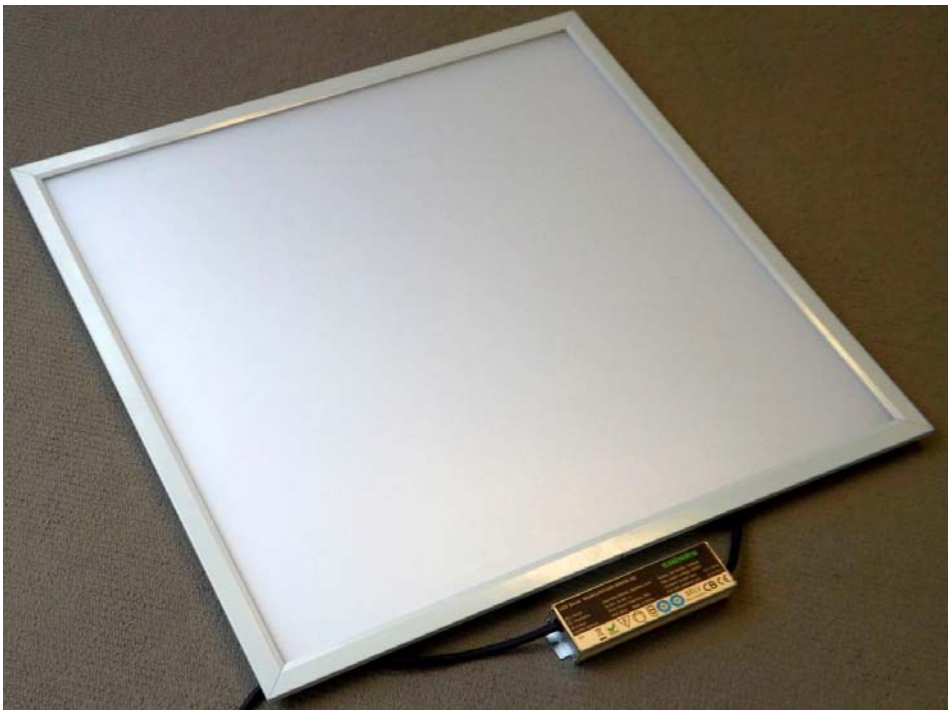
Report of Test
LL18268

Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.



Performance Summary

Luminous flux	2543 lm
Total Luminaire Power (LCP)	40.2 W
Luminous Efficacy	63.2 lm/W
SHR Nominal	1.50
SHR Maximum	1.68

PREPARED FOR : Empyrean Lighting, Birtinya. QLD. 4575.

ORIGINAL REPORT

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Test Report No. LL18268

Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
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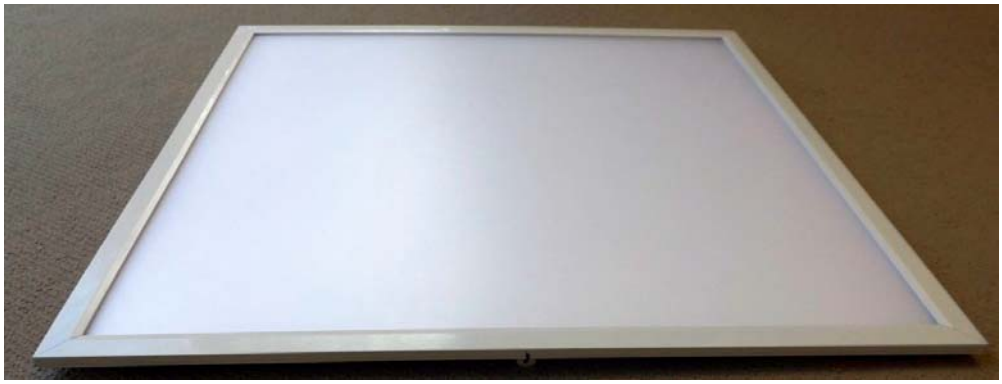

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Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.

LM-79 Performance Data

Spectral	CIE 1931 (x, y)	(1)	(0.383, 0.382)	
	CIE 1976 (u', v')	(1)	(0.225, 0.504)	
	Correlated Colour Temperature (CCT)	(1)	3970	K
	Colour Spatial Uniformity	(2)	0.0021	
	Colour Rendering Index (Ra)	(1)	95	
	Special CRI 9 (R_9)	(1),(3)	84	
	Distance from Planckian Locus (Duv)	(1),(3)	0.0016	
	Scotopic/Photopic Ratio	(1),(3)	1.81	
	Cyanosis Observation Index	(1), (4)	1.0	
Electrical	Voltage		240	V
	Frequency		50	Hz
	Current		0.175	A
	Power		40.2	W
	Power Factor		0.96	
	Current THD		15.8	%

Performance data in accordance with IESNA LM-79-08. Spectral calculations are for a CIE 2° observer

(1) Value is computed from the weighted average of the spatial measurements
(2) Value is the maximum deviation of the spatial u' and v' measurements from the weighted average
(3) Quantity is in addition to the scope of IESNA LM-79-08
(4) Calculated in accordance with Appendix G of AS1680.2.5:1997

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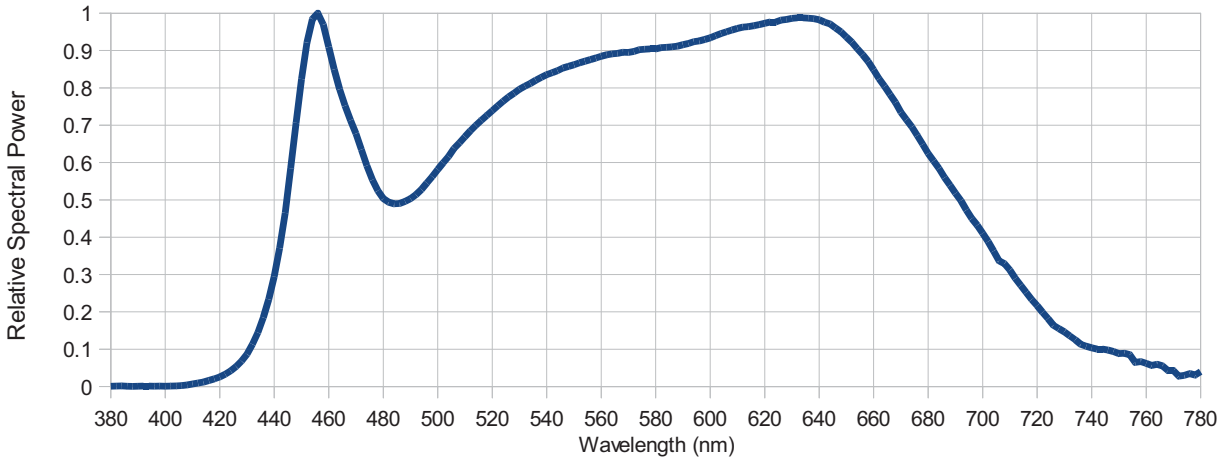
Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.

LM-79 Performance Data

Summary Relative Spectral Irradiance Distribution (wavelength – nm, irradiance – relative to peak = 1)

380	8.60E-04	480	5.04E-01	580	9.04E-01	680	6.25E-01
385	1.22E-03	485	4.90E-01	585	9.09E-01	685	5.72E-01
390	7.31E-04	490	5.03E-01	590	9.16E-01	690	5.18E-01
395	1.01E-03	495	5.37E-01	595	9.25E-01	695	4.61E-01
400	8.59E-04	500	5.81E-01	600	9.34E-01	700	4.11E-01
405	2.14E-03	505	6.27E-01	605	9.48E-01	705	3.50E-01
410	7.08E-03	510	6.69E-01	610	9.59E-01	710	3.12E-01
415	1.41E-02	515	7.06E-01	615	9.65E-01	715	2.61E-01
420	2.57E-02	520	7.39E-01	620	9.73E-01	720	2.17E-01
425	4.79E-02	525	7.70E-01	625	9.79E-01	725	1.73E-01
430	8.65E-02	530	7.96E-01	630	9.86E-01	730	1.47E-01
435	1.64E-01	535	8.16E-01	635	9.87E-01	735	1.19E-01
440	2.94E-01	540	8.35E-01	640	9.82E-01	740	1.04E-01
445	5.25E-01	545	8.50E-01	645	9.66E-01	745	9.91E-02
450	8.24E-01	550	8.62E-01	650	9.36E-01	750	8.82E-02
455	9.92E-01	555	8.74E-01	655	8.97E-01	755	7.49E-02
460	9.10E-01	560	8.85E-01	660	8.48E-01	760	6.23E-02
465	7.74E-01	565	8.92E-01	665	7.93E-01	765	5.76E-02
470	6.78E-01	570	8.95E-01	670	7.35E-01	770	4.30E-02
475	5.73E-01	575	9.03E-01	675	6.84E-01	775	3.24E-02
						780	4.00E-02



* The spectral power distribution combines the weighted spectral power distributions of all spatial measurements.

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Test Report No. LL18268

Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.

LM-79 Performance Data

Spatial measurements

Gamma angle (deg)	CIE 1976 (u',v') coordinates C 0 plane	C 90 plane
0	(0.223, 0.503)	(0.223, 0.503)
10	(0.223, 0.503)	(0.223, 0.503)
20	(0.224, 0.503)	(0.224, 0.503)
30	(0.224, 0.504)	(0.224, 0.504)
40	(0.225, 0.504)	(0.225, 0.504)
50	(0.225, 0.505)	(0.225, 0.505)
60	(0.226, 0.505)	(0.225, 0.505)
70	(0.225, 0.505)	(0.226, 0.505)
80	(0.225, 0.505)	(0.225, 0.505)
90	I <= 10 %	I <= 10 %

Spatial measurements

Gamma angle (deg)	CIE 1976 (u',v') coordinates C 0 plane	C 90 plane
90	I <= 10 %	I <= 10 %
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Test procedure

All measurements were performed in an environmentally controlled laboratory employing suitable baffling to minimise stray light. The sample was mounted in its normal operating orientation on a rotating mirror goniophotometer and operated from a stabilised supply. The photometric output was monitored and measurements were performed once stability was achieved.

The goniophotometer was used to measure the spatial distribution of both luminous intensity and, in conjunction with a spectroradiometer and spectrally flat reflectance tile, spectral irradiance. The distribution locus comprises points in two or more C planes at no more than 10º gamma intervals. The CIE (x,y) coordinates and other derived metrics (CIE (u', v'), CCT and CRI) are calculated from the weighted sum (weighted for intensity and represented solid angle) of the measured spectral irradiances.

		Stabilisation Time	2.75 hour
Sample Orientation	Ceiling mount	Total Operation Time	4 hour

Equipment and uncertainties

C-gamma rotating mirror goniophotometer with a test distance of 8 m.

Luminous Intensity	± 4 %	Temperature	± 1 °C
Luminous Flux	± 4 %	Luminous Efficacy	± 4.5 %
C, Gamma Angles	± 0.5º	Cyanosis Observation Index *	± 0.2

PhotoResearch PR-670 spectroradiometer (380 - 780 nm., 2 nm. per pixel) measuring from a spectrally flat reflectance tile attached to goniophotometer arm at a distance from sample deemed >5 times the maximum observed luminous opening dimension.

CIE (x, y) coordinates	± 0.004	CCT	± 150 K
CIE (u', v') coordinates	± 0.0025	CRI (Ra)	± 2
Δ (u', v') Colour difference	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Relative Spectral Irradiance *	± 2 %	R9 *	± 2

Yokogawa WT210 power meter connected in circuit to the sample electrical supply

Voltage	± 0.5 %	Frequency *	± 0.1 Hz
Current	± 0.5 %	Power	± 0.5 %
Current THD *	± 3 %	Power Factor	± 0.02

Quantities marked with * : NATA accreditation does not cover the performance of this service.
IESNA LM-79-08 Calculator v4.9 (23rd Sep 2014)

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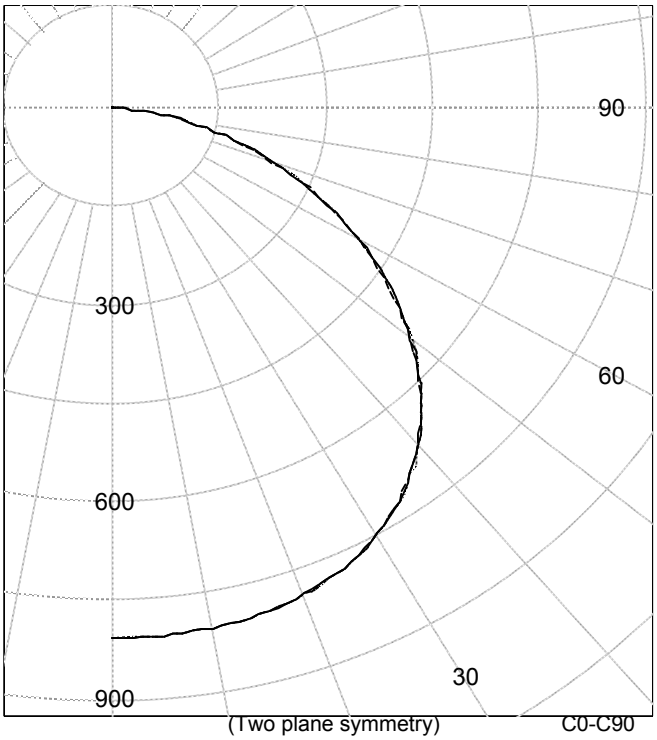
Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.

Legend: C0-Solid, C45-Dashed, C90-Grey (cd)



(Two plane symmetry) C0-C90

INTENSITY SUMMARY (cd)

Gamma	C-Plane C0	C22.5	C45	C67.5	C90	Flux (lm)
0.0	809	809	809	809	809	
5.0	809	809	809	808	809	77
10.0	806	806	806	806	806	
15.0	801	801	801	801	801	226
20.0	791	791	790	790	791	
25.0	775	775	774	775	775	357
30.0	751	750	750	750	752	
35.0	716	716	715	716	717	447
40.0	672	670	669	671	673	
45.0	615	614	614	615	618	474
50.0	550	550	547	551	551	
55.0	479	478	477	478	480	427
60.0	402	400	399	401	402	
65.0	322	321	320	321	322	318
70.0	242	242	241	243	243	
75.0	167	165	164	165	167	174
80.0	95	94	93	93	94	
85.0	37	36	35	34	34	42
90.0	0	0	0	0	0	

AVERAGE LUMINANCE (cd / sq.m)

Gamma	C0	C45	C90
45.0	2876	2871	2890
55.0	2759	2750	2767
65.0	2517	2501	2519
75.0	2129	2097	2127
85.0	1392	1340	1292

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	661	N / A	26.0
0-40	1108	N / A	43.6
0-60	2009	N / A	79.0
0-90	2543	N / A	100.0
40-90	1435	N / A	56.4
60-90	534	N / A	21.0
90-180	0	N / A	0.0
0-180	2543	N / A	100.0

Light Output Ratio = N / A

SHR-NOM = 1.50
SHR-MAX = 1.68

Calculated using the TM5 fine grid method.

CERTIFIED BY: K Monaghan

Kevin Monaghan
Authorised Signatory

Date of test 20-Jan-2015
Date of report 21-Jan-2015

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Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.

Intensity data (cd)

	C-Plane				
Gamma	**C0**	**C22.5**	**C45**	**C67.5**	**C90**
0.0	809	809	809	809	809
2.5	809	809	809	809	809
5.0	809	809	809	808	809
7.5	808	808	808	808	808
10.0	806	806	806	806	806
12.5	804	804	804	804	804
15.0	801	801	801	801	801
17.5	796	796	796	796	797
20.0	791	791	790	790	791
22.5	783	783	784	783	784
25.0	775	775	774	775	775
27.5	764	763	762	764	764
30.0	751	750	750	750	752
32.5	735	734	733	734	735
35.0	716	716	715	716	717
37.5	695	694	693	695	695
40.0	672	670	669	671	673
42.5	644	643	642	644	645
45.0	615	614	614	615	618
47.5	586	583	582	584	586
50.0	550	550	547	551	551
52.5	515	515	515	516	518
55.0	479	478	477	478	480
57.5	443	440	439	441	443
60.0	402	400	399	401	402
62.5	361	363	362	362	363
65.0	322	321	320	321	322
67.5	283	279	282	282	283
70.0	242	242	241	243	243
72.5	203	201	202	201	202
75.0	167	165	164	165	167
77.5	128	128	127	126	126
80.0	95	94	93	93	94
82.5	62	62	62	62	61
85.0	37	36	35	34	34
87.5	13	13	12	12	12
90.0	0	0	0	0	0

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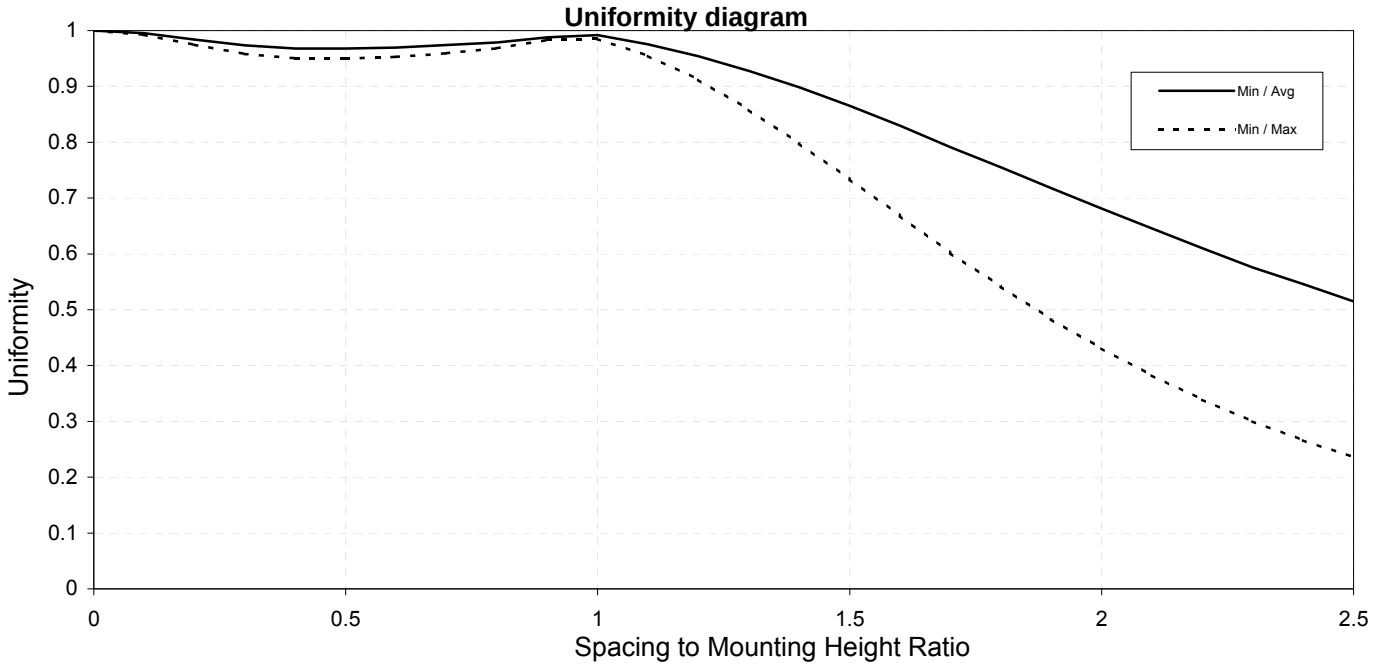
Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.



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Empyrean Lighting 600 x 600 mm LED Light Panel. Product ID: Corona-600SS-W40WNH-ND.
Extruded aluminium frame with white finish, extent ~ 595 x 595 x 10 mm deep.
Opal diffuser forms luminous opening of 550 x 550 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC 50/60Hz electronic driver.
Tested at 240 V 50 Hz.

Test Distance: 8.0 metres

Test Temperature: 25.6 degrees Celsius

Significance: This laboratory has no control over the selection of samples to be tested. All testing is performed on the understanding that the significance of the report is limited to the extent that the test sample is representative of production units.

Special Notes:

The intensity values contained in this report are shown as tested. When using these values in calculations the appropriate Ballast Factor and Manufacturer's rated lumens MUST be taken into account.

It should also be noted that prorating the lumen output for the use of other lamp/ballast combinations, or for use in different environmental conditions, than that tested may produce erroneous results.
The generic term "LOR" is used in this report, it denotes the "Light Output Ratio Luminaire" as defined in Australian Standard AS1680, Part 3, 1991, Section 1.3.9.

This report is free of erasures and corrections.

Photometric intensity values are reported using the CIE Cgamma coordinate system as described in CIE Publication number 121.

Uncertainties: At the 95% confidence interval with a factor k = 2, the uncertainties for this report are :-

Temperature	+/- 1 degree Celsius
Light Output Ratio	+/- 4%
Luminous Intensity	+/- 4%
Angular displacement	+/- 0.5 degrees.

Testing Procedure: Tested in accordance with the applicable sections of CIE Publication Number 121; and with reference to Australian Standard AS1680, Part 3, 1991.

21-Jan-15 14:24:48 REPORT program version: 3.803a

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