

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: P838651

Luminaire Tested: HCSQ645D010-HM64560940-61SQLWW

Issue Date: 5/21/2024

**Test Information**

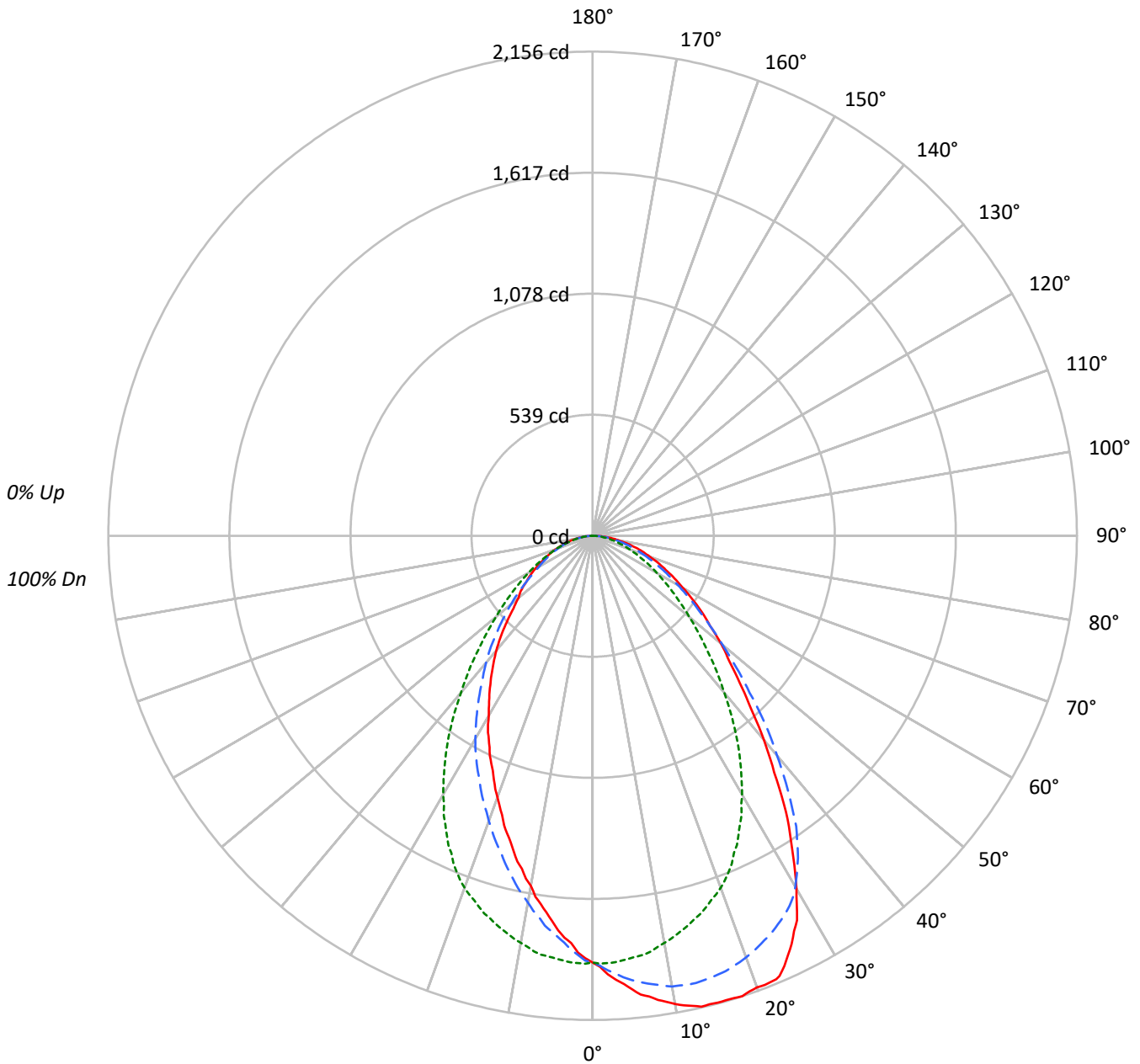
Test Method: LM-79-2019  
Report Number: P838651  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-166-5)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ645D010-HM64560940-61SQLWW  
Description: HALO COMMERCIAL 6" SQUARE, NEW CONSTRUCTION FRAME, LENSED WALLWASH TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3592.8 lumens  
Efficiency: N/A  
Efficacy: 78.3 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	50	30	10	0		
RCR	0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100	100	100	100		
	1	110	106	103	99	108	104	101	98	100	97	95	96	94	92	92	91	89	87	87	87	87	87	87		
	2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75	75	75	75	75	75		
	3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66	66	66	66	66	66		
	4	87	76	69	63	85	75	68	62	73	66	62	71	65	61	68	64	60	58	58	58	58	58	58		
	5	81	69	61	55	79	68	61	55	66	60	55	64	59	54	63	58	53	51	51	51	51	51	51		
	6	75	63	55	49	74	62	55	49	61	54	49	59	53	48	58	52	48	46	46	46	46	46	46		
	7	70	58	50	44	69	57	50	44	56	49	44	54	48	44	53	48	43	42	42	42	42	42	42		
	8	66	53	46	40	64	53	45	40	51	45	40	50	44	40	49	44	39	38	38	38	38	38	38		
	9	62	49	42	37	60	49	42	37	48	41	36	47	41	36	46	40	36	34	34	34	34	34	34		
	10	58	46	39	34	57	45	38	34	44	38	34	44	38	33	43	37	33	32	32	32	32	32	32		

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

	0°	45°	90°	135°	180°
0°	184054	184054	184054	184054	184054
5°	197224	193164	183775	174274	171512
10°	208308	200507	181099	163087	155680
15°	215850	204216	176886	151171	141583
20°	220618	205938	171959	139247	127711
25°	220044	205908	162420	127638	115677
30°	202974	201950	148821	116728	103305
35°	177537	186802	133271	104403	93582
40°	149971	161682	115245	93379	84375
45°	126810	135448	98656	81941	73858
50°	112521	113584	84609	71437	65002
55°	100663	97226	73183	61495	61158
60°	89862	84737	63841	53204	57544
65°	82545	75312	55496	49421	52699
70°	76051	67412	48973	46084	48973
75°	71566	60150	42633	41884	44916
80°	65830	53919	37434	38606	40837
85°	65580	48629	31678	31678	36124

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 40°  
 Vertical Angle: 45°  
 Luminance: 136564 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	179.2	5.0
10°-20°	499.5	13.9
20°-30°	712.4	19.8
30°-40°	734.2	20.4
40°-50°	591.1	16.5
50°-60°	418.0	11.6
60°-70°	270.9	7.5
70°-80°	145.5	4.0
80°-90°	42.0	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°	1391.1	38.7
0°-40°	2125.3	59.2
0°-60°	3134.4	87.2
0°-90°	3592.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3592.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1900	1900	1900	1900	1900	
5°	2028	1986	1890	1792	1764	196
15°	2152	2036	1764	1507	1412	609
25°	2059	1926	1520	1194	1082	937
35°	1501	1580	1127	883	791	932
45°	926	989	720	598	539	723
55°	596	576	433	364	362	533
65°	360	329	242	216	230	359
75°	191	161	114	112	120	203
85°	59	44	28	28	32	65
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°	1899.9	1899.9	1899.9	1899.9	1899.9	1899.9	1899.9	1899.9	1899.9	1899.9	1899.9
1°	1920.3	1928.4	1922.3	1922.3	1916.2	1914.2	1918.3	1912.1	1910.1	1906.0	1897.9
2°	1954.9	1948.8	1946.7	1948.8	1936.6	1936.6	1930.5	1918.3	1912.1	1904.0	1881.6
3°	1979.3	1975.2	1971.1	1969.1	1956.9	1946.7	1938.6	1924.4	1912.1	1902.0	1869.4
4°	2001.7	2001.7	1997.6	1989.4	1977.2	1965.0	1948.8	1932.5	1914.2	1895.9	1853.2
5°	2028.1	2030.1	2011.8	2009.8	1995.5	1977.2	1958.9	1936.6	1914.2	1889.8	1843.0
6°	2054.5	2044.4	2040.3	2026.1	2005.7	1989.4	1967.1	1942.7	1912.1	1883.7	1820.6
7°	2066.7	2064.7	2054.5	2040.3	2022.0	1995.5	1973.2	1940.6	1908.1	1879.6	1804.3
8°	2087.1	2087.1	2074.9	2056.6	2030.1	2005.7	1977.2	1938.6	1906.0	1869.4	1782.0
9°	2101.3	2101.3	2085.1	2068.8	2044.4	2011.8	1979.3	1936.6	1895.9	1853.2	1761.6
10°	2117.6	2113.5	2101.3	2076.9	2056.6	2020.0	1979.3	1934.5	1889.8	1841.0	1741.3
11°	2129.8	2123.7	2109.5	2091.2	2058.6	2022.0	1979.3	1934.5	1881.6	1828.7	1720.9
12°	2140.0	2135.9	2117.6	2095.2	2062.7	2026.1	1977.2	1926.4	1867.4	1812.5	1694.5
13°	2152.2	2140.0	2121.7	2101.3	2064.7	2022.0	1969.1	1914.2	1857.2	1798.2	1672.1
14°	2150.1	2148.1	2131.8	2103.4	2062.7	2017.9	1967.1	1902.0	1843.0	1782.0	1645.7
15°	2152.2	2150.1	2131.8	2105.4	2060.6	2011.8	1961.0	1893.8	1828.7	1763.7	1619.2
16°	2152.2	2152.2	2127.8	2101.3	2058.6	2005.7	1948.8	1885.7	1814.5	1749.4	1596.8
17°	2152.2	2152.2	2131.8	2095.2	2052.5	2001.7	1936.6	1869.4	1798.2	1729.1	1564.3
18°	2156.3	2150.1	2123.7	2093.2	2044.4	1991.5	1928.4	1857.2	1784.0	1706.7	1541.9
19°	2146.1	2142.0	2119.6	2081.0	2038.3	1979.3	1916.2	1843.0	1769.8	1688.4	1515.5
20°	2140.0	2146.1	2115.6	2074.9	2026.1	1969.1	1904.0	1828.7	1749.4	1668.0	1489.0
21°	2142.0	2140.0	2107.4	2064.7	2017.9	1954.9	1889.8	1812.5	1727.0	1643.6	1464.6
22.5°	2137.9	2131.8	2097.3	2050.5	1993.5	1936.6	1865.4	1786.0	1694.5	1600.9	1417.8
23°	2129.8	2123.7	2097.3	2046.4	1985.4	1928.4	1853.2	1769.8	1682.3	1586.7	1405.6
24°	2097.3	2095.2	2083.0	2032.2	1975.2	1912.1	1838.9	1743.3	1645.7	1546.0	1375.1
25°	2058.6	2062.7	2056.6	2024.0	1958.9	1893.8	1816.5	1710.8	1611.1	1519.5	1338.5
26°	2022.0	2022.0	2017.9	2005.7	1942.7	1873.5	1784.0	1672.1	1576.5	1480.9	1299.9
27°	1975.2	1983.3	1975.2	1969.1	1926.4	1851.1	1749.4	1645.7	1537.9	1444.3	1267.3
28°	1938.6	1938.6	1934.5	1924.4	1910.1	1824.7	1712.8	1607.0	1501.2	1411.7	1230.7
29°	1873.5	1885.7	1887.7	1889.8	1887.7	1790.1	1678.2	1564.3	1462.6	1364.9	1196.1
30°	1814.5	1826.7	1834.8	1849.1	1851.1	1759.6	1637.5	1529.7	1426.0	1330.4	1165.6
32.5°	1653.8	1676.2	1698.6	1723.0	1735.2	1668.0	1537.9	1419.9	1314.1	1228.7	1072.0
35°	1501.2	1507.3	1531.8	1588.7	1600.9	1558.2	1419.9	1308.0	1208.3	1126.9	984.6
37.5°	1328.3	1340.5	1375.1	1440.2	1444.3	1409.7	1314.1	1183.9	1090.3	1019.1	895.0
40°	1185.9	1192.0	1216.5	1271.4	1289.7	1267.3	1183.9	1065.9	980.5	911.3	809.6
42.5°	1043.5	1051.7	1082.2	1124.9	1151.4	1124.9	1051.7	950.0	866.6	815.7	728.2
45°	925.6	935.7	964.2	988.6	996.8	980.5	915.4	832.0	773.0	720.1	653.0
47.5°	823.9	834.0	854.4	864.5	874.7	858.4	807.6	738.4	679.4	636.7	575.7
50°	746.6	744.5	758.8	762.8	762.8	744.5	701.8	644.8	596.0	561.4	510.6
52.5°	659.1	663.1	673.3	669.3	667.2	650.9	614.3	565.5	524.8	494.3	447.5
55°	596.0	589.9	596.0	592.0	583.8	567.5	535.0	494.3	459.7	433.3	390.6
57.5°	526.9	526.9	528.9	520.8	510.6	492.3	463.8	431.3	400.7	378.4	343.8
60°	463.8	467.9	465.8	457.7	447.5	427.2	404.8	372.3	345.8	329.5	297.0



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**CANDELA DISTRIBUTION (continued):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
67.5°	<b>315.3</b>	315.3	309.2	303.1	288.9	270.5	254.3	233.9	219.7	205.5	185.1
70°	<b>268.5</b>	272.6	264.4	254.3	244.1	231.9	213.6	197.3	183.1	172.9	156.6
72.5°	<b>231.9</b>	229.9	223.8	213.6	205.5	191.2	174.9	162.7	150.5	142.4	130.2
75°	<b>191.2</b>	191.2	185.1	177.0	166.8	154.6	142.4	132.2	122.1	113.9	107.8
77.5°	<b>152.6</b>	154.6	148.5	142.4	134.3	122.1	111.9	103.7	95.6	89.5	85.4
80°	<b>118.0</b>	120.0	113.9	109.8	99.7	93.6	85.4	77.3	71.2	67.1	65.1
82.5°	<b>89.5</b>	87.5	83.4	81.4	73.2	67.1	59.0	54.9	50.9	46.8	46.8
85°	<b>59.0</b>	57.0	54.9	52.9	46.8	40.7	38.6	34.6	30.5	28.5	28.5
87.5°	<b>30.5</b>	30.5	28.5	26.4	24.4	20.3	18.3	14.2	12.2	12.2	12.2
90°	<b>0.0</b>	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°	1899.9	1899.9	1899.9
1°	1891.8	1883.7	1881.6
2°	1867.4	1855.2	1857.2
3°	1845.0	1830.8	1816.5
4°	1816.5	1794.2	1794.2
5°	1792.1	1769.8	1763.7
6°	1769.8	1733.1	1725.0
7°	1749.4	1704.7	1690.4
8°	1714.8	1670.1	1655.8
9°	1690.4	1641.6	1627.4
10°	1657.9	1609.1	1582.6
11°	1631.4	1576.5	1556.2
12°	1602.9	1535.8	1515.5
13°	1570.4	1501.2	1489.0
14°	1539.9	1472.8	1450.4
15°	1507.3	1438.2	1411.7
16°	1472.8	1403.6	1379.2
17°	1444.3	1367.0	1348.7
18°	1415.8	1334.4	1306.0
19°	1381.2	1303.9	1271.4
20°	1350.7	1265.3	1238.8
21°	1318.2	1236.8	1208.3
22.5°	1273.4	1181.9	1155.4
23°	1259.2	1165.6	1137.1
24°	1226.6	1133.0	1108.6
25°	1194.1	1108.6	1082.2
26°	1165.6	1072.0	1047.6
27°	1137.1	1043.5	1017.1
28°	1106.6	1013.0	992.7
29°	1076.1	980.5	960.1
30°	1043.5	958.1	923.5
32.5°	962.2	884.9	856.4
35°	882.8	815.7	791.3
37.5°	805.5	750.6	728.2
40°	738.4	689.6	667.2
42.5°	669.3	624.5	602.1
45°	598.1	561.4	539.1
47.5°	533.0	502.4	478.0
50°	474.0	443.5	431.3
52.5°	417.0	396.7	402.8
55°	364.1	364.1	362.1
57.5°	313.3	327.5	329.5
60°	274.6	292.9	297.0





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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
67.5°	189.2	199.4	203.4
70°	162.7	170.9	172.9
72.5°	138.3	144.4	148.5
75°	111.9	120.0	120.0
77.5°	91.5	95.6	97.6
80°	69.2	71.2	73.2
82.5°	48.8	50.9	52.9
85°	28.5	30.5	32.5
87.5°	12.2	12.2	12.2
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°	410.9	415.0	408.9	398.7	388.5	370.2	349.9	321.4	301.1	284.8	256.3
65°	360.1	362.1	358.0	347.8	337.7	319.4	299.0	274.6	258.3	242.1	217.7

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Scaled Data Report



62.5°	246.1	260.4	262.4
65°	215.6	227.8	229.9

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Scaled Data Report



(END OF REPORT)