

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: P837611

Luminaire Tested: HCSQ450D010-HM44560840-41SQMB

Issue Date: 5/17/2024

**Test Information**

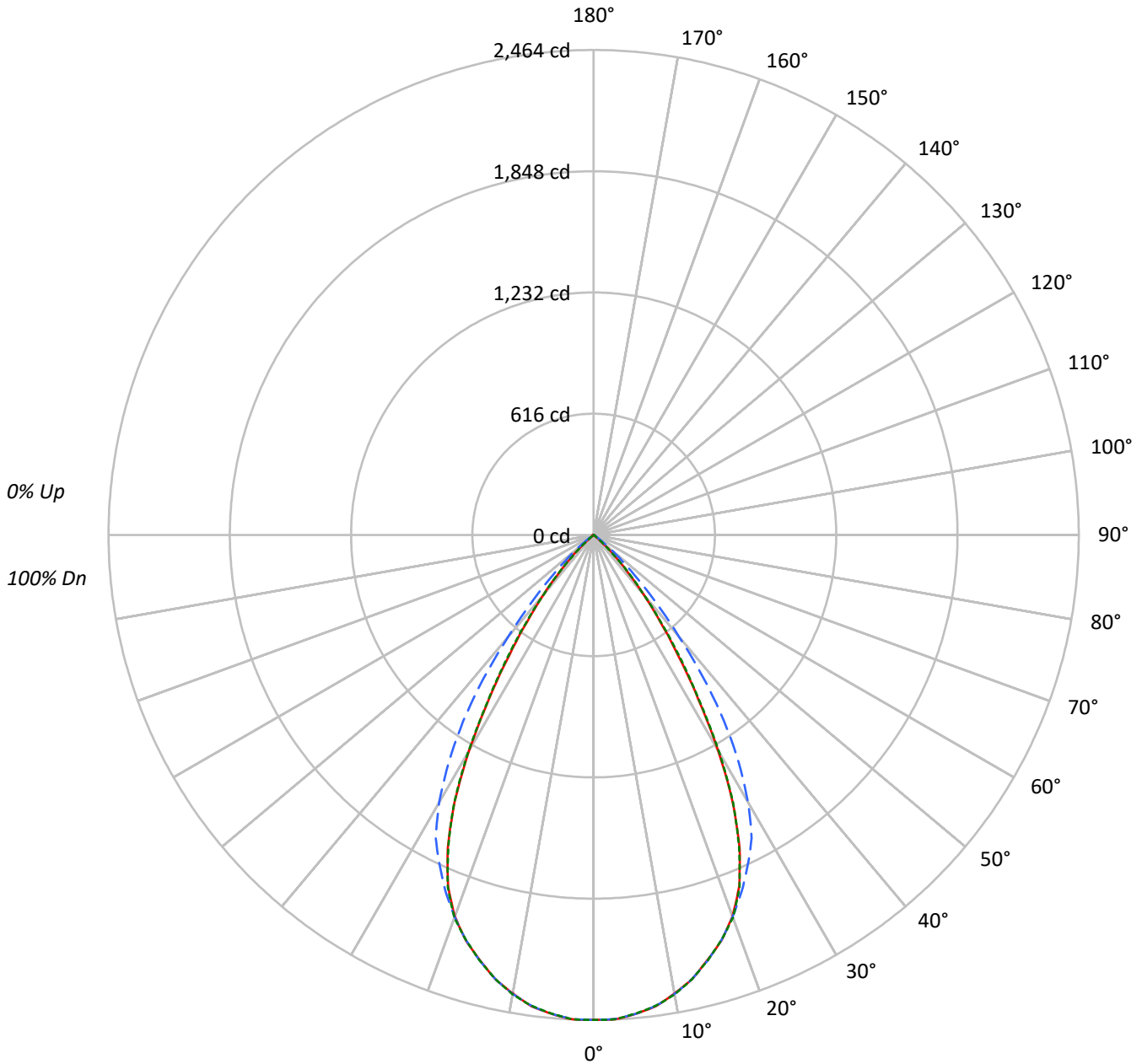
Test Method: LM-79-2019  
Report Number: P837611  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-4)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/17/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ450D010-HM44560840-41SQMB  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, MATTE BLACK TRIM  
Light Source: (1) HIGH LUMEN LED 80CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2461.5 lumens  
Efficiency: N/A  
Efficacy: 49.5 lumens/watt  
Spacing Criteria (0/90/45): 0.96 / 0.96 / 0.99  
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	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	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93								
2	108	103	99	95	105	101	97	94	98	95	92	95	92	90	92	90	88	87								
3	102	96	91	87	100	94	90	86	92	88	84	89	86	83	87	84	82	80								
4	97	89	83	79	95	88	83	79	86	81	78	84	80	77	82	79	76	74								
5	92	83	77	73	90	82	77	73	80	76	72	79	75	71	77	74	71	69								
6	87	78	72	67	85	77	71	67	76	70	67	74	70	66	73	69	66	64								
7	82	73	67	63	81	72	66	62	71	66	62	70	65	62	69	65	61	60								
8	78	69	62	58	77	68	62	58	67	62	58	66	61	58	65	61	57	56								
9	74	65	58	54	73	64	58	54	63	58	54	62	57	54	61	57	54	52								
10	71	61	55	51	70	60	55	51	60	54	51	59	54	51	58	54	50	49								

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

	0°	45°	90°
0°	238711	238711	238711
5°	237619	237619	237405
10°	232723	232950	233176
15°	224205	224435	224435
20°	212556	212794	213268
25°	187400	197907	186673
30°	141405	175411	142680
35°	88662	136511	91642
40°	50003	84982	50003
45°	20989	42909	20674
50°	1718	16533	2065
55°	777	3479	777
60°	891	446	891
65°	527	527	527
70°	651	651	651
75°	861	861	861
80°	0	1283	1283
85°	0	2556	2556

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 42909 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	230.9	9.4
10°-20°	628.3	25.5
20°-30°	815.0	33.1
30°-40°	579.4	23.5
40°-50°	187.9	7.6
50°-60°	13.6	0.6
60°-70°	2.4	0.1
70°-80°	2.4	0.1
80°-90°	1.6	0.1
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°	1674.2	68.0
0°-40°	2253.7	91.6
0°-60°	2455.1	99.7
0°-90°	2461.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2461.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2464	2464	2464	2464	2464	
5°	2444	2446	2444	2444	2441	231
15°	2236	2242	2238	2242	2238	628
25°	1753	1799	1852	1808	1746	785
35°	750	887	1154	896	775	480
45°	153	217	313	222	151	127
55°	5	5	21	5	5	5
65°	2	2	2	2	2	3
75°	2	2	2	2	2	2
85°	0	0	2	2	2	0
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2464.1	2464.1	2464.1	2464.1	2464.1
2.5°	2464.1	2464.1	2461.8	2461.8	2464.1
5°	2443.5	2445.8	2443.5	2443.5	2441.3
7.5°	2416.1	2416.1	2413.8	2413.8	2413.8
10°	2365.8	2368.1	2368.1	2368.1	2370.4
12.5°	2311.0	2311.0	2311.0	2311.0	2311.0
15°	2235.5	2242.4	2237.8	2242.4	2237.8
17.5°	2160.1	2160.1	2157.8	2162.4	2157.8
20°	2061.8	2061.8	2064.1	2068.7	2068.7
22.5°	1931.5	1954.4	1963.5	1958.9	1936.1
25°	1753.2	1798.9	1851.5	1808.1	1746.4
27.5°	1529.2	1616.1	1737.2	1629.8	1533.8
30°	1264.1	1394.4	1568.1	1398.9	1275.5
32.5°	989.8	1140.6	1371.5	1152.1	998.9
35°	749.7	886.9	1154.3	896.0	774.9
37.5°	553.2	678.9	916.6	683.5	569.2
40°	395.4	486.9	672.0	496.0	395.4
42.5°	253.7	345.2	473.2	347.4	265.2
45°	153.2	217.2	313.2	221.7	150.9
47.5°	68.6	123.4	194.3	128.0	68.6
50°	11.4	50.3	109.7	52.6	13.7
52.5°	6.9	9.1	52.6	9.1	6.9
55°	4.6	4.6	20.6	4.6	4.6
57.5°	4.6	4.6	4.6	4.6	4.6
60°	4.6	2.3	2.3	2.3	4.6
62.5°	2.3	2.3	2.3	2.3	2.3
65°	2.3	2.3	2.3	2.3	2.3
67.5°	2.3	2.3	2.3	2.3	2.3
70°	2.3	2.3	2.3	2.3	2.3
72.5°	2.3	2.3	2.3	2.3	2.3
75°	2.3	2.3	2.3	2.3	2.3
77.5°	2.3	2.3	2.3	2.3	2.3
80°	0.0	2.3	2.3	2.3	2.3
82.5°	0.0	2.3	2.3	2.3	2.3
85°	0.0	0.0	2.3	2.3	2.3
87.5°	0.0	0.0	2.3	2.3	2.3
90°	0.0	0.0	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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