authorities of countries other than the country in which approval was granted may carry out similar checks in their territory. If a type of retro-reflector in use exhibits a systematic defect, the said authorities shall transmit any components removed for examination to the authority which granted approval, with a request for its opinion.</p> <p>In the absence of other criteria, the concept of systematic defect of a type of retro-reflector in use shall be interpreted in conformity with the intention of § 9.1. of this Regulation.</p>	<p>1.</p> <p>2.</p> <p>3.</p>		

<sup>2</sup> Despite the importance of tests to check the colour-fastness of retro-reflecting devices, it is in the present state of the art not yet possible to assess colour-fastness by laboratory tests of limited duration.



# RESISTANCE TO IMPACT - CLASS IVA (ANNEX 13) N.A.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>The retro-reflecting device shall be mounted in a manner similar to the way in which it is mounted on the vehicle, but with the lens faced horizontal and directed upwards.</p> <p>Drop a 13 mm diameter polished solid steel ball, once, vertically onto the central part of the lens from a height of 0.76 m. The ball may be guided but not restricted in free fall.</p> <p>When a retro-reflecting device is tested at room temperature with this method, the lens shall not crack.</p>	<p>1.</p> <p>2.</p> <p>3.</p>		

# TEST PROCEDURE - CLASS IVA (ANNEX 14) N.A.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
<p>The applicant shall submit for approval ten samples which shall be tested in the chronological order indicated in Annex 15.</p> <p>After verification of the specifications in § 6.1 - 6.5 and the specifications of shape and dimensions (Annex 5), the ten samples shall be subjected to the heat resistance test (Annex 10) and one hour minimum after this test examined as to their colorimetric characteristics and CIL (Annex 7) for an angle of divergence of 20° and an illumination angle <math>V = H = 0^\circ</math> or, if necessary in the positions defined in Annex 7. The two retro-reflecting devices giving the minimum and maximum values shall then be fully tested as shown in Annex 7. These two samples shall be kept by the laboratories for any further checks which may be found necessary.</p> <p>Four samples out of the remaining eight samples shall be selected at random and divided into two groups of two in each group.</p> <p><u>First group :</u></p> <p>The two samples shall be subjected successively to the water-penetration resistance test (Annex 8, §1) and then, if this test is satisfactory, to the tests for resistance to fuels and lubricating oils (Annex 8, § 3 and 4).</p> <p><u>Second group :</u></p> <p>The two samples shall, if relevant, be subjected to the corrosion test (Annex 8, § 2), and then to the abrasive-strength test of the rear face of the retro-reflecting device (Annex 8, § 5). These two samples shall also be subjected to the impact test (Annex 13).</p> <p>After undergoing the tests referred to in the above paragraph, the retro-reflecting devices in each group must have :</p> <p>A colour which satisfies the conditions laid down in Annex 6. This shall be verified by a qualitative method and, in case of doubt, confirmed by a quantitative method;</p>	<p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> <p>4.1.</p>		



Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
A CIL which satisfies the conditions laid down in Annex 7. Verification shall be performed only for an angle of divergence of 20' and an illumination angle of $V = H = 0^\circ$ or, if necessary, in the positions specified in Annex 7.	4.2.		
The four remaining samples can be utilised, if necessary for any other purpose.	5.		

#### TEST PROCEDURE FOR CLASSES IB AND IIIB DEVICES (ANNEX 16) N.A.

Characteristics concerned and prescriptions to apply	References	Conformity	Not applicated
Retro-reflecting devices of Classes IB and IIIB shall be tested according to the test procedures specified in Annex 4, following the chronological order of tests given in Annex 12, with the exception of the test according to Annex 8, § 1, which for Classes IB and IIIB devices may be replaced by the test specified in Annex 8, § 1.2.			

#### FACILITIES AND EQUIPMENT

The facilities and equipment used to carry out the inspections are in compliance with the requirements of the applied Regulatory Act(s).

Tested by Lucidity Enterprise Co., Ltd – Photometric Laboratory



**TEST RESULTS : Rear Retro-reflector which is in part of an assembly of device**

<b><u>Test Results of Photometric Measurement</u></b>				
Retro-reflector type : Rear reflex reflector		Retro-reflector class : III A		
Requirement : ECE Reg. 3 Annex. 7		Retro-reflector color : Red		
Illumination Angless ( In Degress )	Angle of Divergence , $\alpha$	Min Requirement ( mcd / lx )	Measurement ( mcd / lx )	
			Min Sample D	Max Sample C
10U - V	20 ' ,	200	297.0	324.0
5U - 20L		150	243.0	238.0
5U - 20R		150	211.0	239.0
H - V		450	611.0	887.0
5D - 20L		150	224.0	229.0
5D - 20R		150	285.2	233.0
10D - V		200	266.0	319.0
10U - V	1 ° 30 ' ,	8	76.1	100.3
5U - 20L		8	53.9	71.3
5U - 20R		8	59.4	76.2
H - V		12	83.4	150.3
5D - 20L		8	46.9	67.7
5D - 20R		8	51.6	71.2
10D - V		8	63.8	86.6
Test Results	<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed			

<u>Test Results of Colour Measurement</u>			
Retro-reflector type	: Rear reflex reflector	Retro-reflector class	: III A
Requirement	: ECE Reg. 3 Annex 6	Retro-reflector color	: Red
Light Emitted Color	: Red		
Color Boundaries	- Limit towards yellow : $y \leq 0.335$ - Limit towards purple : $y \geq 0.980 - x$		
Test Points	Sample D Measurement		Sample C Measurement
	Colour x	Colour y	Colour x                  Colour y
H - V	0.6911	0.3038	0.6750                  0.3095
Test Results	<div><div></div> Passed</div> <div><div></div> Failed</div>		





## TEST RESULTS :

Resistance to external agents of the retro-reflecting devices

- (1) The retro-reflecting device is combined with other function.
- (2) The material in housing is PC , in outer lens of reflex reflector are PC.
- (3) The resistance to corrosion test and the abrasive-strength test of the rear face of the devices shall not be checked, because all of the material were used by the devices without combined metal component.

### Test Results of Resistance to Heat

Retro-reflector type : Red reflex reflector		Retro-reflector class : IIIA
Requirement : ECE Reg. 3 Annex 10		Retro-reflector color : Red
Visible Inspection : After this test, no cracking or appreciable distortion of the retro-reflecting device and, in particular, of its optical component.		
Photometric Measurement after Resistance to Heat :		
Illumination Angles ( In Degrees ) : H - V		Angle of Divergence , $\alpha$ : 20 °
Samples	Min Requirement ( mcd / lx )	Measurement ( mcd / lx )
A	450	875.0
B	450	801.0
C	450	887.0
D	450	672.0
E	450	768.0
F	450	751.0
G	450	743.0
H	450	701.0
I	450	682.0
J	450	679.0
Test Results	<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed	

(Null below)



### Test Results of Resistance to External Agents (Water Submersion Test)

Retro-reflector type : Red reflex reflector		Retro-reflector class : IIIA
Requirement : ECE Reg. 3 Annex 8 – paragraph 1.1		
Visible inspection : No water shall penetrate to the reflecting surface of the retro-reflecting optical unit. If visual inspection clearly reveals the presence of water, the device shall not be considered to have passed the test.		
Photometric measurement after moisture test :		
Illumination angles ( In degrees ) : H - V		Angle of divergence , $\alpha$ : 20 ' ,
Samples	Min requirement ( mcd / lx )	Measurement ( mcd / lx )
G	450	711.0
H		693.0
Test Results	<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed	

### Test Results of Resistance to External Agents (Resistance to Fuels and Lubricating Oils)

Retro-reflector type : Red reflex reflector		Retro-reflector class : IIIA
Requirement : ECE Reg 3 Annex 8 – paragraph 3.		Retro-reflector color : Red
Visible Inspection after Resistance to Fuels : No show any apparent surface changes, except that slight surface cracks will not be objected to.		
Photometric Measurement after Resistance to Lubricating Oils :		
Illumination Angles ( In Degrees ) : H - V		Angle of Divergence , $\alpha$ : 20 ' ,
Samples	Min Requirement ( mcd / lx )	Measurement ( mcd / lx )
G	450	682.0
H		655.0
Test Results	<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed	



<u>Test Results of Resistance to External Agents (Resistance to Corrosion)</u>		
Retro-reflector type : Red reflex reflector		Retro-reflector class : IIIA
Requirement : ECE Reg 3 Annex 8		Retro-reflector color : Red
Visible Inspection	: Immediately after completion of the test , the sample must not show signs of excessive corrosion liable to impair the efficiency of the devices.	
Photometric Measurement after Resistance to Lubricating Oils :		
Illumination Angless ( In Degress ) : H - V		Angle of Divergence , $\alpha$ : 20 ’
Samples	Min Requirement ( mcd / lx )	Measured ( mcd / lx )
E	450	729.0
F		704.0
Test Results	<input checked="" type="checkbox"/> Passed <input type="checkbox"/> Failed	

(Null below)



Lucidity Enterprise Co., Ltd.  
No. 18, Gongye 1st Road, Annan District,  
70955 Tainan City, Taiwan R. O. C.

## **COMBINATION TAILLAMP**

**LUCIDITY 26023N**

**Application: original**

**Date: January 04, 2016**

**Total number of pages: 9**



**AUTOMOTIVE certification**  
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2016.04.20





**Manufacturer name and address: Lucidity Enterprise Co., Ltd.**  
**No. 18, Gongye 1st Road, Annan District,**  
**70955 Tainan City, Taiwan R. O. C.**

**Trade name or mark : LUCIDITY**

**Type of device : 26023N**



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## SPECIFICATIONS

### Function-Application-class category lamp and colour

Trade name or mark		LUCIDITY					
Function		<i>Reflex reflector</i>	<i>Rear direction indicator</i>	<i>Rear <sup>(1)</sup> position lamp</i>	<i>Stop lamp <sup>(1)</sup></i>	<i>Reversing <sup>(2)</sup> lamp</i>	<i>Rear <sup>(3)</sup> fog lamp</i>
ECE Regulation		3-02 Supplement 14	6-01 Supplement 24	7-02 Supplement 22	7-02 Supplement 22	23-00 Supplement 19	38-00 Supplement 16
Class		-	-	-	-	-	-
Category		IIIA	2a	R1	S1	-	F1
Number, category and kind of lamp source(s)		-	9LEDs / 9 light sources	9LEDs / 9 light sources	9LEDs / 9 light sources	16LEDs / 16 light sources	16LEDs / 16 light sources
Voltage and wattage		-	12V, 2.6W 24V, 2.6W	12V, 0.3W 24V, 0.5W	12V, 1.3W 24V, 1.2W	12V, 2.7W 24V, 2.8W	12V, 2.2W 24V, 2.3W
Lens	Outer	Red	Clear	Red	Red	Clear	Red
	Filter (Inner)	-	-	-	-	Clear	-
Colour of light emitted		Red	Amber	Red	Red	White	Red

<sup>(1)</sup> Rear position lamp reciprocally incorporated with stop lamp.

<sup>(2)</sup> Reversing lamp shall be installed in a pair of devices.

<sup>(3)</sup> Rear fog lamp shall be installed in a pair of devices.

## TECHNICAL DATA

Part		Material	Remark
Lens	Outer	PC	-
	Filter (Inner)	PC	-
Reflector		-	-
Housing		PC	-

## MARKING

Marking		Location
Trade name or mark	LUCIDITY	See drawing
Approval marks	0745	See drawing





<b>DRAWINGS</b>	
<b>Reference</b>	<b>Version</b>
26023(LH)-5500-1	2016.03.29
26023-LAYOUT-5500-2	2016.03.29
26023(LH)-5500-3	2016.03.25
26023(RH)-5500-4	2016.03.25
26023-LAYOUT-5500-5	2016.03.29
26023(RH)-5500-6	2016.03.29

(Null below)

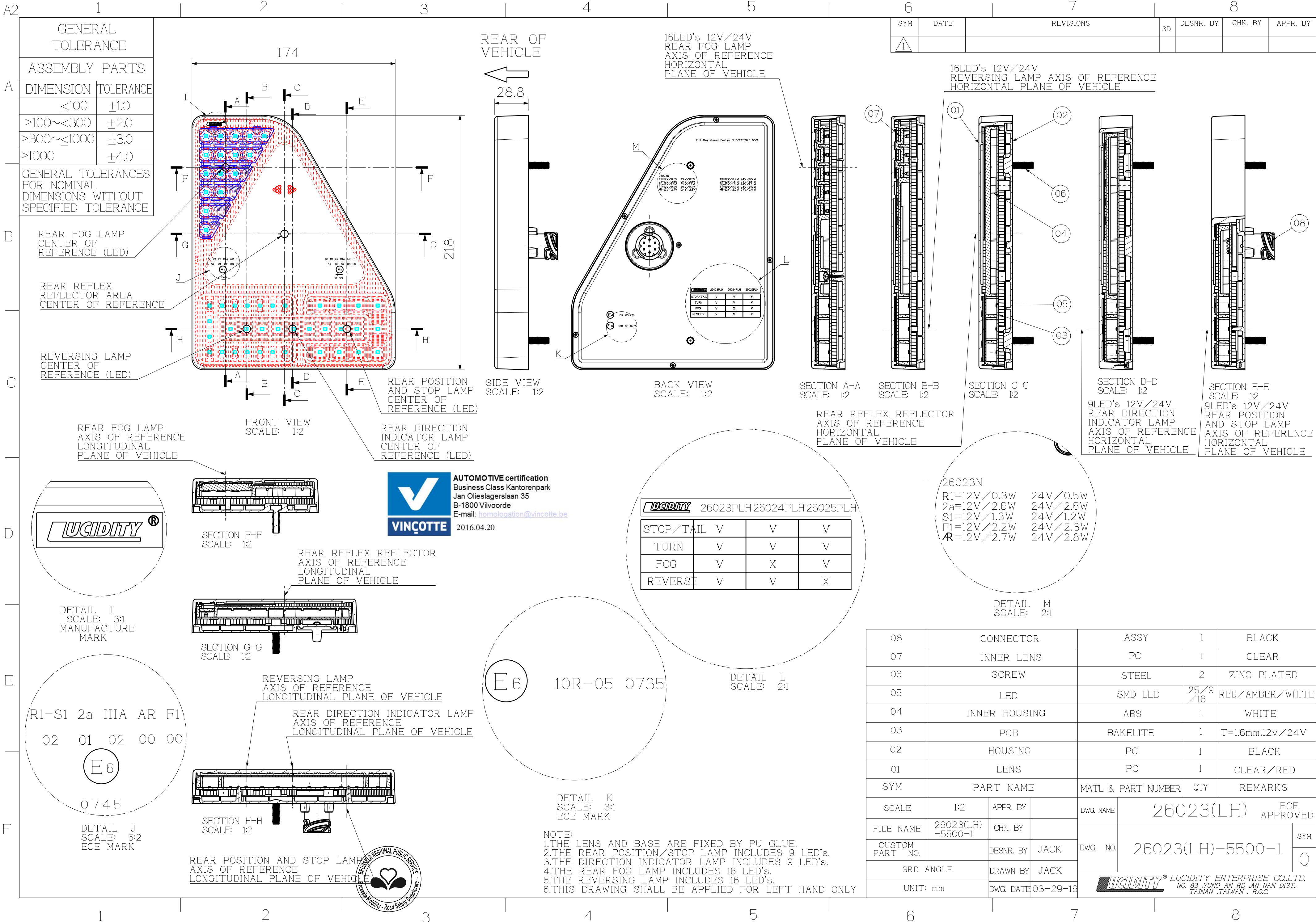


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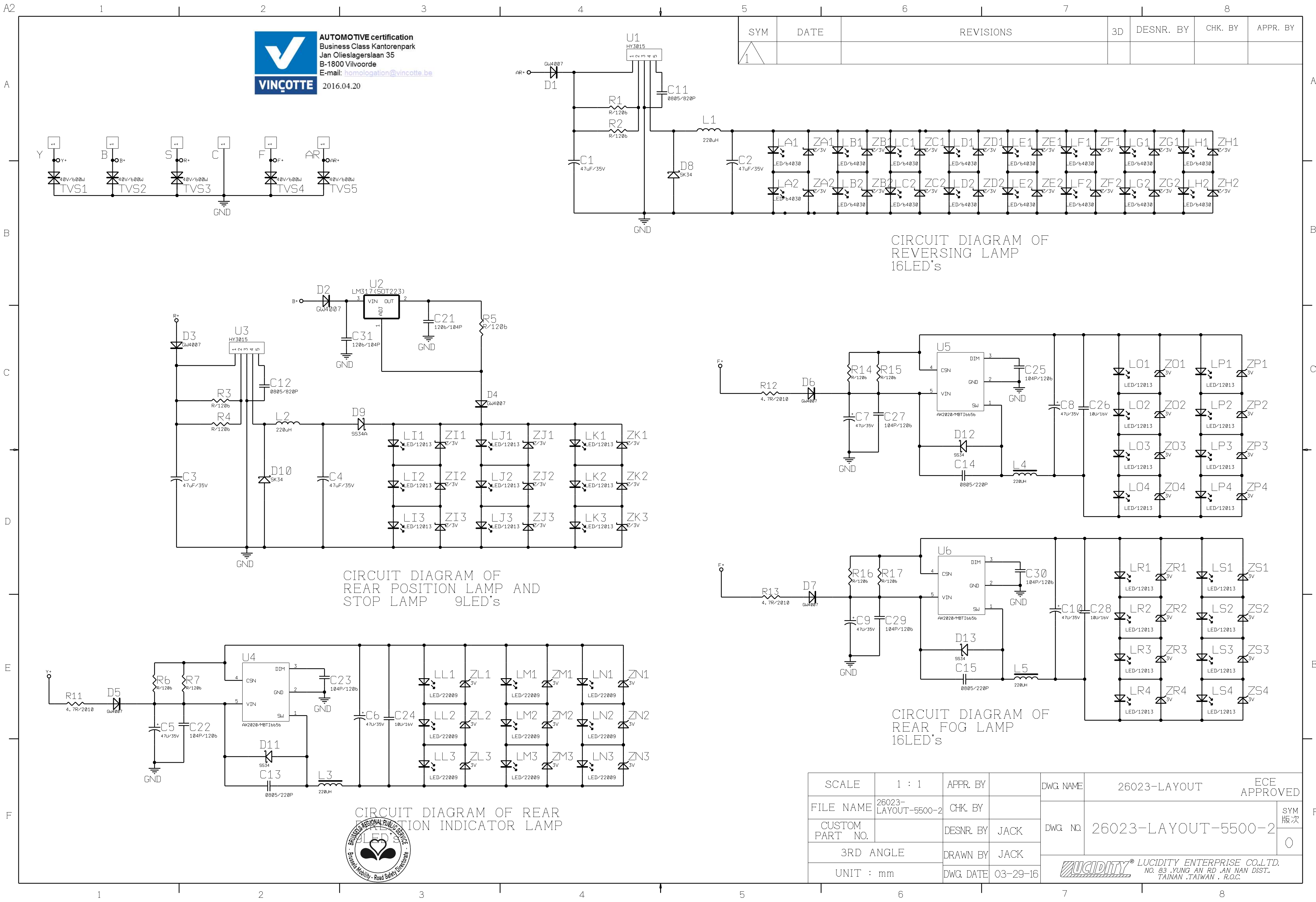
2016.04.20











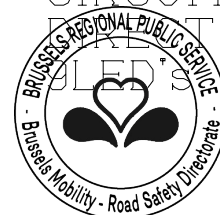













SCALE	1 : 1	APPR. BY		DWG. NAME	26023-LAYOUT	ECE APPROVED	
FILE NAME	26023-LAYOUT-5500-5	CHK. BY		DWG. NO.	26023-LAYOUT-5500-5	SYM 版次	0
CUSTOM PART NO.		DESNR. BY	JACK				
3RD ANGLE		DRAWN BY	JACK				
UNIT : mm		DWG. DATE	03-29-16				
 <b>LUCIDITY ENTERPRISE CO.,LTD.</b> NO. 83 ,YUNG AN RD ,AN NAN DIST. TAINAN ,TAIWAN , R.O.C.							



