

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: P838661

Luminaire Tested: HCSQ650D010-HM64560830-61SQLWW

Issue Date: 5/21/2024

**Test Information**

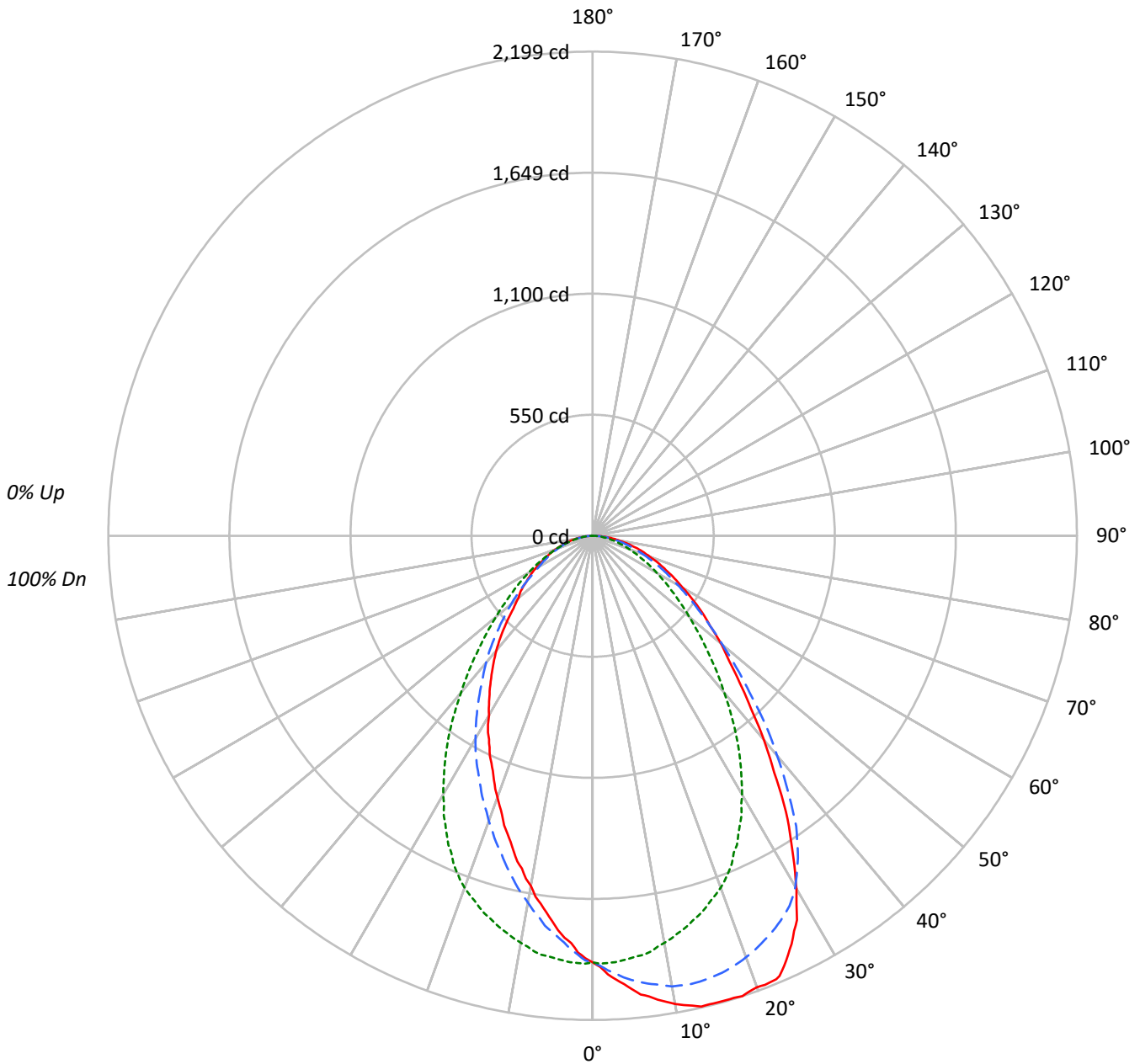
Test Method: LM-79-2019  
Report Number: P838661  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-166-5)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ650D010-HM64560830-61SQLWW  
Description: HALO COMMERCIAL 6" SQUARE, NEW CONSTRUCTION FRAME, LENSED WALLWASH TRIM  
Light Source: (1) HIGH LUMEN LED 80CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3663.6 lumens  
Efficiency: N/A  
Efficacy: 73.7 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): 49.7  
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°	187686	187686	187686	187686	187686
5°	201113	196976	187392	177716	174886
10°	212420	204457	184670	166304	158749
15°	220103	208248	180367	154160	144382
20°	224969	209995	175350	142000	130237
25°	224384	209975	165626	130150	117953
30°	206978	205933	151752	119032	105341
35°	181049	190486	135908	106472	95426
40°	152930	164868	117521	95226	86045
45°	129303	138112	100601	83558	75310
50°	114737	115829	86282	72839	66283
55°	102656	99143	74619	62712	62357
60°	91625	86413	65100	54250	58687
65°	84172	76791	56573	50407	53731
70°	77552	68744	49936	46990	49936
75°	72988	61329	43493	42707	45814
80°	67113	54952	38215	39331	41674
85°	66914	49574	32234	32234	36902

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 40°  
 Vertical Angle: 45°  
 Luminance: 139249 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	182.7	5.0
10°-20°	509.3	13.9
20°-30°	726.5	19.8
30°-40°	748.7	20.4
40°-50°	602.7	16.5
50°-60°	426.2	11.6
60°-70°	276.2	7.5
70°-80°	148.4	4.1
80°-90°	42.8	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°	1418.6	38.7
0°-40°	2167.3	59.2
0°-60°	3196.2	87.2
0°-90°	3663.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3663.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1937	1937	1937	1937	1937	
5°	2068	2026	1927	1828	1798	200
15°	2195	2076	1798	1537	1440	621
25°	2099	1964	1550	1218	1104	956
35°	1531	1611	1149	900	807	950
45°	944	1008	734	610	550	737
55°	608	587	442	371	369	544
65°	367	335	247	220	234	366
75°	195	164	116	114	122	207
85°	60	45	29	29	33	66
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°	1937.4	1937.4	1937.4	1937.4	1937.4	1937.4	1937.4	1937.4	1937.4	1937.4	1937.4
1°	1958.2	1966.5	1960.2	1960.2	1954.0	1951.9	1956.1	1949.9	1947.8	1943.6	1935.3
2°	1993.4	1987.2	1985.1	1987.2	1974.8	1974.8	1968.5	1956.1	1949.9	1941.6	1918.8
3°	2018.3	2014.2	2010.0	2007.9	1995.5	1985.1	1976.8	1962.3	1949.9	1939.5	1906.3
4°	2041.1	2041.1	2037.0	2028.7	2016.2	2003.8	1987.2	1970.6	1951.9	1933.3	1889.7
5°	2068.1	2070.2	2051.5	2049.4	2034.9	2016.2	1997.6	1974.8	1951.9	1927.0	1879.3
6°	2095.1	2084.7	2080.5	2066.0	2045.3	2028.7	2005.9	1981.0	1949.9	1920.8	1856.5
7°	2107.5	2105.4	2095.1	2080.5	2061.9	2034.9	2012.1	1978.9	1945.7	1916.7	1839.9
8°	2128.3	2128.3	2115.8	2097.1	2070.2	2045.3	2016.2	1976.8	1943.6	1906.3	1817.1
9°	2142.8	2142.8	2126.2	2109.6	2084.7	2051.5	2018.3	1974.8	1933.3	1889.7	1796.4
10°	2159.4	2155.2	2142.8	2117.9	2097.1	2059.8	2018.3	1972.7	1927.0	1877.3	1775.6
11°	2171.8	2165.6	2151.1	2132.4	2099.2	2061.9	2018.3	1972.7	1918.8	1864.8	1754.9
12°	2182.2	2178.0	2159.4	2136.6	2103.4	2066.0	2016.2	1964.4	1904.2	1848.2	1727.9
13°	2194.6	2182.2	2163.5	2142.8	2105.4	2061.9	2007.9	1951.9	1893.9	1833.7	1705.1
14°	2192.6	2190.5	2173.9	2144.9	2103.4	2057.7	2005.9	1939.5	1879.3	1817.1	1678.1
15°	2194.6	2192.6	2173.9	2146.9	2101.3	2051.5	1999.7	1931.2	1864.8	1798.4	1651.2
16°	2194.6	2194.6	2169.7	2142.8	2099.2	2045.3	1987.2	1922.9	1850.3	1783.9	1628.3
17°	2194.6	2194.6	2173.9	2136.6	2093.0	2041.1	1974.8	1906.3	1833.7	1763.2	1595.2
18°	2198.8	2192.6	2165.6	2134.5	2084.7	2030.8	1966.5	1893.9	1819.2	1740.4	1572.3
19°	2188.4	2184.3	2161.4	2122.0	2078.5	2018.3	1954.0	1879.3	1804.7	1721.7	1545.4
20°	2182.2	2188.4	2157.3	2115.8	2066.0	2007.9	1941.6	1864.8	1783.9	1700.9	1518.4
21°	2184.3	2182.2	2149.0	2105.4	2057.7	1993.4	1927.0	1848.2	1761.1	1676.1	1493.5
22.5°	2180.1	2173.9	2138.6	2090.9	2032.8	1974.8	1902.2	1821.3	1727.9	1632.5	1445.8
23°	2171.8	2165.6	2138.6	2086.8	2024.5	1966.5	1889.7	1804.7	1715.5	1618.0	1433.4
24°	2138.6	2136.6	2124.1	2072.3	2014.2	1949.9	1875.2	1777.7	1678.1	1576.5	1402.2
25°	2099.2	2103.4	2097.1	2064.0	1997.6	1931.2	1852.4	1744.5	1642.9	1549.5	1364.9
26°	2061.9	2061.9	2057.7	2045.3	1981.0	1910.5	1819.2	1705.1	1607.6	1510.1	1325.5
27°	2014.2	2022.5	2014.2	2007.9	1964.4	1887.6	1783.9	1678.1	1568.2	1472.8	1292.3
28°	1976.8	1976.8	1972.7	1962.3	1947.8	1860.7	1746.6	1638.7	1530.9	1439.6	1255.0
29°	1910.5	1922.9	1925.0	1927.0	1925.0	1825.4	1711.3	1595.2	1491.4	1391.9	1219.7
30°	1850.3	1862.7	1871.0	1885.6	1887.6	1794.3	1669.8	1559.9	1454.1	1356.6	1188.6
32.5°	1686.4	1709.2	1732.1	1757.0	1769.4	1700.9	1568.2	1447.9	1340.0	1252.9	1093.2
35°	1530.9	1537.1	1562.0	1620.0	1632.5	1588.9	1447.9	1333.8	1232.1	1149.2	1004.0
37.5°	1354.5	1367.0	1402.2	1468.6	1472.8	1437.5	1340.0	1207.3	1111.8	1039.2	912.7
40°	1209.3	1215.6	1240.4	1296.5	1315.1	1292.3	1207.3	1086.9	999.8	929.3	825.6
42.5°	1064.1	1072.4	1103.5	1147.1	1174.1	1147.1	1072.4	968.7	883.7	831.8	742.6
45°	943.8	954.2	983.2	1008.1	1016.4	999.8	933.4	848.4	788.2	734.3	665.9
47.5°	840.1	850.5	871.2	881.6	892.0	875.4	823.5	753.0	692.8	649.3	587.0
50°	761.3	759.2	773.7	777.9	777.9	759.2	715.6	657.6	607.8	572.5	520.7
52.5°	672.1	676.2	686.6	682.5	680.4	663.8	626.4	576.7	535.2	504.1	456.4
55°	607.8	601.6	607.8	603.6	595.3	578.7	545.5	504.1	468.8	441.8	398.3
57.5°	537.3	537.3	539.3	531.0	520.7	502.0	472.9	439.8	408.6	385.8	350.6
60°	472.9	477.1	475.0	466.7	456.4	435.6	412.8	379.6	352.6	336.0	302.9



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**CANDELA DISTRIBUTION (continued):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
67.5°	321.5	321.5	315.3	309.1	294.6	275.9	259.3	238.5	224.0	209.5	188.8
70°	273.8	278.0	269.7	259.3	248.9	236.5	217.8	201.2	186.7	176.3	159.7
72.5°	236.5	234.4	228.2	217.8	209.5	195.0	178.4	165.9	153.5	145.2	132.8
75°	195.0	195.0	188.8	180.5	170.1	157.6	145.2	134.8	124.5	116.2	109.9
77.5°	155.6	157.6	151.4	145.2	136.9	124.5	114.1	105.8	97.5	91.3	87.1
80°	120.3	122.4	116.2	112.0	101.6	95.4	87.1	78.8	72.6	68.5	66.4
82.5°	91.3	89.2	85.0	83.0	74.7	68.5	60.2	56.0	51.9	47.7	47.7
85°	60.2	58.1	56.0	53.9	47.7	41.5	39.4	35.3	31.1	29.0	29.0
87.5°	31.1	31.1	29.0	27.0	24.9	20.7	18.7	14.5	12.4	12.4	12.4
90°	0.0	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°	1937.4	1937.4	1937.4
1°	1929.1	1920.8	1918.8
2°	1904.2	1891.8	1893.9
3°	1881.4	1866.9	1852.4
4°	1852.4	1829.6	1829.6
5°	1827.5	1804.7	1798.4
6°	1804.7	1767.3	1759.0
7°	1783.9	1738.3	1723.8
8°	1748.7	1703.0	1688.5
9°	1723.8	1674.0	1659.5
10°	1690.6	1640.8	1613.8
11°	1663.6	1607.6	1586.9
12°	1634.6	1566.1	1545.4
13°	1601.4	1530.9	1518.4
14°	1570.3	1501.8	1479.0
15°	1537.1	1466.5	1439.6
16°	1501.8	1431.3	1406.4
17°	1472.8	1393.9	1375.3
18°	1443.7	1360.8	1331.7
19°	1408.5	1329.6	1296.5
20°	1377.4	1290.2	1263.3
21°	1344.2	1261.2	1232.1
22.5°	1298.5	1205.2	1178.2
23°	1284.0	1188.6	1159.5
24°	1250.8	1155.4	1130.5
25°	1217.6	1130.5	1103.5
26°	1188.6	1093.2	1068.3
27°	1159.5	1064.1	1037.2
28°	1128.4	1033.0	1012.3
29°	1097.3	999.8	979.1
30°	1064.1	977.0	941.7
32.5°	981.2	902.3	873.3
35°	900.3	831.8	806.9
37.5°	821.4	765.4	742.6
40°	753.0	703.2	680.4
42.5°	682.5	636.8	614.0
45°	609.9	572.5	549.7
47.5°	543.5	512.4	487.5
50°	483.3	452.2	439.8
52.5°	425.2	404.5	410.7
55°	371.3	371.3	369.2
57.5°	319.4	334.0	336.0
60°	280.0	298.7	302.9





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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
67.5°	192.9	203.3	207.4
70°	165.9	174.2	176.3
72.5°	141.1	147.3	151.4
75°	114.1	122.4	122.4
77.5°	93.3	97.5	99.6
80°	70.5	72.6	74.7
82.5°	49.8	51.9	53.9
85°	29.0	31.1	33.2
87.5°	12.4	12.4	12.4
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



Report Generated By 670245859 / DESKTOP-T8S5UU9

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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°	419.0	423.2	416.9	406.6	396.2	377.5	356.8	327.7	307.0	290.4	261.4
65°	367.2	369.2	365.1	354.7	344.3	325.7	304.9	280.0	263.4	246.8	222.0

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Scaled Data Report



62.5°	251.0	265.5	267.6
65°	219.9	232.3	234.4

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Scaled Data Report



(END OF REPORT)