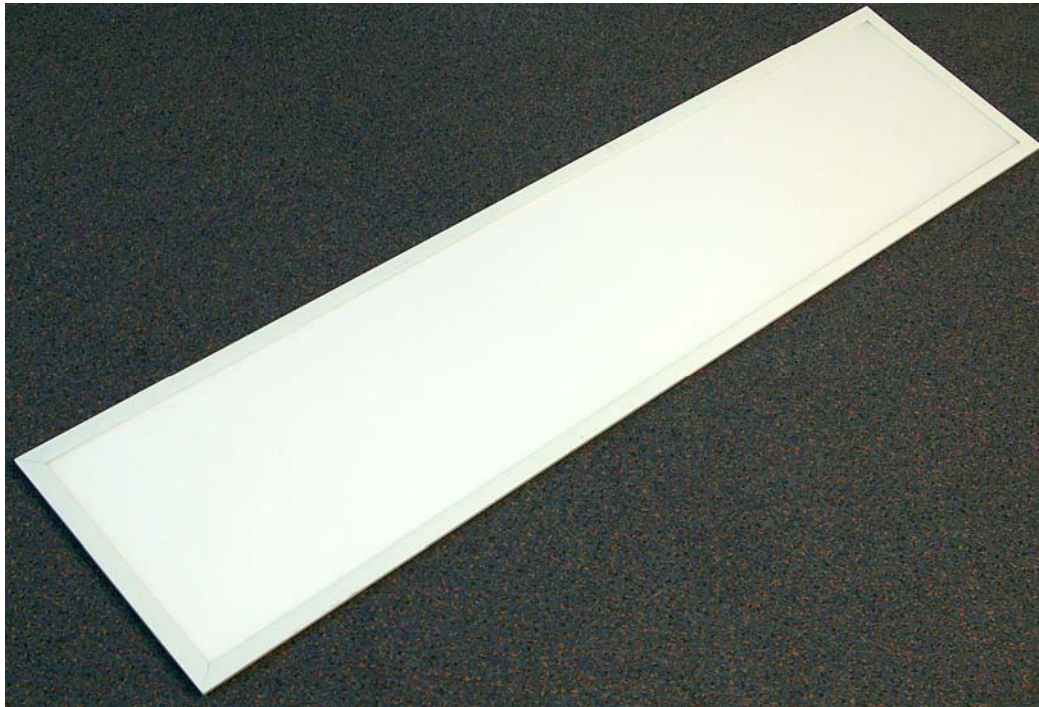


Report of Test LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND
Extruded aluminium frame, white finish, extent ~ 1195 x 295 x 10 mm deep.
Opal diffuser forms luminous opening of 1155 x 257 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.
Tested at 240 V 50 Hz.

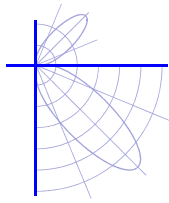


Performance Summary

Luminous flux	3389 lm
Total Luminaire Power (LCP)	38.5 W
Luminous Efficacy	88.0 lm/W
SHR Nominal	1.50
SHR Maximum	1.66

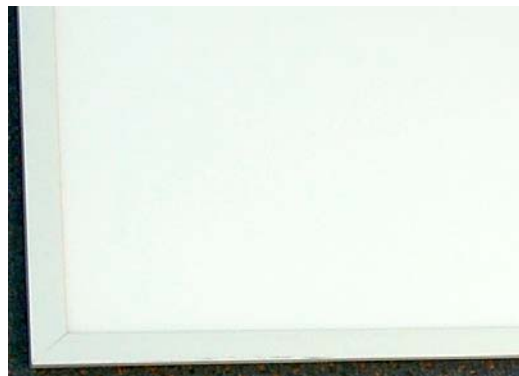
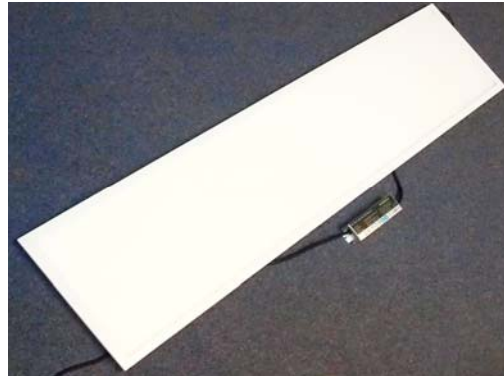
PREPARED FOR : Empyrean Lighting, Sippy Downs, QLD 4556

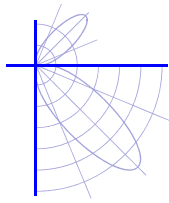




Test Report No. LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND
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Tested at 240 V 50 Hz.

LM-79 Performance Data

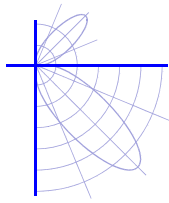
Spectral	CIE 1931 (x, y) ⁽¹⁾	(0.390, 0.391)
	CIE 1976 (u', v') ⁽¹⁾	(0.226, 0.509)
	Correlated Colour Temperature (CCT) ⁽¹⁾	3850 K
	Colour Spatial Uniformity ⁽²⁾	0.0014
	Colour Rendering Index (Ra) ⁽¹⁾	80
	Special CRI 9 (R _g) ^{(1),(3)}	-1
	Distance from Planckian Locus (Duv) ^{(1),(3)}	0.0035
	Scotopic/Photopic Ratio ^{(1),(3)}	1.6
Electrical	Voltage	240 V
	Frequency	50 Hz
	Current	0.167 A
	Power	38.5 W
	Power Factor	0.96
	Current THD	15.9 %

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



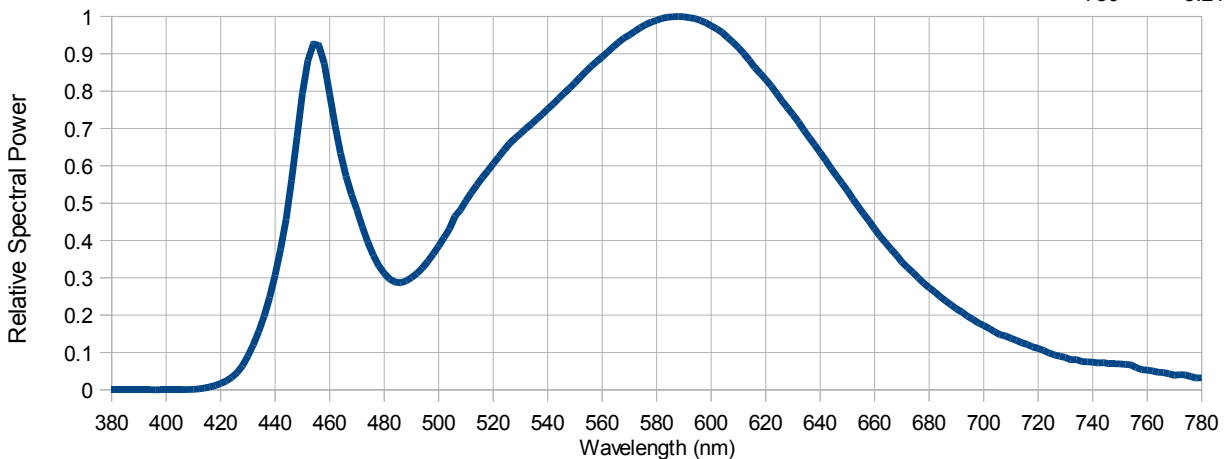
Test Report No. LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND
Extruded aluminium frame, white finish, extent ~ 1195 x 295 x 10 mm deep.
Opal diffuser forms luminous opening of 1155 x 257 mm.
Remote Shinyr LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.
Tested at 240 V 50 Hz.

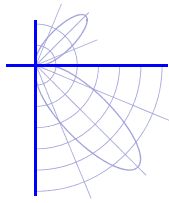
LM-79 Performance Data

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

380	3.02E-04	480	3.12E-01	580	9.90E-01	680	2.73E-01
385	4.81E-04	485	2.88E-01	585	9.98E-01	685	2.44E-01
390	2.66E-04	490	3.01E-01	590	9.99E-01	690	2.17E-01
395	2.50E-04	495	3.35E-01	595	9.92E-01	695	1.93E-01
400	4.45E-04	500	3.85E-01	600	9.75E-01	700	1.72E-01
405	2.60E-04	505	4.48E-01	605	9.51E-01	705	1.51E-01
410	1.33E-03	510	5.06E-01	610	9.17E-01	710	1.38E-01
415	6.14E-03	515	5.58E-01	615	8.73E-01	715	1.24E-01
420	1.69E-02	520	6.05E-01	620	8.31E-01	720	1.11E-01
425	3.94E-02	525	6.51E-01	625	7.84E-01	725	9.60E-02
430	9.04E-02	530	6.86E-01	630	7.37E-01	730	8.64E-02
435	1.77E-01	535	7.18E-01	635	6.86E-01	735	7.83E-02
440	3.07E-01	540	7.52E-01	640	6.36E-01	740	7.40E-02
445	5.09E-01	545	7.87E-01	645	5.83E-01	745	7.15E-02
450	7.95E-01	550	8.22E-01	650	5.34E-01	750	6.93E-02
455	9.24E-01	555	8.60E-01	655	4.81E-01	755	6.33E-02
460	7.91E-01	560	8.91E-01	660	4.31E-01	760	5.28E-02
465	6.03E-01	565	9.24E-01	665	3.85E-01	765	4.66E-02
470	4.82E-01	570	9.50E-01	670	3.42E-01	770	3.88E-02
475	3.78E-01	575	9.74E-01	675	3.07E-01	775	3.79E-02
						780	3.21E-02



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



Test Report No. LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND
Extruded aluminium frame, white finish, extent ~ 1195 x 295 x 10 mm deep.
Opal diffuser forms luminous opening of 1155 x 257 mm.
Remote Shiny LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.
Tested at 240 V 50 Hz.

LM-79 Performance Data

Spatial measurements (lower hemisphere)

Gamma angle (deg)	CIE 1976 (u',v') coordinates	
	C 0 plane	C 90 plane
0	(0.225, 0.508)	(0.225, 0.508)
10	(0.225, 0.508)	(0.225, 0.508)
20	(0.226, 0.509)	(0.225, 0.508)
30	(0.226, 0.509)	(0.226, 0.508)
40	(0.227, 0.509)	(0.226, 0.509)
50	(0.227, 0.510)	(0.226, 0.509)
60	(0.227, 0.510)	(0.226, 0.509)
70	(0.227, 0.510)	(0.226, 0.509)
80	(0.227, 0.510)	I <= 10 %
90	I <= 10 %	I <= 10 %

Spatial measurements (upper hemisphere)

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 10° 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.

Sample Orientation	Ceiling Mount	Stabilisation Time	9 hour
		Total Operation Time	11.75 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	± 0.25°		

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.

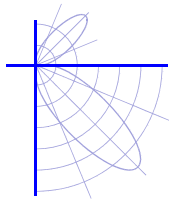
CIE (x, y) coordinates	± 0.003	CCT	± 100 K
CIE (u', v') coordinates	± 0.002	CRI (Ra)	± 3
Δ (u', v') Colour difference	± 0.001	Scotopic / Photopic Ratio *	± 0.02
Relative Spectral Irradiance *	± 2 %	R9 *	± 3

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 v4.7 (13th Sep 2013)



Test Report No. LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND

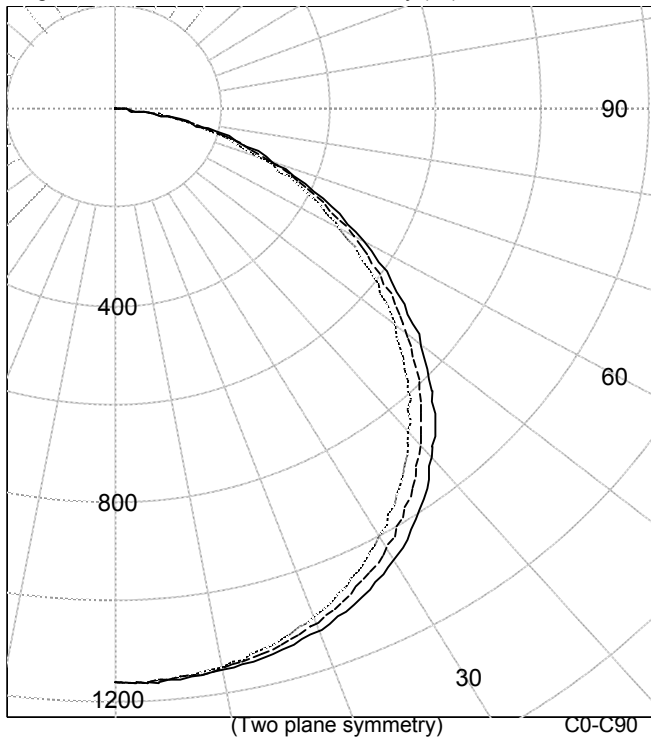
Extruded aluminium frame, white finish, extent ~ 1195 x 295 x 10 mm deep.

Opal diffuser forms luminous opening of 1155 x 257 mm.

Remote Shiny LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.

Tested at 240 V 50 Hz.

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



AVERAGE LUMINANCE (cd / sq.m)

Gamma	C0	C45	C90
45.0	4026	3856	3692
55.0	3811	3630	3458
65.0	3428	3280	3127
75.0	2857	2726	2601
85.0	1731	1700	1621

INTENSITY SUMMARY (cd)

Gamma	C-Plane					Flux (lm)
	C0	C22.5	C45	C67.5	C90	
0.0	1169	1169	1169	1169	1169	
5.0	1167	1167	1166	1165	1165	111
10.0	1160	1159	1156	1153	1152	
15.0	1148	1145	1138	1132	1130	322
20.0	1127	1123	1112	1101	1097	
25.0	1096	1091	1075	1059	1054	496
30.0	1055	1047	1027	1007	999	
35.0	998	989	964	943	936	603
40.0	925	917	892	868	859	
45.0	845	834	809	785	775	624
50.0	751	742	718	694	685	
55.0	649	640	618	596	589	553
60.0	542	535	515	498	489	
65.0	430	425	412	397	392	407
70.0	321	318	307	296	292	
75.0	219	217	209	203	200	221
80.0	122	120	118	115	113	
85.0	45	46	44	43	42	53
90.0	0	0	0	0	0	

ZONAL FLUX AND PERCENTAGES

Zone	Flux (lm)	% Lamp	% Luminaire
0-30	928	N / A	27.4
0-40	1532	N / A	45.2
0-60	2708	N / A	79.9
0-90	3389	N / A	100.0
40-90	1858	N / A	54.8
60-90	681	N / A	20.1
90-180	0	N / A	0.0
0-180	3389	N / A	100.0

Light Output Ratio = N / A

CERTIFIED BY:

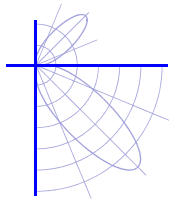
K Monaghan

Kevin Monaghan
Authorised Signatory

SHR-NOM = 1.50
SHR-MAX = 1.66

Calculated using the TM5
fine grid method.

Date of test 16-Dec-2013
Date of report 17-Dec-2013

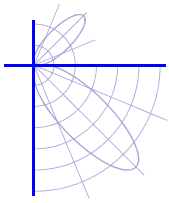


Test Report No. LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND
Extruded aluminium frame, white finish, extent ~ 1195 x 295 x 10 mm deep.
Opal diffuser forms luminous opening of 1155 x 257 mm.
Remote Shinry LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.
Tested at 240 V 50 Hz.

Intensity data (cd)

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	1169	1169	1169	1169	1169
2.5	1168	1169	1168	1168	1168
5.0	1167	1167	1166	1165	1165
7.5	1164	1164	1162	1160	1160
10.0	1160	1159	1156	1153	1152
12.5	1155	1153	1149	1144	1142
15.0	1148	1145	1138	1132	1130
17.5	1139	1136	1126	1118	1115
20.0	1127	1123	1112	1101	1097
22.5	1113	1108	1095	1082	1077
25.0	1096	1091	1075	1059	1054
27.5	1077	1070	1052	1034	1029
30.0	1055	1047	1027	1007	999
32.5	1028	1019	997	975	968
35.0	998	989	964	943	936
37.5	963	954	928	905	897
40.0	925	917	892	868	859
42.5	887	875	852	827	817
45.0	845	834	809	785	775
47.5	797	790	763	738	730
50.0	751	742	718	694	685
52.5	701	694	670	647	640
55.0	649	640	618	596	589
57.5	596	588	568	549	541
60.0	542	535	515	498	489
62.5	488	483	464	449	442
65.0	430	425	412	397	392
67.5	376	371	360	347	343
70.0	321	318	307	296	292
72.5	268	267	257	249	245
75.0	219	217	209	203	200
77.5	167	166	162	156	155
80.0	122	120	118	115	113
82.5	79	79	77	75	76
85.0	45	46	44	43	42
87.5	17	17	16	16	15
90.0	0	0	0	0	0



Test Report No. LL17268

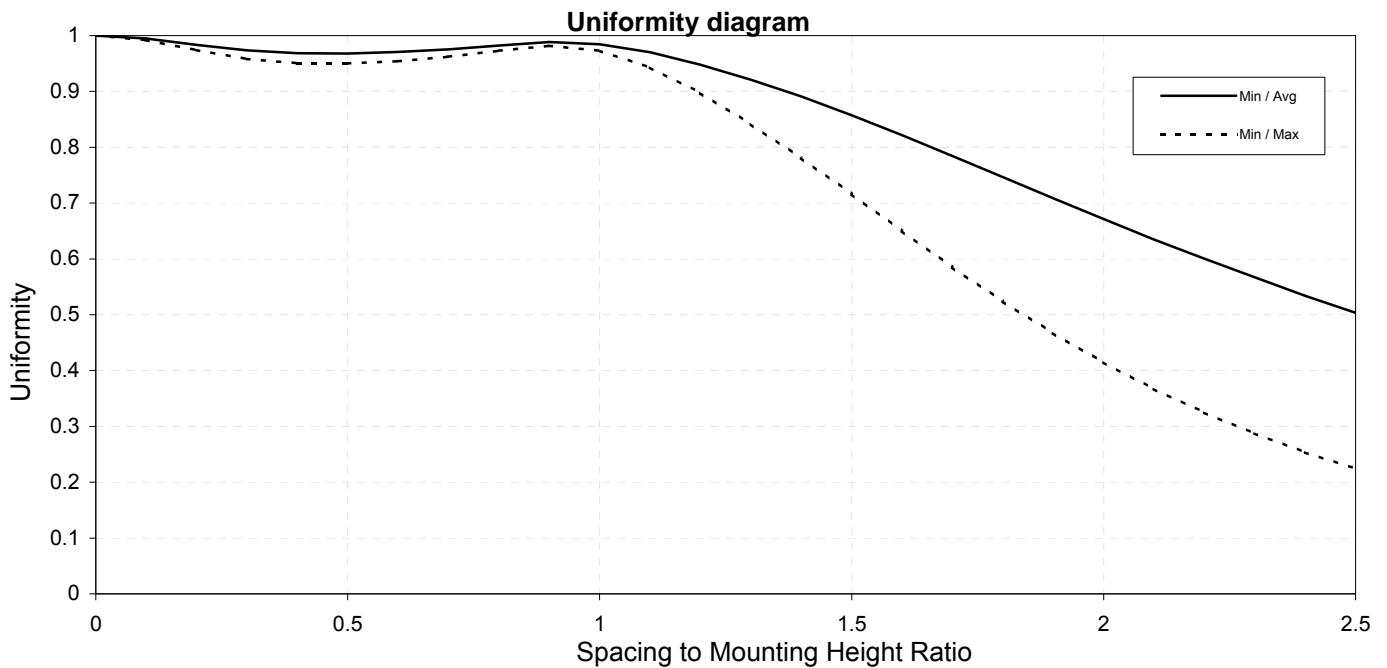
Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND

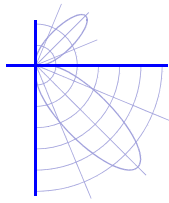
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Opal diffuser forms luminous opening of 1155 x 257 mm.

Remote Shinry LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.

Tested at 240 V 50 Hz.





Test Report No. LL17268

Empyrean Lighting 1200 x 300 mm LED Panel light. Product ID: Corona-1200RS-W40WN-ND
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Opal diffuser forms luminous opening of 1155 x 257 mm.
Remote Shiny LRC1400-30WGE-5D 200-240VAC, 50/60Hz LED driver.
Tested at 240 V 50 Hz.

Test Distance: 8.0 metres
Test Temperature: 24.9 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	+/- 0.25 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.