

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

Report Number: P887010

Luminaire Tested: ML412LSFL9FS1E-TIR4D25NFL-TL4SDMW-1200LM-2700K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887010  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-48)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D25NFL-TL4SDMW-1200LM-2700K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 25D TIR, MATTE WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

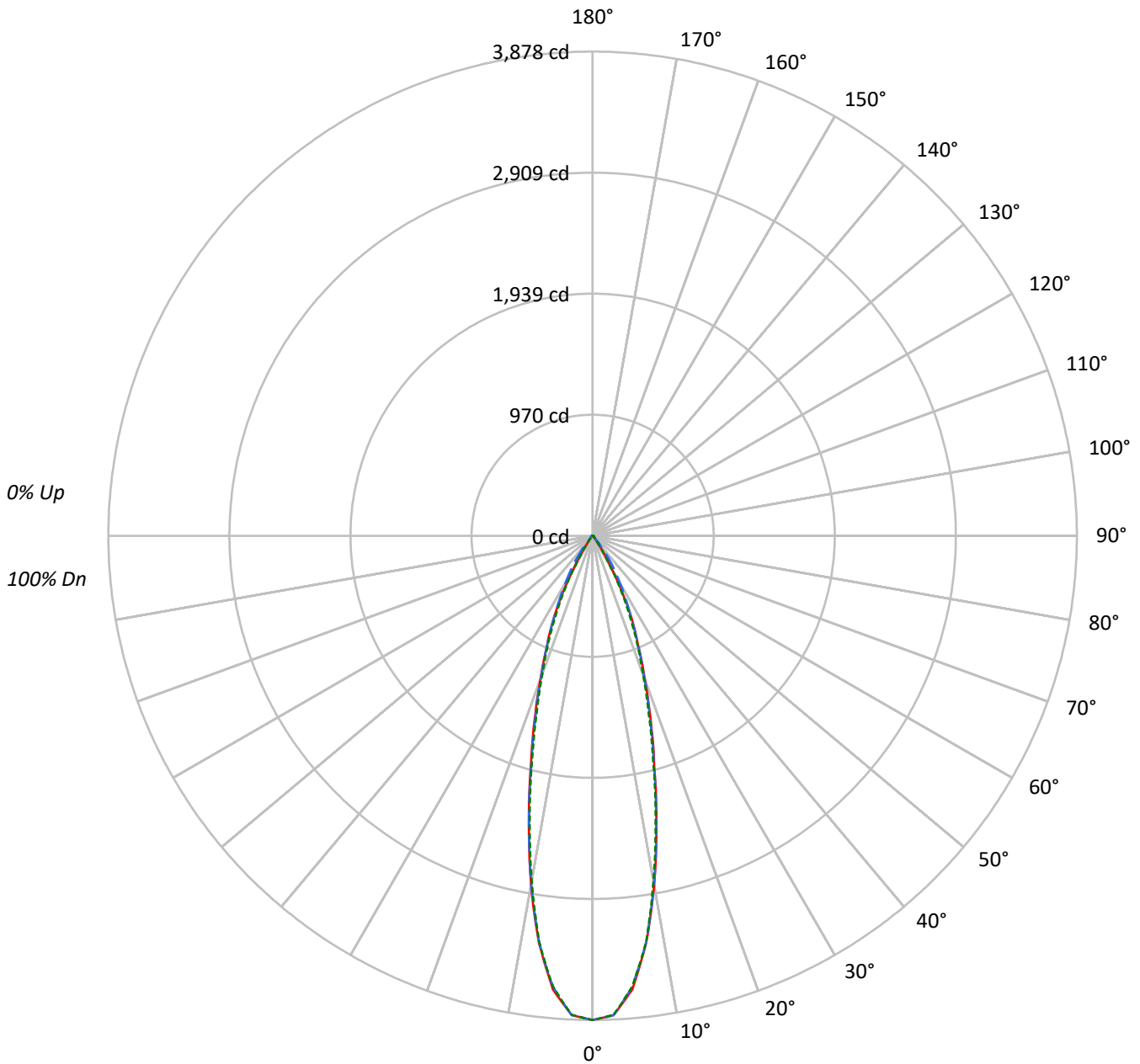
Lumens per Lamp: N/A  
Luminaire Lumens: 1337.0 lumens  
Efficiency: N/A  
Efficacy: 76.0 lumens/watt  
Spacing Criteria (0/90/45): 0.49 / 0.49 / 0.52  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): 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																			
1	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95																			
2	110	105	102	99	108	104	101	98	101	98	96	98	96	94	95	93	92	90																			
3	105	100	96	92	104	99	95	92	96	93	90	94	91	89	92	89	88	86																			
4	101	95	90	87	100	94	90	86	92	88	85	90	87	84	88	86	84	82																			
5	98	91	86	82	96	90	85	82	88	84	81	87	83	81	85	82	80	79																			
6	94	87	82	78	93	86	81	78	85	81	78	83	80	77	82	79	77	75																			
7	91	83	78	75	89	82	78	75	81	77	74	80	77	74	79	76	73	72																			
8	87	80	75	72	86	79	75	71	78	74	71	77	74	71	76	73	71	69																			
9	85	77	72	69	84	76	72	69	75	71	68	75	71	68	74	70	68	67																			
10	82	74	69	66	81	74	69	66	73	69	66	72	68	66	71	68	65	64																			

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

	0°	45°	90°
0°	375702	375702	375702
5°	354674	352826	352729
10°	279311	278623	276065
15°	191519	190115	188210
20°	125845	124196	121309
25°	80574	79398	73744
30°	34666	48649	31198
35°	9579	26846	9106
40°	3414	9864	3288
45°	2603	3562	2466
50°	2411	2713	2261
55°	2365	2533	2365
60°	2325	2519	2325
65°	2292	2521	2292
70°	2266	2549	2266
75°	2246	2620	2246
80°	2232	2789	2232
85°	2223	2223	2223

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 3562 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	321.0	24.0
10°-20°	528.3	39.5
20°-30°	337.8	25.3
30°-40°	98.6	7.4
40°-50°	18.5	1.4
50°-60°	12.8	1.0
60°-70°	10.6	0.8
70°-80°	7.1	0.5
80°-90°	2.3	0.2
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°	1187.1	88.8
0°-40°	1285.7	96.2
0°-60°	1316.9	98.5
0°-90°	1337.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1337.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3878	3878	3878	3878	3878	
5°	3647	3643	3628	3629	3627	322
15°	1910	1903	1896	1883	1877	532
25°	754	750	743	725	690	335
35°	81	129	227	119	77	69
45°	19	20	26	20	18	15
55°	14	14	15	14	14	13
65°	10	11	11	11	10	10
75°	6	7	7	7	6	6
85°	2	2	2	2	2	2
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3878.2	3878.2	3878.2	3878.2	3878.2
2.5°	3843.2	3847.2	3845.2	3834.2	3840.2
5°	3647.2	3643.2	3628.2	3629.2	3627.2
7.5°	3289.3	3288.3	3283.3	3285.3	3279.3
10°	2839.4	2859.4	2832.4	2832.4	2806.4
12.5°	2361.5	2366.5	2354.5	2340.5	2328.5
15°	1909.6	1902.6	1895.6	1882.6	1876.6
17.5°	1543.7	1542.7	1525.7	1509.7	1487.7
20°	1220.7	1217.7	1204.7	1198.7	1176.7
22.5°	957.8	969.8	955.8	932.8	926.8
25°	753.8	749.8	742.8	724.8	689.9
27.5°	522.9	564.9	572.9	539.9	484.9
30°	309.9	375.9	434.9	358.9	278.9
32.5°	174.0	232.0	327.9	216.0	150.0
35°	81.0	129.0	227.0	119.0	77.0
37.5°	37.0	63.0	138.0	62.0	40.0
40°	27.0	32.0	78.0	34.0	26.0
42.5°	22.0	24.0	44.0	24.0	21.0
45°	19.0	20.0	26.0	20.0	18.0
47.5°	16.0	18.0	20.0	17.0	16.0
50°	16.0	16.0	18.0	16.0	15.0
52.5°	15.0	15.0	16.0	15.0	15.0
55°	14.0	14.0	15.0	14.0	14.0
57.5°	13.0	13.0	14.0	13.0	13.0
60°	12.0	13.0	13.0	12.0	12.0
62.5°	11.0	12.0	12.0	12.0	11.0
65°	10.0	11.0	11.0	11.0	10.0
67.5°	9.0	10.0	10.0	10.0	9.0
70°	8.0	9.0	9.0	9.0	8.0
72.5°	7.0	8.0	8.0	8.0	7.0
75°	6.0	7.0	7.0	7.0	6.0
77.5°	5.0	6.0	6.0	6.0	5.0
80°	4.0	5.0	5.0	5.0	4.0
82.5°	3.0	3.0	3.0	4.0	3.0
85°	2.0	2.0	2.0	2.0	2.0
87.5°	1.0	1.0	1.0	1.0	1.0
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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