MSL Measurement Standards Laboratory of New Zealand

Report on the Test of Three Photoluminescent Samples

Report No. Photometry/2017/729, 7 February 2017

ISSUED BY THE

Measurement Standards Laboratory of New Zealand

Established under the Measurement Standards Act 1992 and the National Standards Regulations 1976 to provide for uniform measurement of physical quantities throughout New Zealand.
All results quoted in this report are directly traceable to the national measurement standards held by the Measurement Standards Laboratory of New Zealand (MSL). MSL is New Zealand's national metrology institute and operates within Callaghan Innovation.

IANZ ACCREDITED LABORATORY

ACCREDITATION NUMBER 1

All measurements reported herein have been performed in accordance with the laboratory's scope of accreditation.
www.ianz.govt.nz

69 Gracefield Road, PO Box 31-310
Lower Hutt 5040, New Zealand
www.msl.irl.cri.nz

Callaghan Innovation

MSS

Report on the Test of Three Photoluminescent Samples

Description

Three photoluminescent samples were provided for test.

Client

Tredsafe, 25 Akatea Road, Glendene, Auckland.

Dates of Test

27 - 31 January 2017.

Objective

To determine the luminance of the sample as it decays over a period of five hours after exposure to a 6000 lux illuminance level from a xenon arc lamp.

Technical Procedure

MSLT.O.027.004.

Method of Test

The samples were left in the dark for a period greater than 10 hours prior to exposure to the xenon arc lamp. Each sample's residual luminance was measured immediately before exposure to ensure it did not exceed 0.3 mcd/m^2.

A photometer was used to determine the distance from the light source at which each sample would be exposed to an illuminance of 6000 lux when mounted at normal incidence to the light flux from a xenon arc lamp. Each sample was exposed for 1 hour prior to the start of the measurement sequence.

Another photometer was then used to measure the luminance of an area of each sample that was defined by an aperture of 30 mm in diameter. Measurements were recorded every five seconds between 3 minutes and 300 minutes after the xenon arc lamp was switched off.

Conditions

The test was carried out at a room temperature of 21 °C ± 2 °C.

NSL

Results

The luminance of each sample measured at times between 3 minutes and 300 minutes after the end of exposure to the light from the xenon arc lamp. The expanded uncertainties of the luminance values are presented in the last column.

Time /minutes	Luminance /(mcd/m^2)			Expanded Uncertainty /(mcd/m^2)		
	1	2	3	1	2	3
3	752	767	770	113	115	115
10	223	230	230	33	34	34
30	67.5	69.8	69.6	10.1	10.5	10.4
60	30.7	31.8	31.7	4.6	4.8	4.8
90	19.2	20.1	19.8	2.9	3.0	3.0
120	13.7	14.4	14.2	2.1	2.2	2.1
150	10.5	10.9	11.0	1.6	1.6	1.7
180	8.5	8.8	8.8	1.3	1.3	1.3
210	7.2	7.3	7.3	1.1	1.1	1.1
240	6.19	6.09	6.23	0.93	0.91	0.93
270	5.36	5.38	5.32	0.80	0.81	0.80
300	4.83	4.65	4.77	0.72	0.77	0.97

The decay over 5 hours is presented in the graph on the final page of this report.

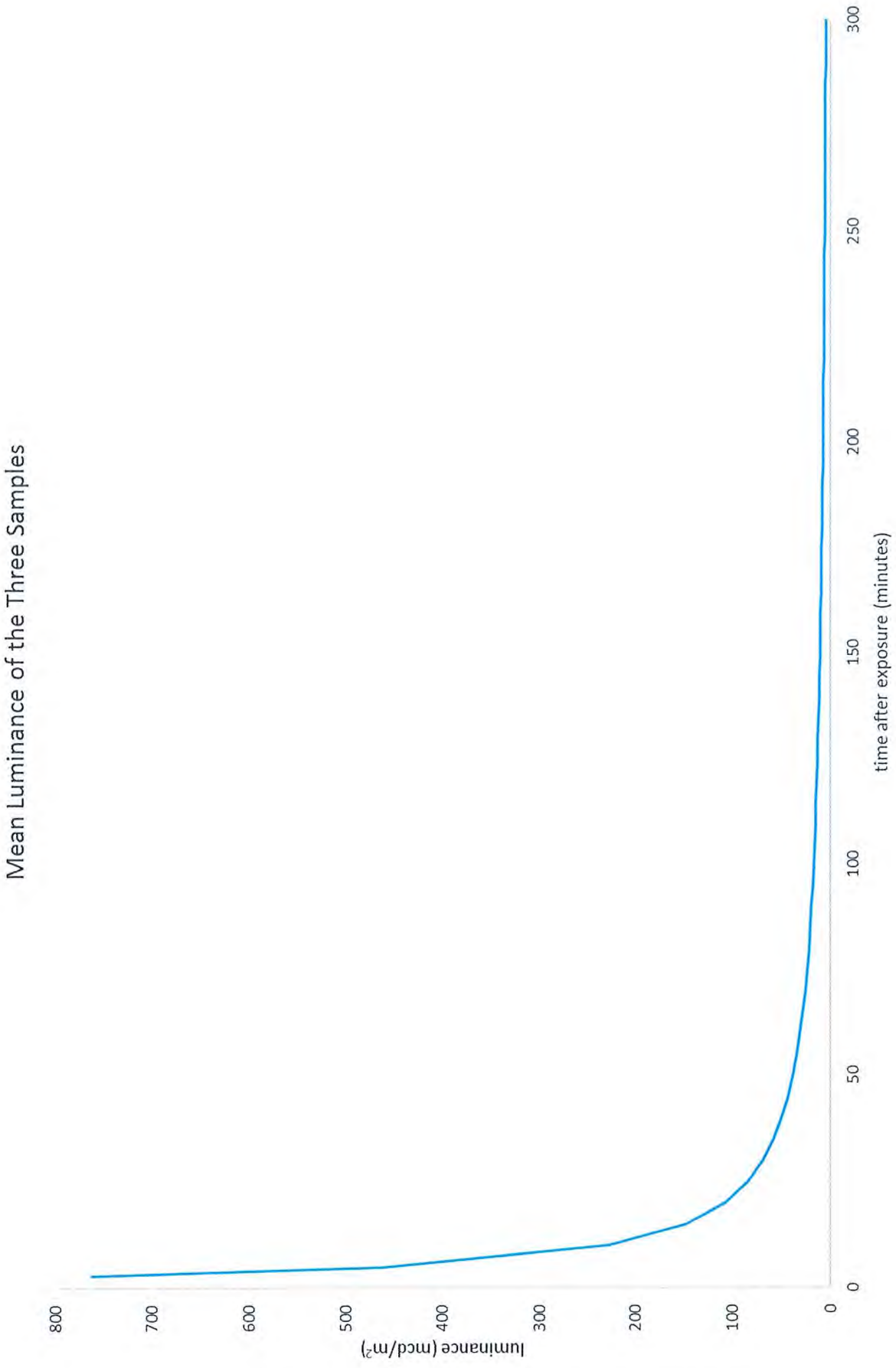
Uncertainty

The uncertainties quoted in this report are for a 95% level of confidence. See the "Guide to the expression of uncertainty in measurement JCGM 100:2008" (BIPM, 1st edition, 2008) for an explanation of terms.

N S Swift
Research Technician

F Shindo
Research Scientist

J Lovell-Smith
for Chief Metrologist



NSS