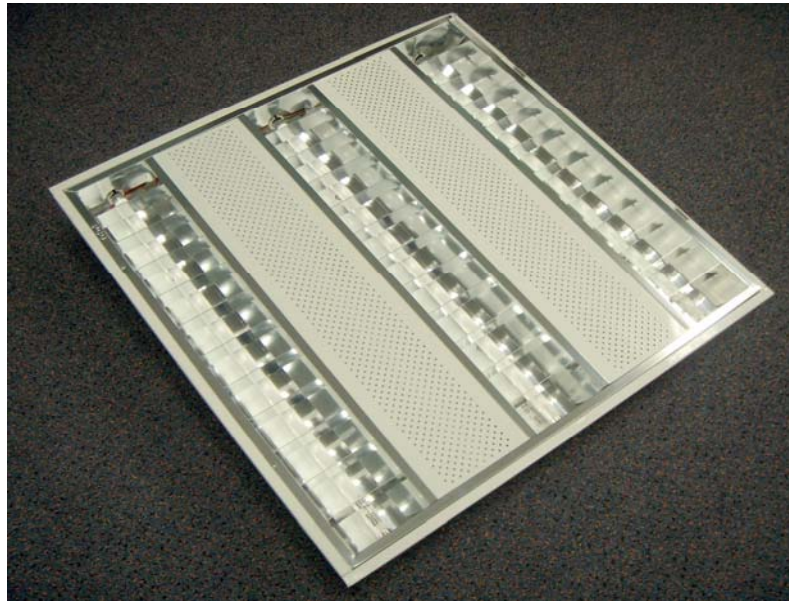


# Report of Test LL14233-R02

**This test report supercedes and replaces test report number LL14233-R01.**

PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

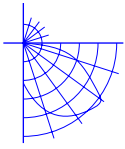
Folded/welded gloss white metal body, 575 x 575 x 66 mm deep. Semi-spec. al. louvre comprising 3 x 12 cells with punched, closed-top 25mm deep cross blades. Perforated inset panels between louvres. Semi-spec. curved reflector above each lamp. Luminous opening comprises 3 off 91 mm x 550 mm. Three Philips MASTER TL5 HE 14W/840 centred 229 mm apart and 35 mm above luminous opening. One Philips HF-P 3/4 14TL5 E11 electronic ballast 220~240V/50/60Hz. Tested at 240V/50Hz.



## Performance Summary

Light Output Ratio	94.6 %
Luminaire Power	45.9 W
SHR Nominal	1.00
SHR Maximum	1.14

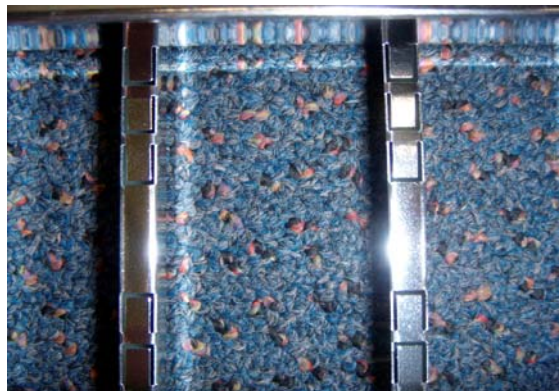
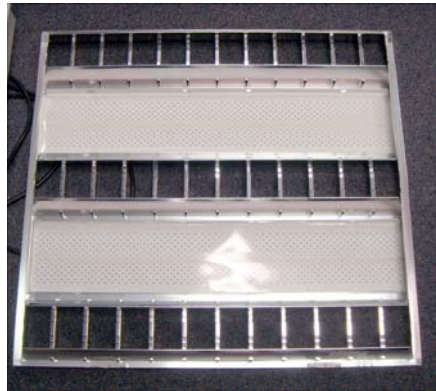
**PREPARED FOR : PCO Lite Electrical Sdn. Bhd, Malaysia**

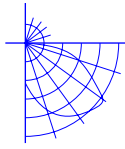


## Certified Test Report No. LL14233-R02

PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

Folded/welded gloss white metal body, 575 x 575 x 66 mm deep. Semi-spec. al. louvre comprising 3 x 12 cells with punched, closed-top 25mm deep cross blades. Perforated inset panels between louvres. Semi-spec. curved reflector above each lamp. Luminous opening comprises 3 off 91 mm x 550 mm. Three Philips MASTER TL5 HE 14W/840 centred 229 mm apart and 35 mm above luminous opening. One Philips HF-P 3/4 14TL5 EII electronic ballast 220~240V/50/60Hz. Tested at 240V/50Hz.



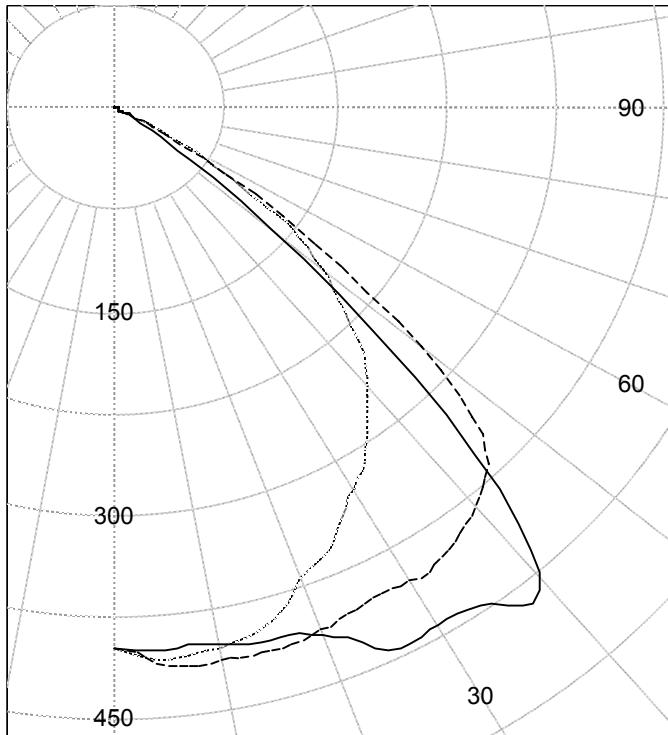


## Certified Test Report No. LL14233-R02

PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

Folded/welded gloss white metal body, 575 x 575 x 66 mm deep. Semi-spec. al. louvre comprising 3 x 12 cells with punched, closed-top 25mm deep cross blades. Perforated inset panels between louvres. Semi-spec. curved reflector above each lamp. Luminous opening comprises 3 off 91 mm x 550 mm. Three Philips MASTER TL5 HE 14W/840 centred 229 mm apart and 35 mm above luminous opening. One Philips HF-P 3/4 14TL5 EII electronic ballast 220~240V/50/60Hz. Tested at 240V/50Hz.

LEGEND : C0-Solid, C45-Dashed, C90-Grey (cd / klm)



### INTENSITY SUMMARY (cd / klm)

Gamma	C-Plane					Output Lumens
	C0	C22.5	C45	C67.5	C90	
0.0	398	398	398	398	398	
5.0	401	407	412	413	408	39
10.0	403	414	414	412	404	
15.0	406	419	413	406	395	116
20.0	412	420	410	387	369	
25.0	440	437	402	369	351	185
30.0	439	445	402	345	324	
35.0	446	440	397	330	299	242
40.0	448	442	382	317	267	
45.0	320	352	357	299	226	241
50.0	140	185	272	263	183	
55.0	38	59	139	194	127	109
60.0	9	17	38	66	46	
65.0	4	9	9	9	7	12
70.0	2	6	3	2	1	
75.0	1	1	1	1	1	1
80.0	1	1	1	0	0	
85.0	0	0	0	0	0	0
90.0	0	0	0	0	0	

### AVERAGE LUMINANCE (cd / sq.m / klm)

Gamma	C0	C45	C90
45.0	3010	3366	2128
55.0	437	1616	1472
65.0	68	149	108
75.0	33	22	17
85.0	24	21	16

### ZONAL LUMENS AND PERCENTAGES

Zone	Lumens	% Lamp	% Luminaire
0-30	340	34.0	36.0
0-40	582	58.2	61.6
0-60	932	93.2	98.6
0-90	946	94.6	100.0
40-90	363	36.3	38.4
60-90	14	1.4	1.4
90-180	0	0.0	0.0
0-180	946	94.6	100.0

Light Output Ratio = 94.6 %

SHR-NOM = 1.00  
SHR-MAX = 1.14

Calculated using the TM5  
fine grid method.

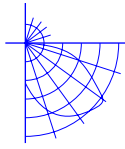
CERTIFIED BY:

P. Lawrance  
Authorised Signatory

Date of test  
Date of report

20-Dec-2010  
18-Mar-2011





**Certified Test Report No. LL14233-R02**

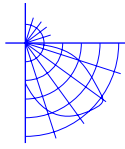
PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

Folded/welded gloss white metal body, 575 x 575 x 66 mm deep. Semi-spec. al. louvre comprising 3 x 12 cells with punched, closed-top 25mm deep cross blades. Perforated inset panels between louvres. Semi-spec. curved reflector above each lamp. Luminous opening comprises 3 off 91 mm x 550 mm. Three Philips MASTER TL5 HE 14W/840 centred 229 mm apart and 35 mm above luminous opening. One Philips HF-P 3/4 14TL5 EII electronic ballast 220~240V/50/60Hz. Tested at 240V/50Hz.

**INTENSITY DATA (cd / klm)**

Gamma	C-Plane				
	C0	C22.5	C45	C67.5	C90
0.0	398	398	398	398	398
2.5	401	402	404	406	405
5.0	401	407	412	413	408
7.5	400	409	415	413	406
10.0	403	414	414	412	404
12.5	405	418	413	410	400
15.0	406	419	413	406	395
17.5	406	418	413	400	385
20.0	412	420	410	387	369
22.5	425	426	406	375	361
25.0	440	437	402	369	351
27.5	443	446	401	359	336
30.0	439	445	402	345	324
32.5	439	441	402	336	313
35.0	446	440	397	330	299
37.5	462	443	390	324	282
40.0	448	442	382	317	267
42.5	399	413	372	308	251
45.0	320	352	357	299	226
47.5	225	272	326	284	205
50.0	140	185	272	263	183
52.5	75	111	208	235	162
55.0	38	59	139	194	127
57.5	18	32	80	131	86
60.0	9	17	38	66	46
62.5	6	12	18	24	21
65.0	4	9	9	9	7
67.5	3	7	6	3	2
70.0	2	6	3	2	1
72.5	2	3	1	1	1
75.0	1	1	1	1	1
77.5	1	1	1	1	1
80.0	1	1	1	0	0
82.5	1	0	0	0	0
85.0	0	0	0	0	0
87.5	0	0	0	0	0
90.0	0	0	0	0	0





**Certified Test Report No. LL14233-R02**

PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

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**Calculations of Luminaire VDT Categories in accordance with CIBSE LG3 : 1996**

Parameter description for average luminance	Symbol	Value	Unit
Luminance in Azimuth Plane	Bc	refer Table 2	cd/sq.m.
Intensity at angle Gamma in given azimuth plane	I	from data	cd/klm
Number of lamps	N	3	
Output of each lamp (initial lumens as specified)	F	0	lm
Multiplying factor	K	1	
Luminous area in horizontal plane used in calculations	A*	0.1471	sq.m.
Angle to the downward vertical from light centre	$\gamma$	from data	°

Table 1 - Calculation parameters for determination of CIBSE LG3 : 1996 Average Luminance

$\gamma$ (°)	C plane (°)																		
	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
55	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
60	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
65	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
70	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
75	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
80	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
85	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200

Table 2 - Average Luminance (cd/sq.m.) for defined C plane, Gamma angle

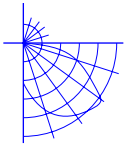
CIBSE Category	$\gamma$ (°)	Average Luminance		Patch Luminance	
		maximum calculated	specified maximum**	maximum measured	specified maximum**
Category 1	55 to 90	<200	500	1909	1500
Category 2	65 to 90	<200	500	842	1500
Category 3	75 to 90	<200	500	165.0	1500

Table 3 - Tabulation of Average and Patch luminance (cd/sq.m.) for defined CIBSE categories

**Category 2 : The luminaire satisfies the specified luminance criteria for 'Positive VDU Screens'.**

Notes: Measurement method and calculations in accordance with Publications CIBSE LG3:1996 and BS5225:Part 1:1975.  
 \* The parameter 'Area' is used in calculations. It is derived from 'Length x Width' as specified in CIBSE LG3:1996 for rectangular luminous openings.  
 \*\* Limits are applicable to 'Positive VDU Screens'.  
 Due to the sampling method of the CIBSE specification it is possible for the Average Luminance to exceed the Patch Luminance over a range of Gamma angles  
 The laboratory uncertainty in measurement for luminance is +/- 6% at the 95% confidence interval.





## Certified Test Report No. LL14233-R02

PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

Folded/welded gloss white metal body, 575 x 575 x 66 mm deep. Semi-spec. al. louvre comprising 3 x 12 cells with punched, closed-top 25mm deep cross blades. Perforated inset panels between louvres. Semi-spec. curved reflector above each lamp. Luminous opening comprises 3 off 91 mm x 550 mm. Three Philips MASTER TL5 HE 14W/840 centred 229 mm apart and 35 mm above luminous opening. One Philips HF-P 3/4 14TL5 EII electronic ballast 220~240V/50/60Hz. Tested at 240V/50Hz.

### Utilization factors UF(F)

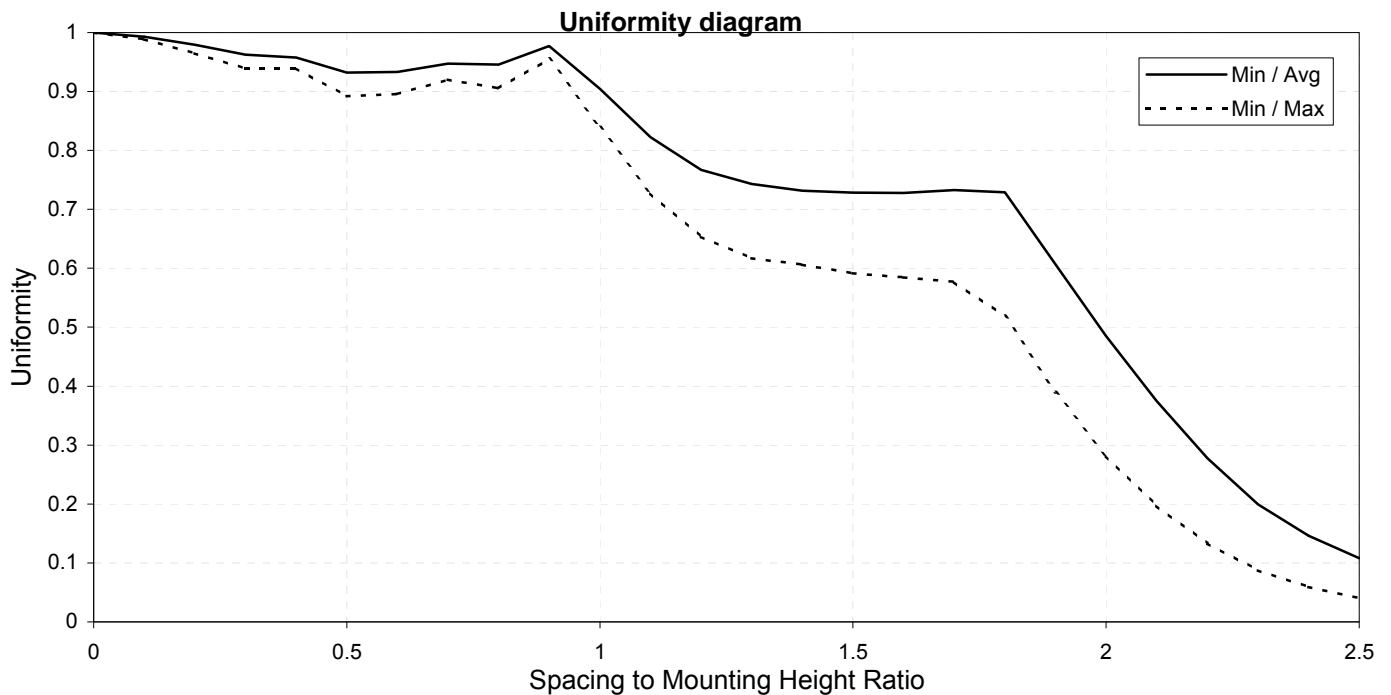
SHR NOM = 1.00											
Room Reflectance.			Room Index								
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.61	0.72	0.79	0.83	0.90	0.93	0.96	0.99	1.01
	0.30		0.55	0.66	0.73	0.78	0.85	0.89	0.92	0.96	0.99
	0.10		0.50	0.62	0.69	0.74	0.81	0.86	0.89	0.94	0.97
0.50	0.50	0.20	0.60	0.70	0.77	0.81	0.87	0.90	0.93	0.96	0.97
	0.30		0.54	0.65	0.72	0.77	0.83	0.87	0.90	0.93	0.96
	0.10		0.50	0.61	0.68	0.73	0.80	0.84	0.87	0.91	0.94
0.30	0.50	0.20	0.59	0.69	0.75	0.79	0.84	0.87	0.90	0.92	0.94
	0.30		0.54	0.64	0.71	0.75	0.81	0.85	0.87	0.90	0.92
	0.10		0.50	0.60	0.67	0.72	0.78	0.82	0.85	0.89	0.91
0.00	0.00	0.00	0.48	0.58	0.65	0.69	0.75	0.79	0.81	0.85	0.87

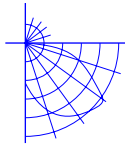
Rating : Photometrically tested without ceiling board.

Multiply values by service correction factors.

Calculated in accordance with CIBS Technical Memorandum No. 5 1980 using the fine grid method.

Luminaire discretisation employed. Ceiling/Wall/Floor reflectances not used in calculations.





## Certified Test Report No. LL14233-R02

PCO Lite Electrical 3 x 14 W T5 Troffer. Product ID: Liscio VDU 314\_T5\_9T-P2 A5.

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**Test Distance:** 8.0 metres  
**Test Temperature:** 24.5 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 based on the lamp(s) delivering 1000.0 lumens. When using these values in calculations the appropriate 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 Working" 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 24 and Australian Standard AS1680, Part 3, 1991.