

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: P887009

Luminaire Tested: ML412LSFL9FS1E-TIR4D25NFL-TL4SDMB-1200LM-5000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887009  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-50)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D25NFL-TL4SDMB-1200LM-5000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 25D TIR, MATTE BLACK TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

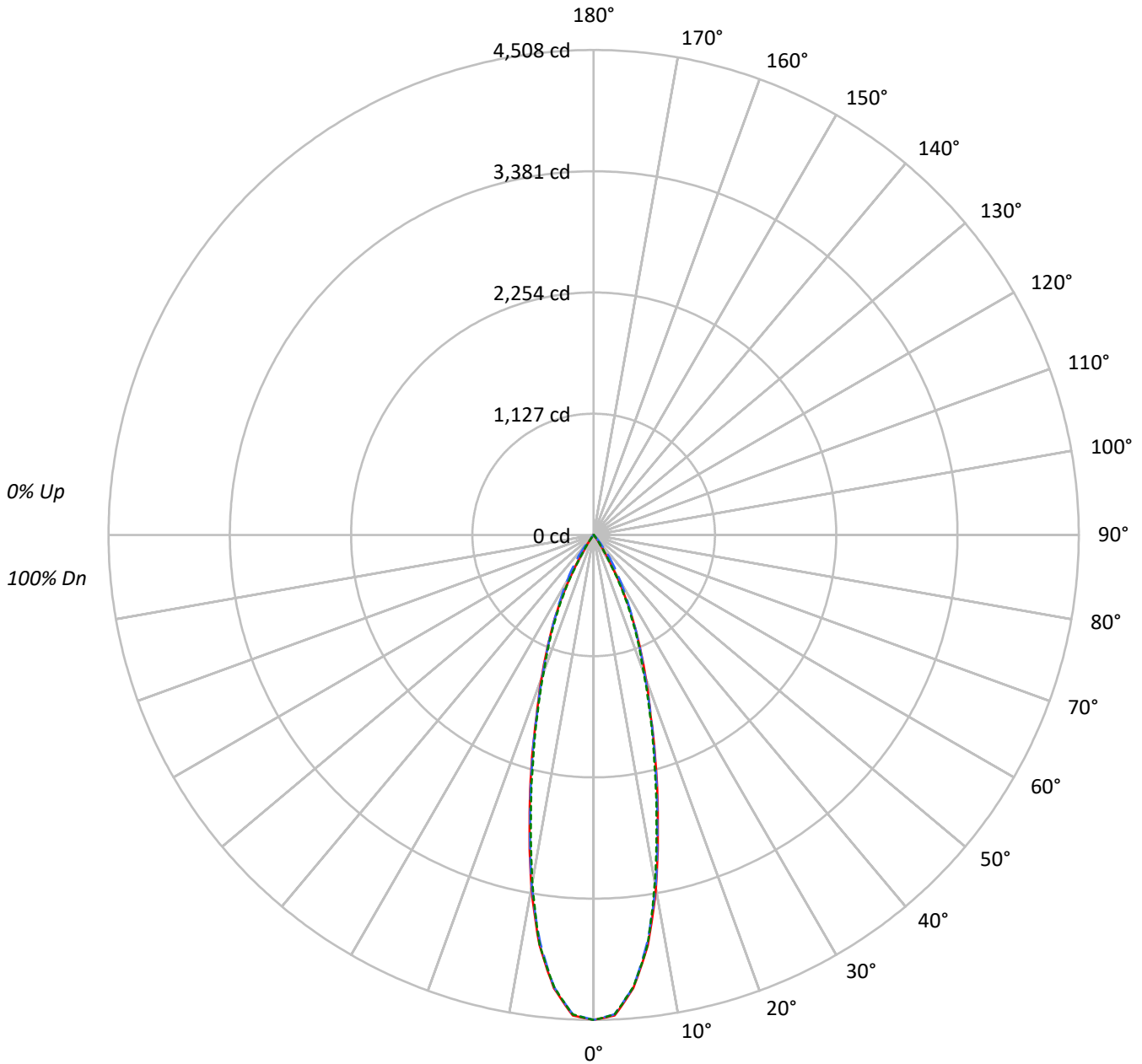
Lumens per Lamp: N/A  
Luminaire Lumens: 1484.3 lumens  
Efficiency: N/A  
Efficacy: 84.3 lumens/watt  
Spacing Criteria (0/90/45): 0.49 / 0.49 / 0.52  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

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					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			
1	115	112	110	108	112	110	108	107	106	105	103	103	101	100	99	98	98	96					96			
2	110	106	103	101	108	105	102	99	102	99	97	99	97	95	96	95	93	92					92			
3	106	101	97	94	105	100	96	93	97	94	92	95	93	91	93	91	89	88					88			
4	103	97	92	89	101	96	92	88	94	90	87	92	89	86	90	88	86	84					84			
5	99	92	88	85	98	92	87	84	90	86	83	88	85	83	87	84	82	81					81			
6	95	89	84	81	94	88	83	80	86	83	80	85	82	79	84	81	79	78					78			
7	92	85	80	77	91	84	80	77	83	79	77	82	79	76	81	78	76	75					75			
8	89	82	77	74	88	81	77	74	80	76	74	79	76	73	79	75	73	72					72			
9	86	79	74	71	85	78	74	71	77	74	71	77	73	71	76	73	70	69					69			
10	83	76	71	68	83	76	71	68	75	71	68	74	71	68	74	70	68	67					67			

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

	0°	45°	90°
0°	436753	436753	436753
5°	411319	410298	410191
10°	327995	325939	322378
15°	224144	221808	218538
20°	145309	143268	139299
25°	90718	90344	85982
30°	38738	55293	34823
35°	9094	30193	8550
40°	1480	9143	1480
45°	480	1754	315
50°	0	347	0
55°	0	0	0
60°	0	0	0
65°	0	0	0
70°	0	0	0
75°	0	0	0
80°	0	0	0
85°	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 1754 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	373.4	25.2
10°-20°	611.9	41.2
20°-30°	386.9	26.1
30°-40°	104.5	7.0
40°-50°	7.4	0.5
50°-60°	0.2	0.0
60°-70°	0.0	0.0
70°-80°	0.0	0.0
80°-90°	0.0	0.0
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°	1372.2	92.4
0°-40°	1476.7	99.5
0°-60°	1484.3	100.0
0°-90°	1484.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1484.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4508	4508	4508	4508	4508	
5°	4230	4225	4219	4223	4218	375
15°	2235	2221	2212	2172	2179	618
25°	849	856	845	836	804	382
35°	77	134	255	120	72	68
45°	4	5	13	5	2	3
55°	0	0	0	0	0	0
65°	0	0	0	0	0	0
75°	0	0	0	0	0	0
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4508.4	4508.4	4508.4	4508.4	4508.4
2.5°	4471.0	4467.5	4459.4	4464.0	4461.7
5°	4229.7	4225.0	4219.2	4222.7	4218.1
7.5°	3849.6	3827.5	3817.0	3820.5	3841.5
10°	3334.3	3301.7	3313.4	3265.6	3277.2
12.5°	2750.2	2736.3	2731.6	2722.3	2693.1
15°	2234.9	2220.9	2211.6	2172.0	2179.0
17.5°	1759.3	1773.3	1758.1	1742.9	1731.3
20°	1409.5	1397.9	1389.7	1371.0	1351.2
22.5°	1108.7	1105.2	1097.1	1076.1	1070.3
25°	848.7	855.7	845.2	835.9	804.4
27.5°	588.8	647.0	654.0	621.4	556.1
30°	346.3	423.2	494.3	409.2	311.3
32.5°	180.7	253.0	367.2	237.8	156.2
35°	76.9	134.1	255.3	120.1	72.3
37.5°	24.5	58.3	144.6	52.5	25.6
40°	11.7	18.7	72.3	19.8	11.7
42.5°	5.8	9.3	35.0	9.3	5.8
45°	3.5	4.7	12.8	4.7	2.3
47.5°	1.2	2.3	4.7	2.3	1.2
50°	0.0	1.2	2.3	1.2	0.0
52.5°	0.0	0.0	1.2	0.0	0.0
55°	0.0	0.0	0.0	0.0	0.0
57.5°	0.0	0.0	0.0	0.0	0.0
60°	0.0	0.0	0.0	0.0	0.0
62.5°	0.0	0.0	0.0	0.0	0.0
65°	0.0	0.0	0.0	0.0	0.0
67.5°	0.0	0.0	0.0	0.0	0.0
70°	0.0	0.0	0.0	0.0	0.0
72.5°	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0
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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