

Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO COMMERCIAL

Report Number: P838626

Luminaire Tested: HCSQ645D010-HM64560835-61SQLWW

Issue Date: 5/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P838626  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-166-5)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ645D010-HM64560835-61SQLWW  
Description: HALO COMMERCIAL 6" SQUARE, NEW CONSTRUCTION FRAME, LENSED WALLWASH TRIM  
Light Source: (1) HIGH LUMEN LED 80CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

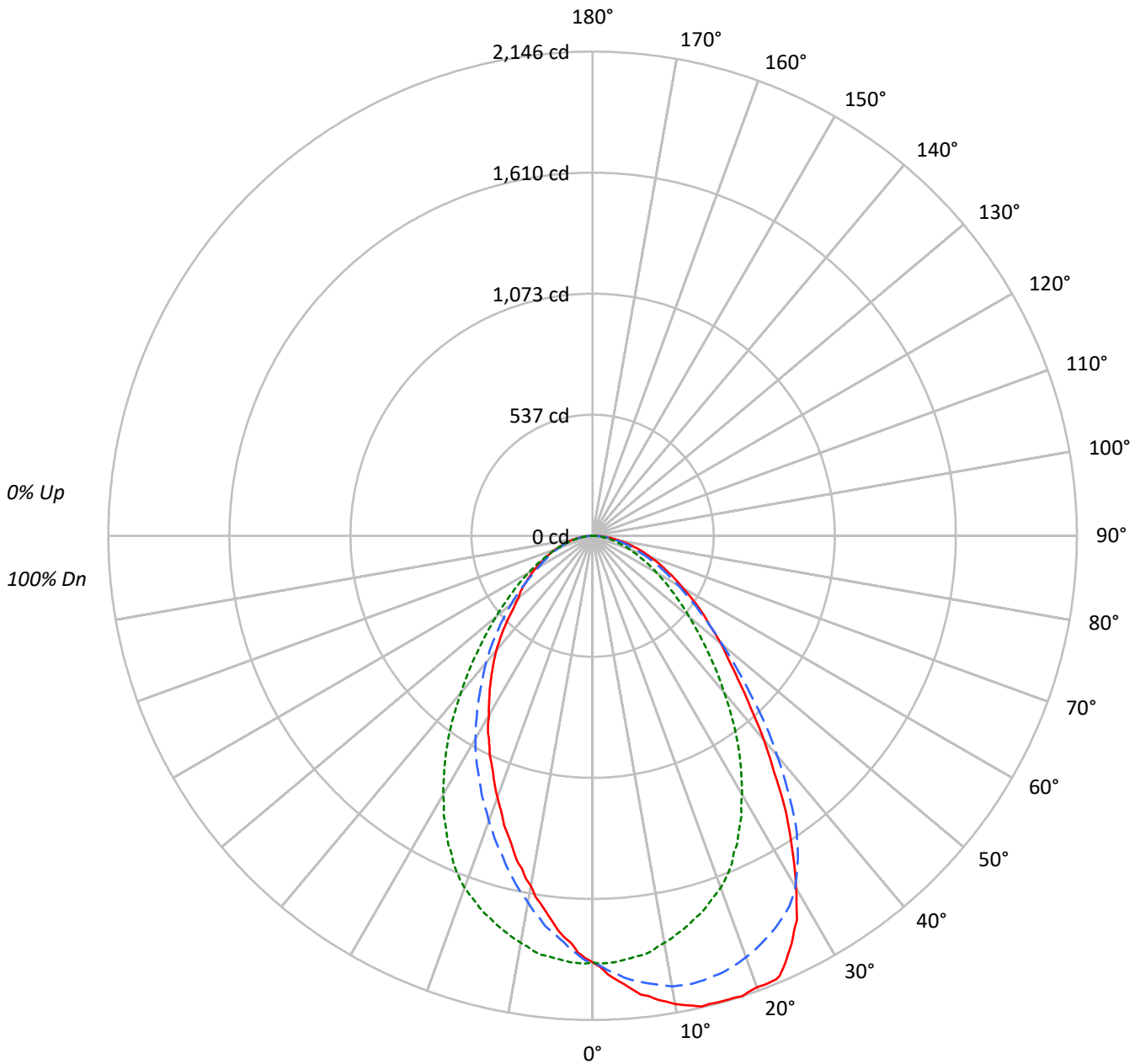
Lumens per Lamp: N/A  
Luminaire Lumens: 3575.0 lumens  
Efficiency: N/A  
Efficacy: 77.9 lumens/watt  
Spacing Criteria (0/90/45): 1.11 / 1.08 / 1.17  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 45.9  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20										
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	110	106	103	99	108	104	101	98	100	97	95	96	94	92	92	91	89	87								
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75								
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66								
4	87	76	69	63	85	75	68	62	73	66	62	71	65	61	68	64	60	58								
5	81	69	61	55	79	68	61	55	66	60	55	64	59	54	63	58	53	51								
6	75	63	55	49	74	62	55	49	61	54	49	59	53	48	58	52	48	46								
7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42								
8	66	53	46	40	64	53	45	40	51	45	40	50	44	40	49	44	39	38								
9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34								
10	58	46	39	34	57	45	38	34	44	38	34	44	38	33	43	37	33	32								

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°	135°	180°
0°	183143	183143	183143	183143	183143
5°	196251	192215	182860	173418	170656
10°	207275	199514	180194	162281	154913
15°	214777	203213	176004	150429	140891
20°	219526	204917	171113	138557	127082
25°	218954	204892	161618	127007	115099
30°	201967	200955	148083	116158	102801
35°	176661	185880	132620	103894	93120
40°	149238	160878	114676	92924	83958
45°	126179	134769	98162	81530	73488
50°	111964	113026	84202	71076	64670
55°	100173	96744	72812	61191	60854
60°	89416	84320	63531	52952	57253
65°	82132	74934	55221	49192	52424
70°	75683	67087	48746	45857	48746
75°	71229	59850	42445	41659	44691
80°	65496	53640	37267	38382	40670
85°	65246	48407	31456	31456	36013

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 40°  
 Vertical Angle: 45°  
 Luminance: 135879 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	178.3	5.0
10°-20°	497.0	13.9
20°-30°	708.9	19.8
30°-40°	730.6	20.4
40°-50°	588.1	16.5
50°-60°	415.9	11.6
60°-70°	269.5	7.5
70°-80°	144.8	4.1
80°-90°	41.8	1.2
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	1384.2	38.7
0°-40°	2114.8	59.2
0°-60°	3118.9	87.2
0°-90°	3575.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3575.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1890	1890	1890	1890	1890	
5°	2018	1977	1880	1783	1755	195
15°	2142	2026	1755	1500	1405	606
25°	2048	1917	1512	1188	1077	933
35°	1494	1572	1121	878	787	927
45°	921	984	716	595	536	720
55°	593	573	431	362	360	530
65°	358	327	241	215	229	357
75°	190	160	113	111	119	202
85°	59	44	28	28	32	64
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	1890.5	1890.5	1890.5	1890.5	1890.5	1890.5	1890.5	1890.5	1890.5	1890.5	1890.5
1°	1910.8	1918.9	1912.8	1912.8	1906.7	1904.7	1908.8	1902.7	1900.7	1896.6	1888.5
2°	1945.2	1939.1	1937.1	1939.1	1927.0	1927.0	1920.9	1908.8	1902.7	1894.6	1872.3
3°	1969.5	1965.4	1961.4	1959.4	1947.2	1937.1	1929.0	1914.8	1902.7	1892.6	1860.2
4°	1991.8	1991.8	1987.7	1979.6	1967.5	1955.3	1939.1	1922.9	1904.7	1886.5	1844.0
5°	2018.1	2020.1	2001.9	1999.8	1985.7	1967.5	1949.2	1927.0	1904.7	1880.4	1833.9
6°	2044.4	2034.3	2030.2	2016.0	1995.8	1979.6	1957.3	1933.1	1902.7	1874.4	1811.6
7°	2056.5	2054.5	2044.4	2030.2	2012.0	1985.7	1963.4	1931.0	1898.6	1870.3	1795.4
8°	2076.8	2076.8	2064.6	2046.4	2020.1	1995.8	1967.5	1929.0	1896.6	1860.2	1773.1
9°	2090.9	2090.9	2074.7	2058.5	2034.3	2001.9	1969.5	1927.0	1886.5	1844.0	1752.9
10°	2107.1	2103.1	2090.9	2066.6	2046.4	2010.0	1969.5	1925.0	1880.4	1831.8	1732.7
11°	2119.3	2113.2	2099.0	2080.8	2048.4	2012.0	1969.5	1925.0	1872.3	1819.7	1712.4
12°	2129.4	2125.3	2107.1	2084.9	2052.5	2016.0	1967.5	1916.9	1858.2	1803.5	1686.1
13°	2141.5	2129.4	2111.2	2090.9	2054.5	2012.0	1959.4	1904.7	1848.0	1789.3	1663.8
14°	2139.5	2137.5	2121.3	2093.0	2052.5	2007.9	1957.3	1892.6	1833.9	1773.1	1637.5
15°	2141.5	2139.5	2121.3	2095.0	2050.5	2001.9	1951.3	1884.5	1819.7	1754.9	1611.2
16°	2141.5	2141.5	2117.2	2090.9	2048.4	1995.8	1939.1	1876.4	1805.5	1740.8	1588.9
17°	2141.5	2141.5	2121.3	2084.9	2042.4	1991.8	1927.0	1860.2	1789.3	1720.5	1556.6
18°	2145.6	2139.5	2113.2	2082.8	2034.3	1981.6	1918.9	1848.0	1775.2	1698.3	1534.3
19°	2135.5	2131.4	2109.2	2070.7	2028.2	1969.5	1906.7	1833.9	1761.0	1680.0	1508.0
20°	2129.4	2135.5	2105.1	2064.6	2016.0	1959.4	1894.6	1819.7	1740.8	1659.8	1481.7
21°	2131.4	2129.4	2097.0	2054.5	2007.9	1945.2	1880.4	1803.5	1718.5	1635.5	1457.4
22.5°	2127.4	2121.3	2086.9	2040.3	1983.7	1927.0	1856.1	1777.2	1686.1	1593.0	1410.8
23°	2119.3	2113.2	2086.9	2036.3	1975.6	1918.9	1844.0	1761.0	1674.0	1578.8	1398.7
24°	2086.9	2084.9	2072.7	2022.1	1965.4	1902.7	1829.8	1734.7	1637.5	1538.3	1368.3
25°	2048.4	2052.5	2046.4	2014.0	1949.2	1884.5	1807.6	1702.3	1603.1	1512.0	1331.9
26°	2012.0	2012.0	2007.9	1995.8	1933.1	1864.2	1775.2	1663.8	1568.7	1473.6	1293.4
27°	1965.4	1973.5	1965.4	1959.4	1916.9	1842.0	1740.8	1637.5	1530.2	1437.1	1261.0
28°	1929.0	1929.0	1925.0	1914.8	1900.7	1815.7	1704.3	1599.1	1493.8	1404.8	1224.6
29°	1864.2	1876.4	1878.4	1880.4	1878.4	1781.2	1669.9	1556.6	1455.4	1358.2	1190.2
30°	1805.5	1817.7	1825.8	1839.9	1842.0	1750.9	1629.4	1522.2	1418.9	1323.8	1159.8
32.5°	1645.6	1667.9	1690.2	1714.4	1726.6	1659.8	1530.2	1412.8	1307.6	1222.6	1066.7
35°	1493.8	1499.9	1524.2	1580.9	1593.0	1550.5	1412.8	1301.5	1202.3	1121.4	979.7
37.5°	1321.8	1333.9	1368.3	1433.1	1437.1	1402.7	1307.6	1178.0	1084.9	1014.1	890.6
40°	1180.1	1186.1	1210.4	1265.1	1283.3	1261.0	1178.0	1060.6	975.6	906.8	805.6
42.5°	1038.4	1046.5	1076.8	1119.3	1145.7	1119.3	1046.5	945.3	862.3	811.7	724.6
45°	921.0	931.1	959.4	983.7	991.8	975.6	910.9	827.9	769.2	716.5	649.7
47.5°	819.8	829.9	850.1	860.3	870.4	854.2	803.6	734.8	676.1	633.6	572.8
50°	742.9	740.8	755.0	759.1	759.1	740.8	698.3	641.7	593.1	558.7	508.1
52.5°	655.8	659.9	670.0	665.9	663.9	647.7	611.3	562.7	522.2	491.9	445.3
55°	593.1	587.0	593.1	589.0	580.9	564.7	532.3	491.9	457.5	431.1	388.6
57.5°	524.3	524.3	526.3	518.2	508.1	489.8	461.5	429.1	398.8	376.5	342.1
60°	461.5	465.6	463.5	455.4	445.3	425.1	402.8	370.4	344.1	327.9	295.5



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**CANDELA DISTRIBUTION (continued):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
67.5°	<i>313.7</i>	313.7	307.7	301.6	287.4	269.2	253.0	232.8	218.6	204.4	184.2
70°	<i>267.2</i>	271.2	263.1	253.0	242.9	230.8	212.5	196.3	182.2	172.1	155.9
72.5°	<i>230.8</i>	228.7	222.7	212.5	204.4	190.3	174.1	161.9	149.8	141.7	129.5
75°	<i>190.3</i>	190.3	184.2	176.1	166.0	153.8	141.7	131.6	121.4	113.4	107.3
77.5°	<i>151.8</i>	153.8	147.8	141.7	133.6	121.4	111.3	103.2	95.1	89.1	85.0
80°	<i>117.4</i>	119.4	113.4	109.3	99.2	93.1	85.0	76.9	70.8	66.8	64.8
82.5°	<i>89.1</i>	87.0	83.0	81.0	72.9	66.8	58.7	54.7	50.6	46.6	46.6
85°	<i>58.7</i>	56.7	54.7	52.6	46.6	40.5	38.5	34.4	30.4	28.3	28.3
87.5°	<i>30.4</i>	30.4	28.3	26.3	24.3	20.2	18.2	14.2	12.1	12.1	12.1
90°	<i>0.0</i>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	1890.5	1890.5	1890.5
1°	1882.4	1874.4	1872.3
2°	1858.2	1846.0	1848.0
3°	1835.9	1821.7	1807.6
4°	1807.6	1785.3	1785.3
5°	1783.3	1761.0	1754.9
6°	1761.0	1724.6	1716.5
7°	1740.8	1696.2	1682.1
8°	1706.3	1661.8	1647.6
9°	1682.1	1633.5	1619.3
10°	1649.7	1601.1	1574.8
11°	1623.4	1568.7	1548.5
12°	1595.0	1528.2	1508.0
13°	1562.6	1493.8	1481.7
14°	1532.3	1465.5	1443.2
15°	1499.9	1431.1	1404.8
16°	1465.5	1396.7	1372.4
17°	1437.1	1360.2	1342.0
18°	1408.8	1327.8	1299.5
19°	1374.4	1297.5	1265.1
20°	1344.0	1259.0	1232.7
21°	1311.6	1230.7	1202.3
22.5°	1267.1	1176.0	1149.7
23°	1252.9	1159.8	1131.5
24°	1220.6	1127.4	1103.2
25°	1188.2	1103.2	1076.8
26°	1159.8	1066.7	1042.4
27°	1131.5	1038.4	1012.1
28°	1101.1	1008.0	987.8
29°	1070.8	975.6	955.4
30°	1038.4	953.4	919.0
32.5°	957.4	880.5	852.2
35°	878.5	811.7	787.4
37.5°	801.6	746.9	724.6
40°	734.8	686.2	663.9
42.5°	665.9	621.4	599.1
45°	595.1	558.7	536.4
47.5°	530.3	500.0	475.7
50°	471.6	441.3	429.1
52.5°	414.9	394.7	400.8
55°	362.3	362.3	360.3
57.5°	311.7	325.9	327.9
60°	273.3	291.5	295.5





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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
67.5°	188.2	198.4	202.4
70°	161.9	170.0	172.1
72.5°	137.6	143.7	147.8
75°	111.3	119.4	119.4
77.5°	91.1	95.1	97.2
80°	68.8	70.8	72.9
82.5°	48.6	50.6	52.6
85°	28.3	30.4	32.4
87.5°	12.1	12.1	12.1
90°	0.0	0.0	0.0

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



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Scaled Data Report





— 0°-180°    - - 45°-225°    - - - - 90°-270°

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Scaled Data Report



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Scaled Data Report





62.5°	408.9	412.9	406.9	396.7	386.6	368.4	348.2	319.8	299.6	283.4	255.0
65°	358.3	360.3	356.2	346.1	336.0	317.8	297.5	273.3	257.1	240.9	216.6

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Scaled Data Report





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Scaled Data Report



62.5°	244.9	259.1	261.1
65°	214.6	226.7	228.7

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Scaled Data Report



(END OF REPORT)