

T e s t R e p o r t

Report No : L17660A

Client: : Astro Lighting Ltd
The Astro Building
Midas, River Way
Harlow
Essex
CM20 2GJ

Description : Mashico LED Emergency Luminaire

Manufacturer : Not disclosed

Type/Model : CL211

Test Specification : BS EN 13032-4:2015 Clause 4.5.4

Date Testing Started : 13/09/2018

Conclusion : Refer to body of report

Date of Issue : 01/10/2018

Date of Expiry : 30/09/2023

Tested by: N. GABIR
Position: Laboratory Engineer



Approved by: T. MALIK
Position: Operations Manager



INTRODUCTION

Astro Lighting Ltd have supplied the product identified in page one for determination of light output distribution.

PRODUCT DETAILS

Table 1. Test Sample Details

Product Description	Mashico LED Emergency Luminaire – Emergency Mode
Model No.	CL211
Number of Samples	One
Condition on Receipt	Good
Nominal Dimensions (mm)	L – 400mm; W – 400mm; H – 70mm
Product Supply Requirement	220-240V AC, 50/60Hz
Lamp Type and Power	LED, 28W
Sampling Method: Test samples selected and supplied by client, no sampling method specified by client.	

Continued on following page

PROCEDURE

Table 2. Test Procedure and Equipment Used for Photometric Measurements

Test Standard	BS EN 13032-4:2015 Clause 4.5.4
Equipment Used	LMT GO-DS 2000 goniophotometer (408)
Standard Lamp Used	LMT Photometer Unit 01B6081
Standard Lamp Traceability	Traceable to luminous intensity standard lamp type OSRAM Wi41/G lamp No. 934
Scan Setup	Elevation: 0°-180°, step size: 5° Azimuth: 0°-360°, step size: 5°
Power Supply	Tridonic Accu NiCd 3A Battery, 3 cells, 4.2Ah, 3.6VDC
Power Measurement	N4L single phase power analyser (394)
Temperature Measurement	Testo 405i Thermal Anemometer (419)

Table 3. Lamp Conditioning and Setup

Lamp ageing Time (Mins)	0
Stabilisation Time (Mins)	180
Total Operating Time (Mins)	202
Support Structure	LMT Goniophotometer Mounting Fixture

Continued on following page

TEST RESULTS

Table 4. Test Environmental and Operating Conditions

Ambient Temperature (°C)	24.1
Voltage (V)	31.3
Current (mA)	82.97
Power (W)	2.57
Power Factor	1.00

Table 5. Beam Angle Results

Luminous Flux of Luminaire (lm)	Luminous Efficacy (lm/W)	Centre Beam Intensity (cd)	Beam Angle (Lamp orientation)	Beam Angle Result (°)
297	116	84	Horizontal	116.5
			Vertical	117.7

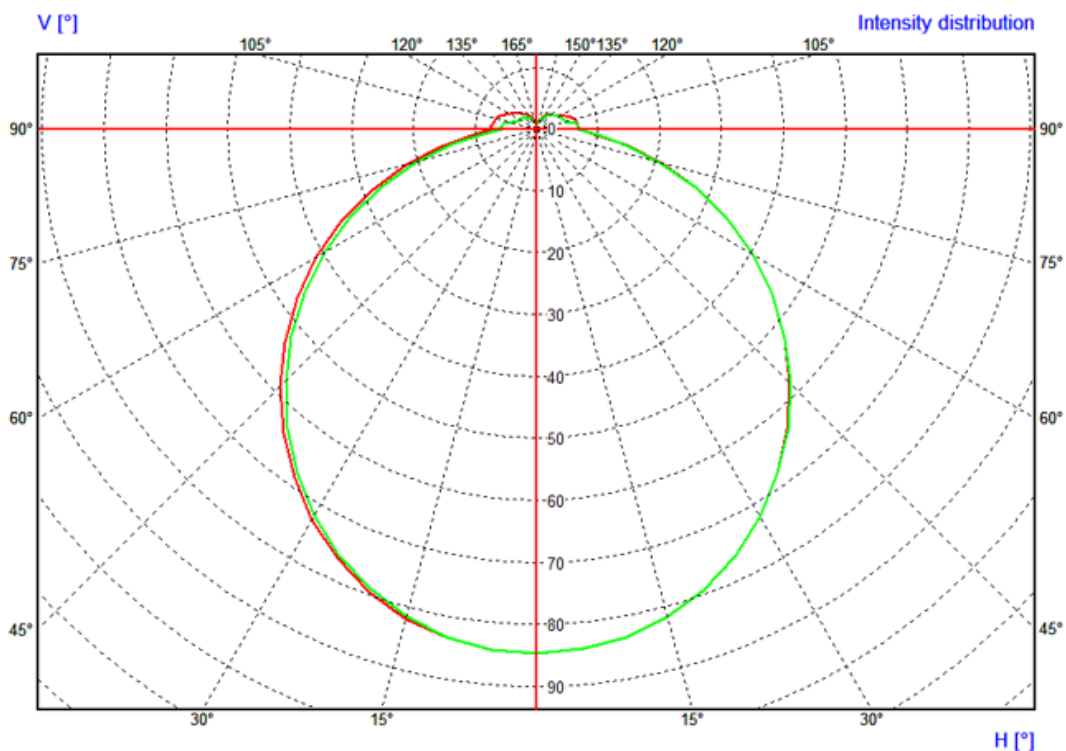


Figure 1. Polar Diagram

Continued on following page

Table 6. Luminous Intensities (cd)

Gamma	0	5	10	15	20	25	30	35	40	45	50	55
0	84.4	84.4	84.4	84.4	84.4	84.4	84.5	84.5	84.4	84.4	84.4	84.4
5	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1
10	83.1	83.1	83.1	83.1	83.1	83.2	83.2	83.2	83.2	83.1	83.1	83.1
15	81.3	81.3	81.3	81.4	81.4	81.4	81.5	81.5	81.5	81.5	81.4	81.4
20	78.9	78.9	78.9	79.0	79.0	79.0	79.1	79.1	79.1	79.1	79.1	79.1
25	75.8	75.8	75.8	75.9	76.0	76.1	76.1	76.1	76.2	76.2	76.2	76.1
30	72.0	72.0	72.1	72.2	72.3	72.4	72.5	72.5	72.5	72.6	72.6	72.5
35	67.8	67.7	67.8	67.9	68.1	68.2	68.3	68.4	68.4	68.5	68.4	68.4
40	63.0	63.0	63.1	63.3	63.4	63.6	63.7	63.8	63.8	63.9	63.9	63.8
45	57.8	57.8	58.0	58.1	58.3	58.5	58.7	58.8	58.8	58.8	58.8	58.8
50	52.3	52.4	52.5	52.7	52.9	53.1	53.3	53.4	53.5	53.5	53.5	53.4
55	46.4	46.5	46.6	46.9	47.1	47.3	47.5	47.6	47.7	47.7	47.7	47.7
60	40.3	40.3	40.5	40.8	41.0	41.2	41.4	41.6	41.6	41.7	41.6	41.6
65	33.9	34.0	34.1	34.4	34.7	34.9	35.1	35.2	35.3	35.4	35.3	35.3
70	27.4	27.4	27.6	27.9	28.2	28.4	28.6	28.8	28.8	28.9	28.9	28.8
75	20.9	21.0	21.2	21.5	21.7	22.0	22.2	22.3	22.4	22.4	22.4	22.4
80	14.7	14.8	15.0	15.3	15.6	15.8	16.0	16.2	16.2	16.3	16.2	16.2
85	9.8	9.8	10.1	10.4	10.6	10.9	11.1	11.2	11.3	11.4	11.3	11.2
90	6.8	6.9	7.1	7.4	7.7	8.1	8.2	8.3	8.4	8.5	8.5	8.4
95	6.8	6.8	7.0	7.4	7.7	7.9	8.1	8.3	8.3	8.4	8.4	8.3
100	6.6	6.6	6.9	7.2	7.5	7.7	7.9	8.1	8.2	8.2	8.2	8.0
105	6.4	6.4	6.6	6.9	7.2	7.4	7.5	7.6	7.6	7.4	7.1	6.6
110	5.8	5.9	6.0	6.3	6.5	6.6	6.7	6.6	6.5	6.3	6.1	5.8
115	5.2	5.2	5.4	5.5	5.7	5.8	5.8	5.8	5.8	5.7	5.6	5.5
120	4.6	4.6	4.7	4.8	4.9	5.1	5.2	5.2	5.3	5.3	5.3	5.2
125	3.9	3.9	4.1	4.2	4.3	4.5	4.7	4.8	4.9	4.9	4.9	4.9
130	3.6	3.7	3.7	3.9	4.0	4.2	4.3	4.4	4.5	4.6	4.5	4.4
135	3.3	3.3	3.4	3.5	3.7	3.8	4.0	4.1	4.1	4.1	4.1	4.0
140	3.1	3.1	3.2	3.3	3.4	3.5	3.5	3.6	3.7	3.7	3.7	3.6
145	2.8	2.8	2.9	3.0	3.1	3.1	3.2	3.3	3.3	3.3	3.3	3.2
150	2.5	2.5	2.6	2.6	2.7	2.8	2.8	2.9	2.9	2.9	2.8	2.8
155	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4
160	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
165	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.6
170	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.3
175	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
180	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.9	0.9

Continued on following page

This page is to be read in conjunction with the first page of this report

Table 6 Continued...

Gamma	60	65	70	75	80	85	90	95	100	105	110	115
0	84.4	84.4	84.4	84.3	84.4	84.4	84.4	84.4	84.4	84.4	84.5	84.5
5	84.1	84.0	84.0	84.0	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.2
10	83.1	83.1	83.1	83.0	83.0	83.1	83.1	83.1	83.1	83.1	83.2	83.2
15	81.5	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.4	81.5	81.5	81.6
20	79.1	79.0	79.0	79.0	78.9	78.9	78.9	78.9	79.0	79.1	79.2	79.2
25	76.1	76.1	76.0	75.9	75.9	75.9	75.8	75.8	75.9	76.1	76.2	76.3
30	72.5	72.4	72.3	72.2	72.2	72.1	72.1	72.1	72.2	72.3	72.5	72.6
35	68.3	68.2	68.1	68.0	67.9	67.8	67.8	67.8	67.9	68.1	68.3	68.5
40	63.7	63.6	63.5	63.3	63.2	63.1	63.0	63.1	63.2	63.4	63.7	63.9
45	58.7	58.6	58.4	58.2	58.1	57.9	57.9	57.9	58.1	58.3	58.6	58.8
50	53.3	53.2	53.0	52.8	52.6	52.5	52.3	52.4	52.6	52.9	53.2	53.4
55	47.6	47.4	47.2	47.0	46.8	46.6	46.5	46.5	46.8	47.0	47.4	47.7
60	41.5	41.3	41.1	40.9	40.6	40.5	40.3	40.4	40.6	40.9	41.3	41.6
65	35.2	35.0	34.8	34.6	34.3	34.1	33.9	34.0	34.3	34.6	35.0	35.3
70	28.7	28.6	28.3	28.1	27.8	27.6	27.4	27.5	27.7	28.1	28.5	28.8
75	22.2	22.1	21.9	21.6	21.3	21.0	20.8	20.9	21.2	21.6	22.0	22.3
80	16.1	15.9	15.7	15.4	15.1	14.8	14.6	14.7	15.0	15.3	15.7	16.1
85	11.1	10.9	10.7	10.4	10.1	9.8	9.6	9.6	10.0	10.4	10.7	11.1
90	8.2	8.1	7.8	7.5	7.2	6.9	6.6	6.7	7.0	7.4	7.8	8.2
95	8.2	8.0	7.7	7.4	7.1	6.8	6.6	6.6	6.9	7.3	7.7	8.0
100	7.6	7.4	7.2	7.0	6.7	6.5	6.3	6.4	6.6	6.9	7.2	7.5
105	6.0	5.8	5.7	5.5	5.1	4.9	4.9	4.9	5.1	5.5	5.7	5.9
110	5.6	5.5	5.2	4.9	4.6	4.5	4.6	4.6	4.6	4.9	5.2	5.4
115	5.4	5.2	4.9	4.7	4.5	4.4	4.4	4.4	4.5	4.7	4.9	5.2
120	5.1	4.9	4.6	4.5	4.3	4.2	4.2	4.2	4.2	4.4	4.6	4.8
125	4.7	4.5	4.3	4.2	4.1	4.0	3.9	3.9	4.0	4.2	4.3	4.5
130	4.3	4.2	4.1	3.9	3.9	3.7	3.6	3.7	3.7	4.0	4.1	4.2
135	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.4	3.5	3.6	3.7	3.8
140	3.5	3.4	3.4	3.3	3.2	3.1	3.0	3.0	3.1	3.2	3.3	3.4
145	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.7	2.8	2.9	3.0	3.1
150	2.8	2.7	2.7	2.6	2.6	2.5	2.4	2.4	2.5	2.6	2.6	2.7
155	2.4	2.4	2.3	2.3	2.2	2.1	2.1	2.1	2.1	2.2	2.3	2.3
160	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	2.0
165	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6
170	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3
175	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
180	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9

Continued on following page

This page is to be read in conjunction with the first page of this report

Table 6 Continued...

Gamma	120	125	130	135	140	145	150	155	160	165	170	175
0	84.5	84.5	84.5	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4
5	84.2	84.2	84.2	84.2	84.2	84.2	84.1	84.1	84.1	84.1	84.1	84.2
10	83.3	83.3	83.3	83.3	83.3	83.3	83.3	83.3	83.3	83.2	83.2	83.2
15	81.6	81.7	81.7	81.7	81.7	81.7	81.7	81.7	81.7	81.7	81.6	81.6
20	79.3	79.3	79.4	79.4	79.4	79.4	79.4	79.4	79.4	79.4	79.3	79.3
25	76.4	76.5	76.5	76.5	76.6	76.6	76.6	76.5	76.5	76.4	76.4	76.3
30	72.8	72.9	73.0	73.0	73.1	73.1	73.0	73.0	72.9	72.8	72.8	72.7
35	68.6	68.8	68.9	68.9	69.0	69.0	68.9	68.9	68.8	68.7	68.6	68.5
40	64.1	64.2	64.3	64.4	64.5	64.5	64.4	64.3	64.2	64.1	63.9	63.9
45	59.1	59.2	59.4	59.4	59.5	59.5	59.4	59.4	59.2	59.0	58.9	58.8
50	53.7	53.9	54.0	54.1	54.1	54.1	54.1	54.0	53.9	53.7	53.5	53.4
55	47.9	48.1	48.3	48.4	48.4	48.5	48.4	48.3	48.1	47.9	47.7	47.6
60	41.9	42.1	42.3	42.4	42.4	42.4	42.4	42.3	42.1	41.9	41.7	41.5
65	35.6	35.8	36.0	36.1	36.1	36.1	36.1	36.0	35.8	35.6	35.4	35.2
70	29.1	29.3	29.5	29.6	29.7	29.7	29.6	29.5	29.4	29.2	28.9	28.7
75	22.6	22.8	23.0	23.2	23.2	23.2	23.2	23.1	22.9	22.7	22.4	22.2
80	16.4	16.6	16.8	16.9	17.0	17.0	17.0	16.8	16.7	16.5	16.2	15.9
85	11.4	11.6	11.8	11.9	12.0	12.0	11.9	11.8	11.7	11.4	11.1	10.9
90	8.4	8.6	8.8	8.9	8.9	8.9	8.8	8.7	8.5	8.3	8.0	7.7
95	8.3	8.5	8.7	8.8	8.8	8.8	8.7	8.6	8.4	8.1	7.8	7.5
100	7.8	8.2	8.5	8.6	8.6	8.6	8.5	8.4	8.2	7.9	7.7	7.4
105	6.1	6.8	7.4	7.8	8.1	8.2	8.2	8.1	7.9	7.7	7.4	7.1
110	5.6	5.9	6.3	6.6	7.0	7.2	7.3	7.3	7.2	7.0	6.8	6.6
115	5.4	5.6	5.8	6.0	6.2	6.3	6.4	6.4	6.4	6.3	6.1	6.0
120	5.1	5.3	5.4	5.5	5.6	5.7	5.7	5.7	5.6	5.5	5.4	5.3
125	4.7	5.0	5.1	5.2	5.2	5.1	5.1	5.0	4.9	4.8	4.7	4.6
130	4.3	4.5	4.6	4.7	4.7	4.7	4.6	4.5	4.4	4.2	4.1	4.0
135	3.9	4.0	4.1	4.2	4.2	4.2	4.2	4.1	4.0	3.9	3.8	3.7
140	3.5	3.6	3.7	3.7	3.8	3.8	3.7	3.7	3.6	3.5	3.4	3.3
145	3.1	3.2	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.1	3.0	3.0
150	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.8	2.8	2.7	2.7	2.6
155	2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3
160	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9
165	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
170	1.3	1.3	1.3	1.4	1.3	1.4	1.3	1.3	1.3	1.3	1.2	1.2
175	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
180	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.8

Continued on following page

This page is to be read in conjunction with the first page of this report

Table 6 Continued...

Gamma	180	185	190	195	200	205	210	215	220	225	230	235
0	84.4	84.4	84.4	84.4	84.5	84.5	84.5	84.5	84.4	84.4	84.4	84.4
5	84.2	84.2	84.2	84.2	84.2	84.2	84.2	84.2	84.2	84.2	84.1	84.1
10	83.3	83.2	83.3	83.3	83.3	83.3	83.4	83.3	83.3	83.3	83.2	83.2
15	81.7	81.6	81.7	81.7	81.8	81.8	81.8	81.8	81.7	81.7	81.6	81.6
20	79.3	79.3	79.3	79.4	79.5	79.5	79.5	79.5	79.4	79.4	79.3	79.3
25	76.3	76.3	76.4	76.5	76.5	76.5	76.6	76.6	76.5	76.5	76.4	76.3
30	72.7	72.6	72.7	72.8	72.9	73.0	73.0	73.0	73.0	72.9	72.8	72.8
35	68.5	68.4	68.6	68.7	68.7	68.8	68.9	68.9	68.9	68.8	68.7	68.6
40	63.8	63.8	63.9	64.0	64.2	64.3	64.3	64.3	64.3	64.3	64.2	64.0
45	58.7	58.7	58.8	59.0	59.1	59.3	59.3	59.4	59.3	59.3	59.2	59.0
50	53.3	53.3	53.4	53.6	53.7	53.9	54.0	54.0	54.0	53.9	53.8	53.7
55	47.4	47.5	47.6	47.8	48.0	48.1	48.2	48.2	48.2	48.2	48.0	47.9
60	41.4	41.4	41.5	41.7	41.9	42.1	42.2	42.2	42.2	42.1	42.0	41.8
65	35.0	35.0	35.2	35.4	35.6	35.8	35.9	35.9	35.9	35.8	35.7	35.5
70	28.5	28.5	28.7	28.9	29.1	29.3	29.4	29.4	29.4	29.3	29.2	29.0
75	22.0	22.0	22.2	22.4	22.6	22.8	22.9	22.9	22.9	22.9	22.7	22.5
80	15.7	15.8	15.9	16.2	16.4	16.6	16.7	16.7	16.7	16.6	16.5	16.3
85	10.6	10.7	10.9	11.1	11.4	11.5	11.6	11.7	11.6	11.6	11.4	11.2
90	7.5	7.5	7.7	8.0	8.2	8.5	8.5	8.5	8.5	8.4	8.3	8.1
95	7.3	7.4	7.6	7.8	8.1	8.2	8.3	8.4	8.4	8.3	8.2	8.0
100	7.2	7.2	7.4	7.6	7.9	8.0	8.1	8.2	8.2	8.1	8.0	7.7
105	6.9	6.9	7.1	7.4	7.6	7.7	7.8	7.8	7.7	7.4	7.0	6.4
110	6.4	6.5	6.6	6.8	6.9	7.0	7.0	6.8	6.6	6.3	5.8	5.3
115	5.8	5.9	5.9	6.1	6.1	6.1	6.1	6.0	5.8	5.6	5.2	4.8
120	5.2	5.2	5.2	5.4	5.4	5.4	5.4	5.4	5.2	5.1	5.0	4.8
125	4.5	4.5	4.6	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.6	4.5
130	3.9	3.9	4.0	4.1	4.2	4.3	4.3	4.3	4.3	4.3	4.2	4.1
135	3.6	3.6	3.7	3.7	3.8	3.9	3.9	3.9	3.9	3.8	3.8	3.7
140	3.2	3.3	3.3	3.4	3.4	3.5	3.5	3.5	3.5	3.4	3.4	3.3
145	2.9	2.9	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0
150	2.5	2.5	2.6	2.7	2.7	2.7	2.8	2.8	2.7	2.7	2.7	2.6
155	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.3	2.3	2.3	2.2
160	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9
165	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
170	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
175	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0
180	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8

Continued on following page

This page is to be read in conjunction with the first page of this report

Table 6 Continued...

Gamma	240	245	250	255	260	265	270	275	280	285	290	295
0	84.4	84.4	84.4	84.3	84.3	84.3	84.4	84.4	84.4	84.4	84.4	84.4
5	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1
10	83.2	83.2	83.2	83.1	83.1	83.0	83.1	83.1	83.1	83.1	83.1	83.2
15	81.6	81.5	81.5	81.4	81.4	81.3	81.3	81.3	81.3	81.4	81.4	81.4
20	79.2	79.2	79.1	79.0	78.9	78.9	78.9	78.9	78.9	78.9	79.0	79.0
25	76.2	76.1	76.0	75.9	75.8	75.7	75.7	75.7	75.7	75.8	75.9	75.9
30	72.7	72.5	72.3	72.2	72.1	71.9	71.9	71.9	71.9	72.0	72.1	72.2
35	68.5	68.3	68.2	67.9	67.8	67.6	67.6	67.6	67.6	67.7	67.9	68.0
40	63.9	63.7	63.5	63.2	63.0	62.8	62.7	62.7	62.8	63.0	63.2	63.3
45	58.9	58.6	58.4	58.1	57.9	57.6	57.5	57.5	57.6	57.8	58.0	58.2
50	53.5	53.2	53.0	52.6	52.3	52.1	51.9	52.0	52.1	52.3	52.5	52.7
55	47.7	47.4	47.1	46.8	46.5	46.2	46.0	46.0	46.2	46.4	46.7	46.9
60	41.6	41.3	41.0	40.6	40.3	40.0	39.8	39.8	40.0	40.2	40.5	40.8
65	35.3	35.0	34.7	34.3	33.9	33.6	33.4	33.4	33.6	33.9	34.1	34.4
70	28.8	28.5	28.2	27.8	27.4	27.0	26.8	26.8	27.0	27.3	27.6	27.9
75	22.3	22.0	21.7	21.3	20.9	20.5	20.3	20.3	20.5	20.8	21.1	21.4
80	16.1	15.8	15.4	15.0	14.6	14.2	14.0	14.0	14.2	14.5	14.9	15.2
85	11.0	10.7	10.3	9.9	9.5	9.1	8.9	8.9	9.2	9.5	9.8	10.2
90	7.9	7.6	7.2	6.9	6.4	6.1	5.8	5.9	6.1	6.5	6.8	7.2
95	7.8	7.5	7.2	6.8	6.4	6.0	5.7	5.8	6.1	6.4	6.8	7.1
100	7.4	7.1	6.8	6.4	6.1	5.8	5.6	5.6	5.9	6.1	6.4	6.6
105	5.8	5.5	5.4	5.1	4.7	4.5	4.4	4.7	4.9	5.0	5.1	5.3
110	4.9	4.6	4.4	4.1	3.8	3.8	3.8	4.1	4.2	4.2	4.3	4.5
115	4.4	4.1	3.8	3.4	3.3	3.2	3.3	3.4	3.7	3.9	4.1	4.3
120	4.6	4.2	3.9	3.6	3.3	3.2	3.2	3.3	3.6	3.9	4.1	4.3
125	4.3	4.0	3.8	3.5	3.4	3.2	3.2	3.3	3.6	3.8	3.9	4.1
130	3.9	3.8	3.7	3.4	3.2	3.0	2.9	3.1	3.3	3.6	3.7	3.9
135	3.6	3.4	3.3	3.2	2.9	2.8	2.8	2.9	3.0	3.2	3.4	3.6
140	3.2	3.1	3.0	2.8	2.7	2.6	2.5	2.6	2.8	2.9	3.1	3.2
145	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.4	2.5	2.6	2.8	2.9
150	2.5	2.5	2.4	2.3	2.3	2.2	2.1	2.1	2.3	2.4	2.5	2.6
155	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.2	2.2
160	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.7	1.8	1.8	1.9
165	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.6
170	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2
175	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
180	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Continued on following page

This page is to be read in conjunction with the first page of this report

Table 6 Continued...

Gamma	300	305	310	315	320	325	330	335	340	345	350	355
0	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.4	84.3	84.4
5	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1	84.1
10	83.2	83.2	83.2	83.2	83.2	83.2	83.1	83.1	83.1	83.1	83.0	83.0
15	81.4	81.4	81.4	81.4	81.4	81.4	81.5	81.4	81.4	81.4	81.3	81.3
20	79.0	79.1	79.1	79.1	79.1	79.1	79.1	79.0	79.0	79.0	78.9	78.9
25	76.0	76.0	76.1	76.1	76.1	76.1	76.1	76.0	76.0	75.9	75.9	75.8
30	72.3	72.4	72.4	72.4	72.4	72.4	72.4	72.3	72.3	72.2	72.1	72.1
35	68.1	68.2	68.3	68.3	68.3	68.3	68.3	68.2	68.1	68.0	67.9	67.8
40	63.4	63.6	63.6	63.6	63.7	63.7	63.6	63.5	63.4	63.3	63.2	63.1
45	58.3	58.5	58.6	58.6	58.6	58.6	58.5	58.5	58.3	58.2	58.0	57.9
50	52.9	53.1	53.2	53.2	53.2	53.2	53.2	53.1	52.9	52.7	52.6	52.5
55	47.1	47.2	47.3	47.4	47.4	47.4	47.4	47.2	47.1	46.9	46.7	46.6
60	41.0	41.1	41.3	41.4	41.4	41.4	41.3	41.2	41.0	40.8	40.6	40.4
65	34.6	34.8	34.9	35.0	35.0	35.0	35.0	34.9	34.7	34.5	34.3	34.1
70	28.1	28.3	28.4	28.5	28.6	28.6	28.5	28.4	28.2	28.0	27.8	27.6
75	21.6	21.9	22.0	22.1	22.1	22.1	22.1	21.9	21.8	21.6	21.3	21.1
80	15.4	15.6	15.8	15.9	15.9	15.9	15.9	15.8	15.6	15.4	15.1	14.9
85	10.4	10.6	10.8	10.9	11.0	11.0	10.9	10.8	10.6	10.4	10.2	9.9
90	7.4	7.6	7.8	7.9	8.0	8.0	7.9	7.8	7.7	7.5	7.2	7.0
95	7.3	7.6	7.7	7.9	7.9	7.9	7.9	7.8	7.6	7.4	7.2	6.9
100	6.9	7.2	7.5	7.7	7.8	7.8	7.7	7.6	7.5	7.3	7.0	6.8
105	5.9	6.3	6.7	7.0	7.2	7.3	7.3	7.3	7.2	7.0	6.8	6.5
110	4.8	5.3	5.8	6.2	6.5	6.6	6.6	6.6	6.5	6.4	6.2	6.0
115	4.6	4.8	5.1	5.4	5.7	5.8	5.9	5.9	5.8	5.6	5.5	5.4
120	4.5	4.7	4.8	4.9	5.0	5.1	5.1	5.1	5.0	4.9	4.8	4.7
125	4.3	4.5	4.5	4.6	4.6	4.6	4.6	4.5	4.4	4.3	4.1	4.0
130	4.0	4.1	4.2	4.3	4.3	4.2	4.2	4.1	4.0	3.9	3.8	3.7
135	3.7	3.8	3.9	3.9	4.0	4.0	3.9	3.8	3.7	3.6	3.5	3.4
140	3.3	3.4	3.5	3.5	3.6	3.6	3.6	3.5	3.4	3.3	3.3	3.2
145	3.0	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.0	3.0	2.9
150	2.7	2.7	2.8	2.8	2.9	2.9	2.8	2.8	2.8	2.7	2.6	2.6
155	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3
160	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9
165	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.4
170	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
175	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
180	0.8	0.8	0.8	0.9	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.8

Continued on following page

This page is to be read in conjunction with the first page of this report

CONE DIAGRAM



Figure 2. Cone diagram for mounting height up to 12 metres

Continued on following page

UNIFIED GLARE RATING

Table 7. Unified Glare Rating

Ceiling Reflectance		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall Reflectance		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Floor Cavity Reflectance		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room Dimension		Viewed endwise					Viewed crosswise				
2H	2H	<10.0	<10.0	<10.0	10.4	11.0	<10.0	<10.0	<10.0	10.4	10.9
2H	3H	10.1	11.4	10.6	12.0	12.5	10.0	11.4	10.6	11.9	12.5
2H	4H	10.8	12.1	11.3	12.6	13.2	10.7	12.0	11.2	12.5	13.1
2H	6H	11.4	12.5	11.9	13.1	13.7	11.3	12.4	11.8	13.0	13.6
2H	8H	11.6	12.7	12.1	13.3	13.9	11.4	12.6	12.0	13.1	13.8
2H	12H	11.7	12.8	12.3	13.4	14.0	11.6	12.7	12.1	13.2	13.9
4H	2H	<10.0	10.4	<10.0	11.0	11.6	<10.0	10.4	<10.0	10.9	11.5
4H	3H	11.0	12.1	11.6	12.6	13.3	10.9	12.0	11.5	12.6	13.2
4H	4H	11.9	12.8	12.5	13.4	14.1	11.8	12.8	12.4	13.4	14.0
4H	6H	12.5	13.4	13.1	14.0	14.7	12.4	13.3	13.0	13.9	14.6
4H	8H	12.8	13.6	13.4	14.3	14.9	12.7	13.5	13.3	14.1	14.8
4H	12H	13.1	13.8	13.7	14.4	15.2	12.9	13.7	13.5	14.3	15.0
8H	4H	12.2	13.0	12.8	13.6	14.3	12.1	12.9	12.7	13.6	14.2
8H	6H	13.0	13.7	13.6	14.3	15.1	12.9	13.6	13.6	14.2	15.0
8H	8H	13.5	14.1	14.1	14.7	15.4	13.3	13.9	14.0	14.6	15.3
8H	12H	13.8	14.3	14.5	15.0	15.7	13.6	14.2	14.3	14.8	15.6
12H	4H	12.2	13.0	12.9	13.6	14.3	12.2	12.9	12.8	13.6	14.3
12H	6H	13.2	13.8	13.8	14.4	15.1	13.1	13.7	13.7	14.3	15.1
12H	8H	13.6	14.1	14.2	14.8	15.5	13.5	14.0	14.1	14.7	15.4

Continued on following page

DEVIATION(S) FROM TEST STANDARD

No reported deviations from test standard.

Continued on following page

IDENTIFICATION OF PHOTOMETRIC CENTRE

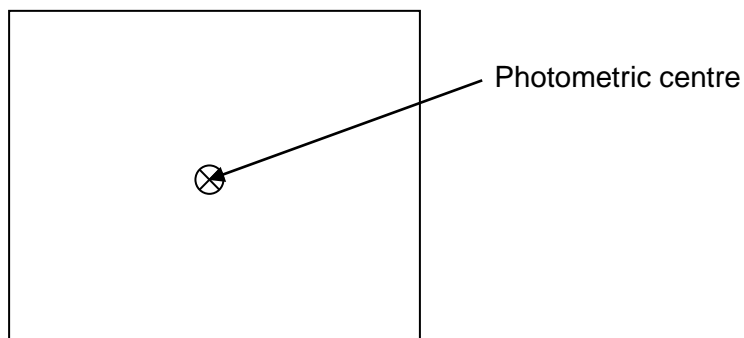


Figure 3. *Product photometric centre*

ILLUSTRATION

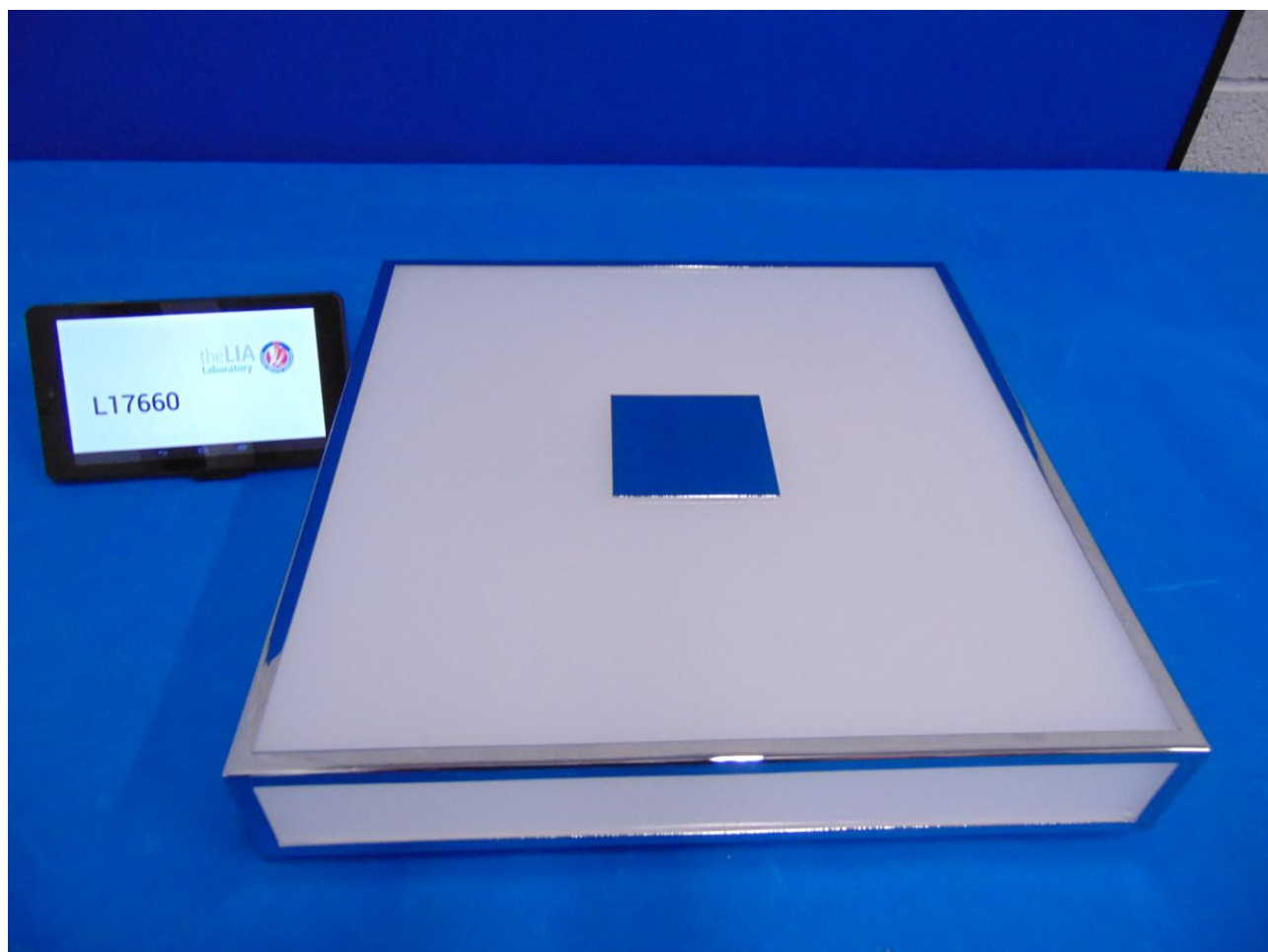


Figure 4. *Product image*

End

This page is to be read in conjunction with the first page of this report