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Measurement of photoluminescence according to DIN 67510-1:2009

(2 appendices)

Identification

Object	One photoluminescent exit sign “Luna SuperGLOW”, size 200 × 400 mm. See pictures in appendix 1.
Object state	Upon arrival the object had no visual damages.
Location	Borås, Sweden
Measurement date	May 15–16, 2017

Measurement methods and procedures

The sample was exposed during a time of 5 minutes at 1000 lux from an unfiltered 150 W xenon lamp. The illuminance at the measuring plane was measured with a luxmeter, Hagner, Model S4. After 5 minutes the xenon lamp was turned off and a luminance meter, Photo Research Model 1980A, connected to a computer, was recording the luminance every minute for 10 hours. A measuring spot of about \varnothing 40 mm was used. The sample was kept under dark conditions for at least 48 h prior to excitation.

The colour during excitation and attenuation was measured with a spectrometer, Spectrascan PR-735. The excitation was done with the above light source at 1000 lux for 5 minutes and the attenuation colour measurement started about 15 seconds after the lamp was switched off.

In accordance with section 4.5 in DIN 67510-1, a logarithmic parabolic extrapolation of the results was made in order to determine the time when the luminance is $0,3 \text{ mcd/m}^2$, the decay time.

Measurement conditions

Room temperature	$(23 \pm 1) \text{ }^\circ\text{C}$
Relative humidity	$(45 \pm 5) \%$
Illumination	1000 lx perpendicular to the sample, Xenon lamp

Results

The results only refer to the object specified in this document.

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Table 1: Compilation of the results for luminance and calculated decay time.

Sample ID	Luminance (mcd/m ²)					Decay time (min)
	2 min	10 min	30 min	60 min	120 min	
Luna SuperGLOW	2200	470	144	64,3	27,7	3800

Table 2: CIE 1931 chromaticity coordinates for 2° standard observer.

Sample ID	During excitation		During attenuation	
	x	y	x	y
Luna SuperGLOW	0,355	0,394	0,274	0,574

Measuring uncertainty

The measuring uncertainty is $\pm 5\%$ of the measured luminance values, but not less than $\pm 0,05$ mcd/m². The uncertainty of the given values for x and y is $\pm 0,005$.

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 has been determined in accordance with EA Publication EA-4/02 (formerly EAL-R2). The long term stability of the calibrated object is not included in the reported expanded uncertainty of measurement.

Equipment

Xenon-lamp 150 W, SP inv.no. 502959
 Luminance meter Pritchard PR 1980, SP inv.no. 500721
 Luxmeter Hagner S4, SP inv.no. 901737
 Spectrometer Spectrascan PR-735, SP inv.no. 901491

RISE Research Institutes of Sweden AB Measurement Science and Technology - Time and Optics

Performed by

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Appendices


Pictures of the test object
 Measured luminance, table and diagram

Appendix 1

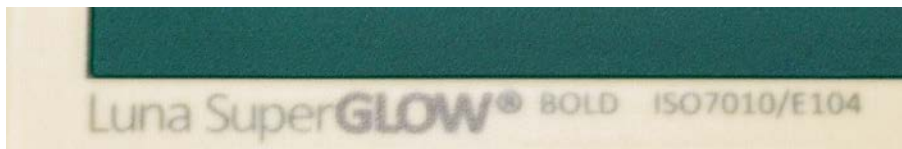
Pictures of the test object

Exit sign Luna SuperGLOW



 = Measuring position

Exit sign – printed text, bottom left corner



Exit sign – printed text, bottom right corner



Appendix 2

Measured luminance, table and diagram

Table 1. Luminance during attenuation (after 5 min exposure at 1000 lux).

Time (min)	Luminance (mcd/m ²)	Time (min)	Luminance (mcd/m ²)
5	949	65	58,6
10	470	70	53,4
15	312	75	49,3
20	226	80	45,4
25	177	85	42,4
30	144	90	39,5
35	121	95	36,9
40	104	100	34,9
45	90,1	105	32,7
50	80,1	110	31,0
55	71,2	115	29,4
60	64,3	120	27,7

Diagram 1. Luminance during attenuation (after 5 min exposure at 1000 lux).

