

# DELTA Test Report



TEST Reg. no. 73

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## Determination of the luminous intensity distribution of a LED bicycle lamp

### Performed for Reelight Aps

Project no.: DELTA-L101656-2905-00003

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03. June 2008

#### DELTA

Danish Electronics,  
Light & Acoustics

Venlighedsvej 4  
2970 Hørsholm  
Denmark

Tel. (+45) 72 19 40 00  
Fax (+45) 72 19 40 01  
[www.delta.dk](http://www.delta.dk)



<b>Title</b>	Determination of the luminous intensity distribution of a LED bicycle lamp.
<b>Test object</b>	1 LED bicycle front lamp marked: 00003-EP1-F. 1 LED bicycle rear lamp marked: 00003-EP1-R The test sample is shown on page 4 The test includes the above mentioned item received on 29. April 2008
<b>Report no.</b>	DELTA-L101656-2905-00003
<b>Date of test</b>	29. April 2008
<b>Client</b>	Reelight Aps Hasselager Centervej 11, 1. sal 8260 Viby J.
<b>Contact person</b>	Steffen Hansen
<b>Specifications</b>	DLO Measuring Instruction B18: "Lysstyrke af belysningsanordninger i diskrete punkter".
<b>Remarks</b>	-
<b>Result</b>	Table 1 and table 2 on page 3: The luminous intensity distribution of the bicycle lamp determined according to The Danish Road Safety and Transport Agency's departmental order of 20 May 1999 "Bekendtgørelse om cyklers indretning og udstyr m.v.", including changes in The Danish Road Safety and Transport Agency's departmental order of 3 July 2000 and 4 March 2005 "Bekendtgørelse om ændring af bekendtgørelse om cyklers indretning og udstyr m.v." The uncertainty of measurement of luminous intensity is $\pm 1,6$ %. The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95 %. The standard uncertainty of measurement has been determined in accordance with EAL Publication EAL-R2.
<b>Date</b>	03. June 2008
<b>Project manager</b>	<hr/> Esben Raahauge Nielsen, technical responsible DELTA
<b>Responsible</b>	<hr/> Bent B. Rasmussen, professional responsible DELTA

### Description of the measurement

The measurement of the luminous intensity distribution of the bicycle lamp, was made on the laboratory's photometer bench by placing the bicycle lamp in a photo goniometer. A color corrected photocell was placed in the distance 2.0 m from the bicycle lamp. The distance to the photocell was measured from a point in the middle between the two diodes on the front glass.

The lamp is equipped with two diodes which are lighting at the same time. During the test, the diodes was modified to light constant. The lamp was orientated with the two diodes besides each other in vertical plane.

The reference direction for the bicycle lamp is defined as the direction for maximum luminous intensity.

Measurement was made with the lamp connected to d.c. voltage and limited at 30mA current for the front lamp and at 20mA current for the rear lamp, as stated by the customer.

Measurement was made after a stabilization time of 5 minutes.

### Result

Table 1: Distribution of luminous intensity for 00003-EP1-F front lamp:

Distribution of luminous intensity (cd)					
Vertical angle 0°	Horizontal angle				
	-80°	-20°	0°	20°	80°
Result of the measurement H	0.80	4.40	11.60	2.40	0.80
Requirement from departmental order No. 316 § 16 item 2	≥ 0.05	≥ 0.40	≥ 4.00	≥ 0.40	≥ 0.05

Seen from the lamp the measuring angle is stated positively to the right of the lamp.

Comment: Under the specified test condition, the front lamp meets the requirements to the luminous intensity as stated in the Danish Road Safety and Transport Agency's departmental order No. 316 § 16 item 2.

Table 2: Distribution of luminous intensity for 00003-EP1-R rear lamp:

Distribution of luminous intensity (cd)					
Vertical angle 0°	Horizontal angle				
	-80°	-20°	0°	20°	80°
Result of the measurement H	0.40	0.80	12.00	1.20	0.40
Requirement from departmental order No. 316 § 16 item 3	≥ 0.05	≥ 0.20	≥ 2.00	≥ 0.20	≥ 0.05

Seen from the lamp the measuring angle is stated positively to the right of the lamp.

Comment: Under the specified test condition, the rear lamp meets the requirements to the luminous intensity as stated in the Danish Road Safety and Transport Agency's departmental order No. 316 § 16 item 3.

**Equipment used**

Name:	Type:	DLO No.	Traceability	Calibration
System Photometer	LMT S1000	849	PTB	DANAK-LVFLYS-2582 2007-02-06
Voltmeter	Wavetek	925	NPL	DANAK-22-301997 2007-12-18
Power supply	Instek GPQ-3020D	5018	-	-

**Photo of test sample**



Foto: Front lamp



Foto: Rear lamp