

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: P837631

Luminaire Tested: HCSQ450D010-HM44560940-41SQMB

Issue Date: 5/17/2024

**Test Information**

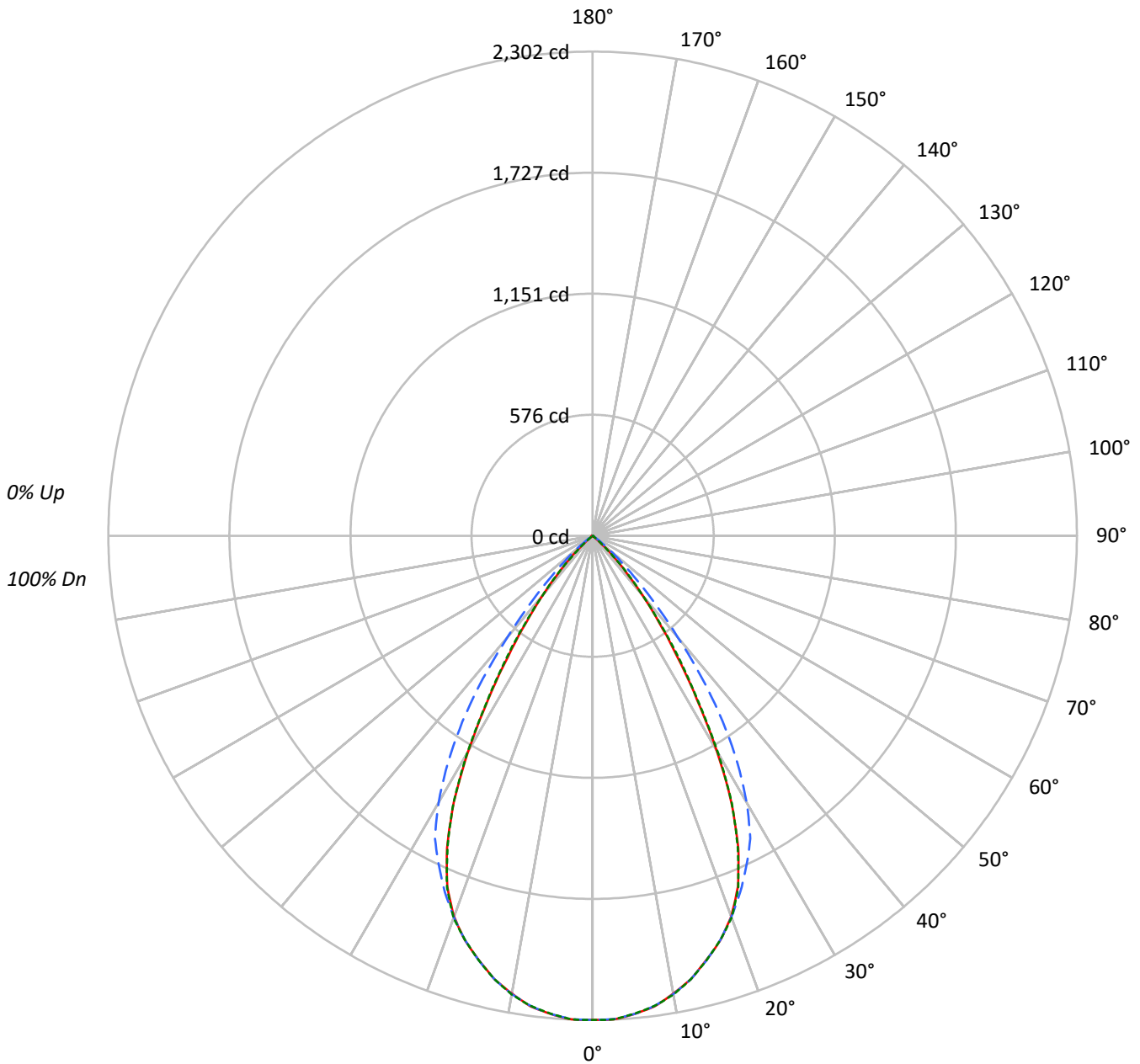
Test Method: LM-79-2019  
Report Number: P837631  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2309-165-4)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 5/17/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO COMMERCIAL  
Catalog Number: HCSQ450D010-HM44560940-41SQMB  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, MATTE BLACK TRIM  
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2299.4 lumens  
Efficiency: N/A  
Efficacy: 46.3 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	100	100	100	100	100		
	1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93	93	93	93	93	93		
	2	108	103	99	95	105	101	97	94	98	95	92	95	92	90	92	90	88	87	87	87	87	87	87		
	3	102	96	91	87	100	94	90	86	92	88	84	89	86	83	87	84	82	80	80	80	80	80	80		
	4	97	89	83	79	95	88	83	79	86	81	78	84	80	77	82	79	76	74	74	74	74	74	74		
	5	92	83	77	73	90	82	77	73	80	76	72	79	75	71	77	74	71	69	69	69	69	69	69		
	6	87	78	72	67	85	77	71	67	76	70	67	74	70	66	73	69	66	64	64	64	64	64	64		
	7	82	73	67	63	81	72	66	62	71	66	62	70	65	62	69	65	61	60	60	60	60	60	60		
	8	78	69	62	58	77	68	62	58	67	62	58	66	61	58	65	61	57	56	56	56	56	56	56		
	9	74	65	58	54	73	64	58	54	63	58	54	62	57	54	61	57	54	52	52	52	52	52	52		
	10	71	61	55	51	70	60	55	51	60	54	51	59	54	51	58	54	50	49	49	49	49	49	49		

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

	0°	45°	90°
0°	223007	223007	223007
5°	221992	221992	221788
10°	217417	217624	217840
15°	209462	209672	209672
20°	198577	198794	199237
25°	175075	184888	174391
30°	132098	163867	133295
35°	82831	127535	85611
40°	46715	79393	46715
45°	19605	40087	19304
50°	1613	15448	1929
55°	726	3243	726
60°	833	407	833
65°	481	481	481
70°	595	595	595
75°	786	786	786
80°	0	1172	1172
85°	0	2334	2334

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 40087 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	215.8	9.4
10°-20°	586.9	25.5
20°-30°	761.4	33.1
30°-40°	541.3	23.5
40°-50°	175.5	7.6
50°-60°	12.7	0.6
60°-70°	2.2	0.1
70°-80°	2.2	0.1
80°-90°	1.5	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°	1564.1	68.0
0°-40°	2105.4	91.6
0°-60°	2293.6	99.7
0°-90°	2299.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2299.4	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2302	2302	2302	2302	2302	
5°	2283	2285	2283	2283	2281	216
15°	2088	2095	2091	2095	2091	586
25°	1638	1681	1730	1689	1632	733
35°	700	829	1078	837	724	448
45°	143	203	293	207	141	119
55°	4	4	19	4	4	5
65°	2	2	2	2	2	2
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°	2302.0	2302.0	2302.0	2302.0	2302.0
2.5°	2302.0	2302.0	2299.9	2299.9	2302.0
5°	2282.8	2284.9	2282.8	2282.8	2280.7
7.5°	2257.2	2257.2	2255.0	2255.0	2255.0
10°	2210.2	2212.3	2212.3	2212.3	2214.5
12.5°	2159.0	2159.0	2159.0	2159.0	2159.0
15°	2088.5	2094.9	2090.6	2094.9	2090.6
17.5°	2018.0	2018.0	2015.9	2020.1	2015.9
20°	1926.2	1926.2	1928.3	1932.6	1932.6
22.5°	1804.5	1825.8	1834.4	1830.1	1808.7
25°	1637.9	1680.6	1729.7	1689.2	1631.5
27.5°	1428.6	1509.8	1623.0	1522.6	1432.9
30°	1180.9	1302.6	1464.9	1306.9	1191.6
32.5°	924.7	1065.6	1281.3	1076.3	933.2
35°	700.4	828.6	1078.4	837.1	723.9
37.5°	516.8	634.2	856.3	638.5	531.7
40°	369.4	454.9	627.8	463.4	369.4
42.5°	237.0	322.5	442.0	324.6	247.7
45°	143.1	202.9	292.6	207.1	140.9
47.5°	64.1	115.3	181.5	119.6	64.1
50°	10.7	47.0	102.5	49.1	12.8
52.5°	6.4	8.5	49.1	8.5	6.4
55°	4.3	4.3	19.2	4.3	4.3
57.5°	4.3	4.3	4.3	4.3	4.3
60°	4.3	2.1	2.1	2.1	4.3
62.5°	2.1	2.1	2.1	2.1	2.1
65°	2.1	2.1	2.1	2.1	2.1
67.5°	2.1	2.1	2.1	2.1	2.1
70°	2.1	2.1	2.1	2.1	2.1
72.5°	2.1	2.1	2.1	2.1	2.1
75°	2.1	2.1	2.1	2.1	2.1
77.5°	2.1	2.1	2.1	2.1	2.1
80°	0.0	2.1	2.1	2.1	2.1
82.5°	0.0	2.1	2.1	2.1	2.1
85°	0.0	0.0	2.1	2.1	2.1
87.5°	0.0	0.0	2.1	2.1	2.1
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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