

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: P837629

Luminaire Tested: HCSQ450D010-HM44560940-41SQH

Issue Date: 5/17/2024



**Test Information**

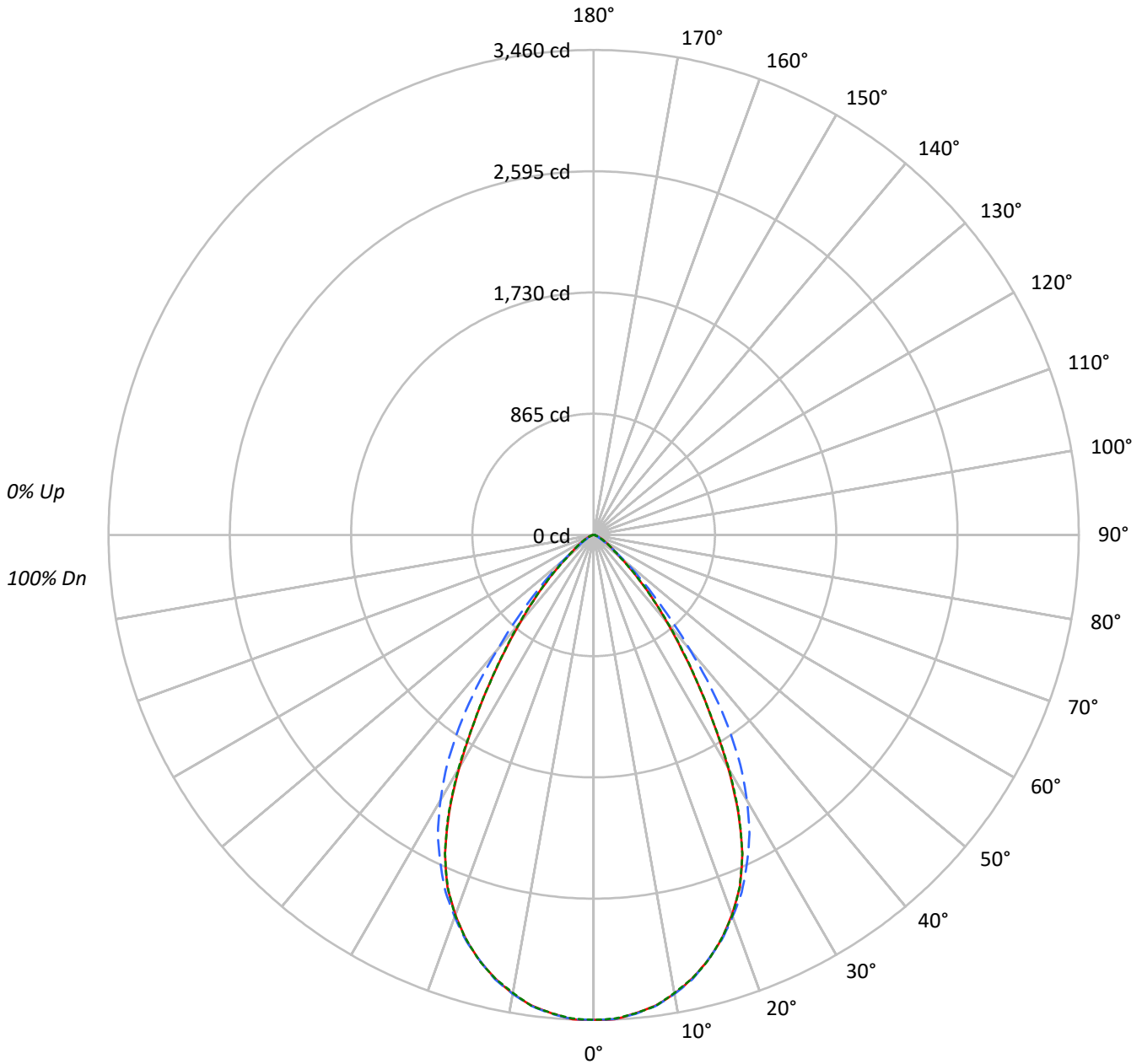
Test Method: LM-79-2019  
Report Number: P837629  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-2)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/17/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ450D010-HM44560940-41SQH  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, HAZE TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3889.5 lumens  
Efficiency: N/A  
Efficacy: 78.3 lumens/watt  
Spacing Criteria (0/90/45): 0.98 / 0.98 / 1.01  
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									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			100																
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	92			92																
2	107	101	97	93	104	100	95	92	96	93	90	93	90	88	90	88	86	85			85																
3	101	93	88	84	98	92	87	83	89	85	82	87	83	80	85	82	79	77			77																
4	95	87	80	76	93	85	80	75	83	78	74	81	77	74	79	76	73	71			71																
5	89	80	74	69	88	79	73	69	77	72	68	76	71	68	74	70	67	65			65																
6	84	75	68	63	83	74	68	63	72	67	63	71	66	62	69	65	62	60			60																
7	80	70	63	59	78	69	63	58	68	62	58	66	61	58	65	61	57	56			56																
8	75	65	59	54	74	65	58	54	63	58	54	62	57	54	61	57	53	52			52																
9	72	61	55	50	70	61	54	50	60	54	50	59	54	50	58	53	50	48			48																
10	68	57	51	47	67	57	51	47	56	51	47	55	50	47	55	50	46	45			45																

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

	0°	45°	90°
0°	335199	335199	335199
5°	333153	333571	333153
10°	326922	327129	326283
15°	315301	315090	315521
20°	297227	298773	297886
25°	268198	276418	268198
30°	214205	244575	215883
35°	152914	197901	153162
40°	103243	134593	104862
45°	65583	79640	65885
50°	37361	42516	36080
55°	24541	20572	24186
60°	16973	12013	16566
65°	11759	8825	11759
70°	8469	6656	8469
75°	5614	5614	5614
80°	3570	4742	4742
85°	4780	4780	4780

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 79640 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	324.2	8.3
10°-20°	881.4	22.7
20°-30°	1154.0	29.7
30°-40°	907.0	23.3
40°-50°	423.7	10.9
50°-60°	131.3	3.4
60°-70°	46.9	1.2
70°-80°	16.5	0.4
80°-90°	4.5	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°	2359.6	60.7
0°-40°	3266.7	84.0
0°-60°	3821.6	98.3
0°-90°	3889.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3889.5	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3460	3460	3460	3460	3460	
5°	3426	3428	3430	3434	3426	324
15°	3144	3144	3142	3144	3146	881
25°	2509	2543	2586	2545	2509	1128
35°	1293	1411	1673	1428	1295	815
45°	479	536	581	526	481	381
55°	145	137	122	135	143	136
65°	51	47	38	45	51	53
75°	15	15	15	15	15	17
85°	4	4	4	4	4	4
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3460.1	3460.1	3460.1	3460.1	3460.1
2.5°	3460.1	3455.9	3458.0	3453.7	3453.7
5°	3425.9	3428.1	3430.2	3434.5	3425.9
7.5°	3387.5	3391.7	3389.6	3389.6	3389.6
10°	3323.4	3325.5	3325.5	3325.5	3316.9
12.5°	3242.1	3246.4	3248.6	3242.1	3242.1
15°	3143.8	3143.8	3141.7	3143.8	3146.0
17.5°	3026.3	3032.7	3032.7	3026.3	3024.1
20°	2883.1	2893.8	2898.1	2889.5	2889.5
22.5°	2722.8	2733.5	2759.1	2737.8	2720.7
25°	2509.1	2543.3	2586.0	2545.4	2509.1
27.5°	2233.4	2308.2	2406.5	2321.0	2239.8
30°	1914.9	2036.8	2186.4	2043.2	1929.9
32.5°	1590.1	1726.9	1947.0	1737.5	1590.1
35°	1293.0	1410.6	1673.4	1427.7	1295.1
37.5°	1028.0	1141.3	1372.1	1154.1	1043.0
40°	816.4	908.3	1064.3	906.2	829.2
42.5°	636.9	703.1	805.7	701.0	634.8
45°	478.7	536.4	581.3	525.8	480.9
47.5°	352.6	391.1	416.8	384.7	344.1
50°	247.9	275.7	282.1	269.3	239.4
52.5°	185.9	185.9	188.1	183.8	181.7
55°	145.3	136.8	121.8	134.6	143.2
57.5°	113.3	104.7	85.5	100.4	111.1
60°	87.6	79.1	62.0	76.9	85.5
62.5°	68.4	59.8	49.2	59.8	66.3
65°	51.3	47.0	38.5	44.9	51.3
67.5°	38.5	34.2	29.9	34.2	38.5
70°	29.9	27.8	23.5	25.6	29.9
72.5°	21.4	19.2	19.2	19.2	21.4
75°	15.0	15.0	15.0	15.0	15.0
77.5°	10.7	10.7	10.7	10.7	10.7
80°	6.4	6.4	8.5	8.5	8.5
82.5°	4.3	4.3	6.4	6.4	6.4
85°	4.3	4.3	4.3	4.3	4.3
87.5°	2.1	2.1	2.1	4.3	4.3
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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