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Accredited for compliance with ISO/IEC 17025 Accreditation No. 19541

Test Report: 215030

Photometric performance of CORNIA® Street Light 60W with 120/75 degrees asymmetrical batwings lens

Partial Testing to IES LM 79 - 2008

Model: C065 60CX2

Prepared for: LED4Life

The data specified in this report relates to the luminaire/components photometered under standard conditions specified in the Test Specification, and may not necessarily relate to other similar luminaires or other operating conditions.

The tests and measurements covered by this document are traceable to Australian national standards of measurement.
This report only applies to the items tested and shall only be reproduced in full unless approved in writing by Light Emission Distribution Laboratory (LEDLab)

Product

Luminaire Type: Category P Street Light
Vendor identification: LED4Life
Name of Product: *CORNIA*® Street Light 60W with 120/75 degrees asymmetrical batwings lens
Model/Catalogue number: C065 60CX2
Description: Pure aluminium double coated body with 1 CREE LED, contact lens design (120 degrees asymmetrical batwings lens) and driven from a Mean well class 2 Power supply HLG-60H-36A set at full output current.

Test specifications

The distribution of luminous intensity from the luminaire, in candela as a function of C, Gamma angles, is given in the accompanying tables. This report is the result of testing a sample of the product described, with the components nominated, in accordance with the general requirements of IES LM79 – 2008, AS/NZS 1158 and CIE 121 using the **absolute method**. The photometric test distance of the Type C goniophotometer was 10m.
Except this Test Report does not cover parts of IES LM79 related to colour quantities.

Test Setup

The luminaire was mounted according to CIE 121 with:

- The first axis vertical, in the direction of nadir, perpendicular to and centred on the optical opening (also the centre of LED chip).
- The second axis through the photometric centre, perpendicular to the first axis, aligned with the middle of the lens.
- The third axis is perpendicular to the first and second in the 90 ° - 270 ° C-plane
- The long dimension of the luminaire is in the direction of the third axis;
- The mounting spigot at 270°C-angle and horizontal.
- The photometric test distance of 10m, is referenced to the photometric centre of the luminaire;
- The LED Module is mounted horizontally, with the supply connections towards the spigot.

The luminaire is symmetrical about the 90/270° axis.
Values as a function of horizontal and vertical angles have different reference axis as defined in IES LM 63.

The photometer was calibrated using the average of three omnidirectional Incandescent Reference Flux Standard Lamps, themselves calibrated at NMI Australia. Spectral Mismatch Correction Factor calculated as 1.0064 but not applied as accounted for in Uncertainty budget.

Client: Contact Nick Sikiotis LED4Life, 90 Minnamorra Ave, Earlwood NSW 2206

Based on Sphere Test by: Alain Yetendje	On 16/02/2015	Authorised Signatory David Ford	Date: 25/02/2015

Results

Total Luminous Flux: 6933 lm
Lamp Circuit Power (including control gear losses): 61.23 Watts

The Intensity Distribution results are contained in the I-Tables and associated files.

The data files for this report are contained in the archive file 215030.zip.

IES file	215030.ies	Spigot at 180º C-Angle.
CIE file	215030.cie	Spigot at 270º C-Angle.

Uncertainties

At a Confidence Level of 95% with a Coverage Factor of 2

Angular direction: ± 0.8 °
Luminous Intensity: ± 3% + 0.05Cd
Luminous Flux: ± 3% + 0.05lm
Supply Voltage (AC): ± 0.07%
Ambient Temperature : ± 1°C

LED Module

Nominal Correlated Colour Temperature not assessed in this Test Report.

Number of Hours of Operation prior to this Test "Seasoning Time": 2h

Stabilisation Time prior to this Test "Warm-up Time": 2h

Test configuration:

Lux meter range	2uA
Calibration report:	214031 SF: -6.1235e+09 cd/A
Ambient temperature:	25.8 ºC
Procedure:	P9
Reference directions:	I-Tables and CIE files in accordance with AS/NZS 1158, IES files in accordance with IESNA LM63
Software:	41 Rev. 0A
Configuration file:	P0026 Rev1A Major Street Light Az 360 deg. 2.5deg peak res_FAST

Test lead angle:	1º
Angle tolerance:	0.3º
Obstructions:	None
Lab. Book / Page:	PH1/10
Colour correction:	1
Polarisation correction:	1
Air Flow, Supply Voltage and Humidity:	Within specified requirements.

Test Equipment Used

Goniophotometer:	SLA Goniophotometer, L1308
Photocell:	P30SCT SNo.10A244 heated
Lux meter:	Keithley 6485 SNo.1110915
Lux meter integration time (PLC):	5
Power meter:	Clarke Hess Model 2335 SN 52164
Power meter integration time (s):	5
Calibration Report:	Ausgrid 220537
Luminaire thermometer:	AMA S No, 1086110-0.1deg
Data logger:	Agilent 34970A Serial No: MY44014871, Agilent 34901A 20 Channel Multiplexer: Serial No: MY41055589 used with thermocouple to ensure stability is achieved.
Spectroradiometer: Colour Correction only	Ocean Optics HR4000CG-UV-NIR SNo. HR41C1966
Integrating Sphere:	2.4 meter
Photocell and Meter	ID11077 & B360

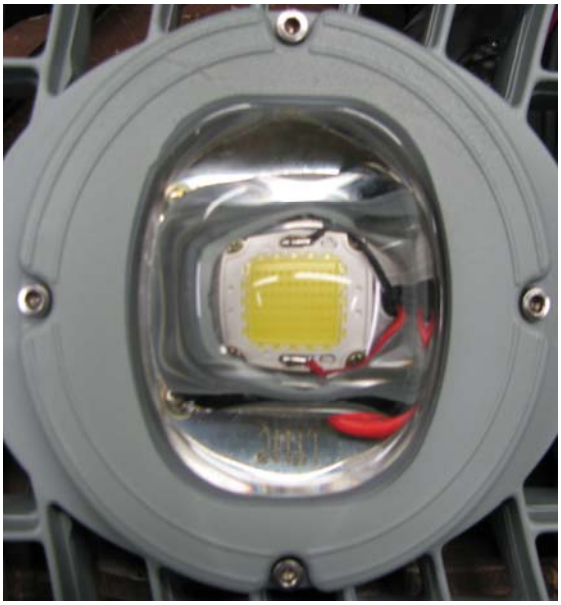

Illustration 1: LED chip and lens

Illustration 2: Mean well driver

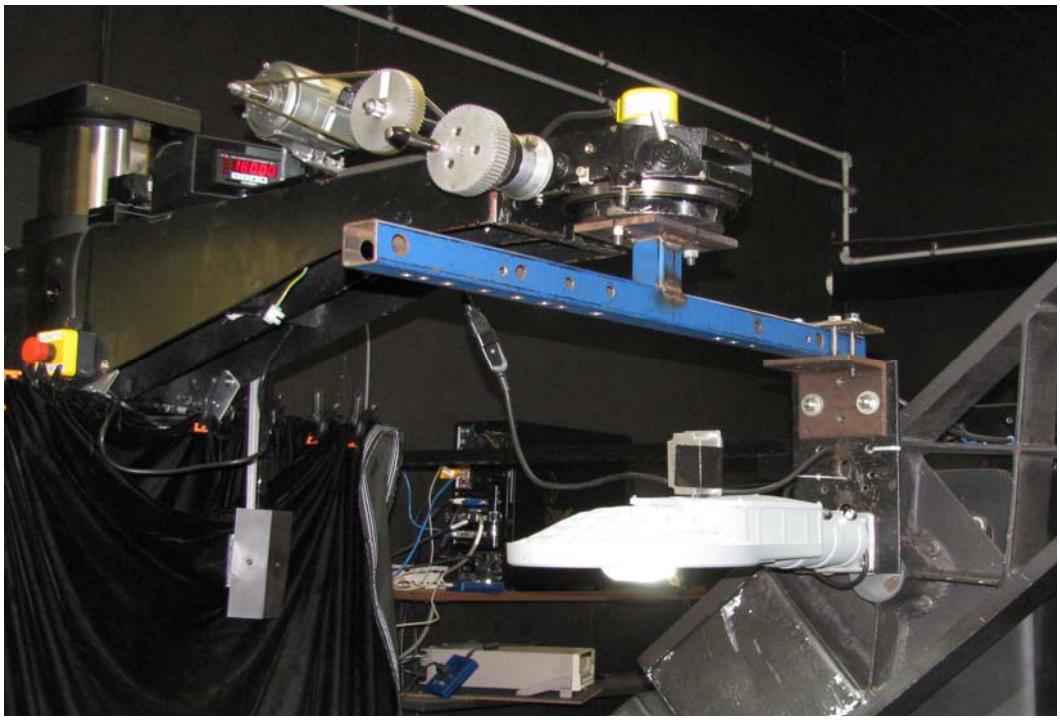

Illustration 3: Luminaire setup on the goniophotometer

Absolute Values in Candela

Angle Elev.	Angle of Azimuth 270	255	240	230	225	220	215	210	205	200	195	190	185
0	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374
10	1383	1372	1366	1364	1370	1372	1375	1375	1374	1374	1374	1372	1369
20	1404	1385	1370	1352	1331	1317	1298	1285	1279	1271	1268	1265	1263
30	1464	1442	1382	1320	1298	1274	1249	1235	1228	1213	1206	1203	1205
35	1481	1462	1404	1353	1328	1307	1284	1260	1246	1239	1239	1244	1255
40	1492	1468	1421	1393	1383	1361	1356	1344	1340	1344	1363	1383	1404
45	1487	1459	1434	1426	1435	1453	1470	1484	1497	1520	1554	1601	1639
47.5	1454	1437	1421	1437	1462	1495	1532	1566	1603	1640	1688	1745	1806
50	1393	1389	1394	1427	1462	1509	1565	1626	1696	1756	1825	1914	1996
52.5	1303	1310	1347	1412	1460	1525	1606	1707	1822	1921	2000	2090	2188
55	1164	1187	1263	1348	1408	1487	1595	1732	1877	2026	2157	2278	2392
57.5	998	1028	1154	1274	1353	1462	1604	1789	1997	2185	2323	2428	2559
60	842	846	971	1127	1222	1348	1525	1745	1983	2212	2431	2580	2722
62.5	693	677	767	969	1094	1262	1490	1764	2024	2272	2480	2662	2833
65	568	546	532	707	873	1056	1307	1620	1904	2184	2419	2577	2711
67.5	477	442	398	507	677	917	1194	1513	1806	2065	2285	2455	2610
70	407	368	297	335	444	649	936	1250	1560	1806	1986	2124	2217
72.5	321	275	210	242	349	535	797	1088	1340	1513	1599	1622	1606
75	204	171	123	136	208	352	551	775	969	1077	1075	1004	897
77.5	93	73	44	54	107	213	344	480	572	564	483	393	297
80	24	21	14	17	24	41	81	141	182	159	126	95	66
82.5	14	11	9	14	19	25	35	41	43	36	30	28	30
85	9	9	8	11	16	24	28	33	35	33	27	27	35
87.5	5	6	6	11	16	21	24	28	32	36	36	46	60
90	2	5	5	8	11	13	16	19	24	35	41	47	52
92.5	0	3	2	3	3	5	6	9	13	19	25	27	27
95	0	2	2	2	2	2	2	3	3	3	5	6	8
97.5	0	0	0	0	0	0	2	2	2	2	2	2	3
100	0	0	0	0	0	0	0	0	0	0	2	2	2
102.5	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1: I-Table 180° side of luminaire, CIE "C,Gamma co-ordinates".

Absolute Values in Candela

Angle Elev.	180	175	170	165	160	155	150	145	140	135	130	120	105	90
0	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374	1374
10	1367	1367	1367	1364	1366	1366	1364	1364	1364	1364	1363	1358	1356	1361
20	1265	1265	1269	1271	1276	1279	1284	1293	1303	1318	1328	1334	1339	1340
30	1211	1214	1224	1230	1230	1247	1260	1271	1282	1301	1323	1386	1454	1453
35	1266	1277	1287	1292	1296	1298	1303	1310	1329	1355	1385	1449	1530	1560
40	1427	1448	1464	1460	1453	1437	1429	1430	1440	1465	1503	1576	1655	1686
45	1688	1718	1730	1713	1693	1666	1652	1628	1618	1623	1625	1656	1735	1760
47.5	1854	1880	1877	1858	1833	1795	1760	1737	1713	1691	1682	1694	1749	1765
50	2068	2103	2098	2051	1994	1944	1901	1855	1803	1757	1729	1694	1737	1749
52.5	2261	2291	2264	2226	2166	2084	2008	1933	1850	1784	1735	1685	1704	1713
55	2495	2537	2506	2428	2335	2251	2146	2019	1903	1800	1730	1647	1642	1647
57.5	2664	2679	2630	2575	2490	2354	2191	2034	1871	1751	1655	1562	1538	1532
60	2867	2924	2853	2735	2588	2454	2277	2064	1865	1691	1563	1430	1355	1339
62.5	2956	2941	2815	2725	2635	2425	2204	1964	1721	1503	1358	1186	1070	1052
65	2896	2940	2874	2810	2594	2381	2161	1898	1590	1323	1118	868	785	766
67.5	2757	2709	2577	2443	2341	2191	1926	1606	1260	960	759	590	598	594
70	2338	2308	2212	2154	2053	1910	1686	1361	1014	726	561	466	480	496
72.5	1607	1509	1478	1536	1550	1492	1271	979	715	532	425	354	363	381
75	782	676	684	793	889	939	854	704	543	399	302	223	219	232
77.5	185	101	139	210	303	369	343	289	223	161	120	88	95	101
80	52	44	43	47	54	60	63	60	49	36	27	21	21	21
82.5	38	39	35	30	28	28	27	22	21	17	16	11	13	11
85	46	57	63	52	38	24	19	16	17	16	13	11	9	9
87.5	60	58	66	66	46	17	11	13	11	11	11	9	8	8
90	44	39	46	46	38	19	8	8	8	9	14	5	3	3
92.5	21	14	14	17	17	9	5	3	5	5	6	2	2	2
95	6	5	5	3	3	3	2	2	2	2	2	0	0	0
97.5	3	3	3	2	2	2	2	0	0	0	0	0	0	0
100	2	2	2	2	0	0	0	0	0	0	0	0	0	0
102.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2: I-Table 180° side of luminaire, CIE "C,Gamma co-ordinates".