

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: P887041

Luminaire Tested: ML412LSFL9FS1E-TIR4D40FL-TL4SDMW-1200LM-3000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887041  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-51)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D40FL-TL4SDMW-1200LM-3000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 40D TIR, MATTE WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

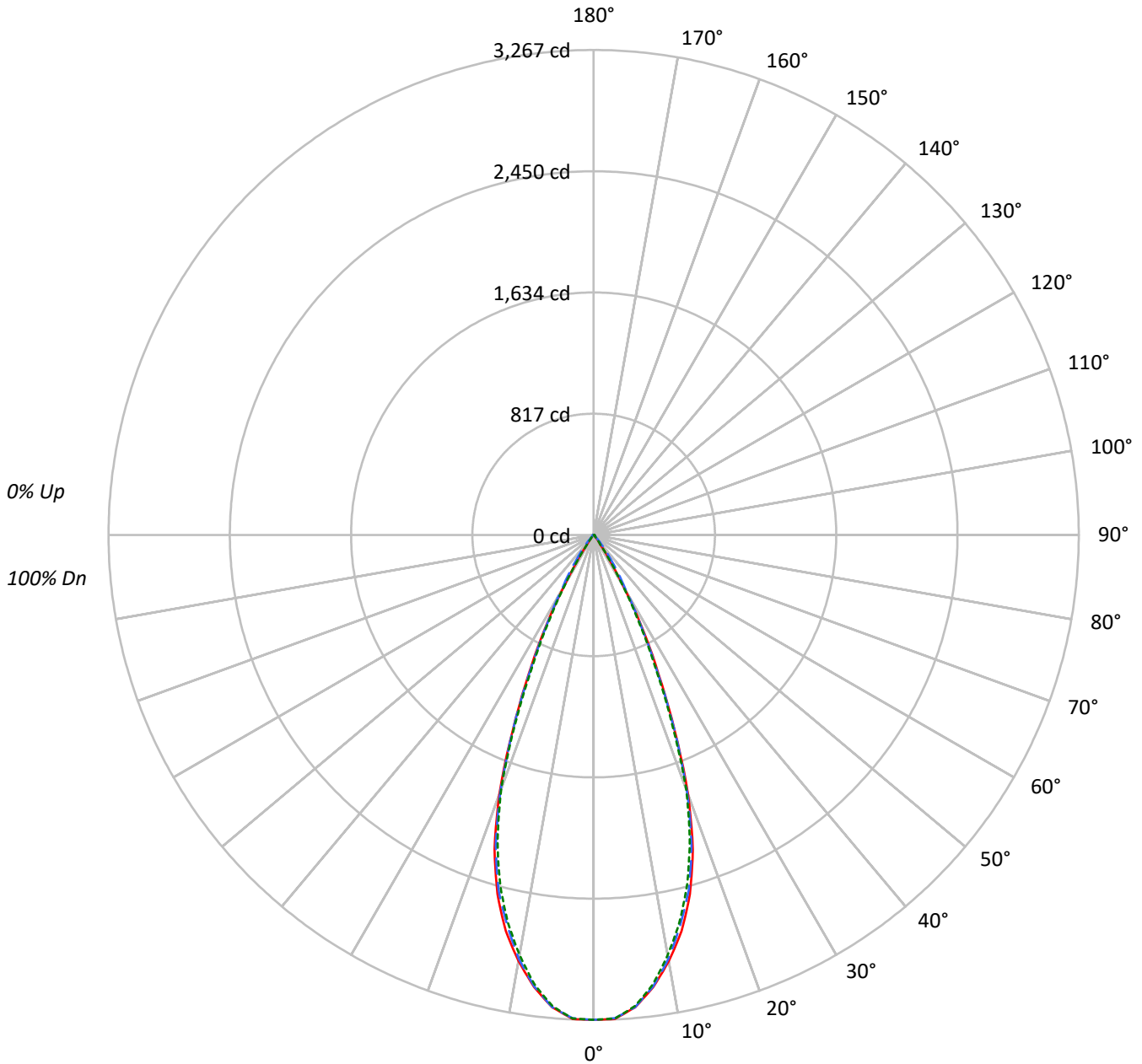
Lumens per Lamp: N/A  
Luminaire Lumens: 1579.3 lumens  
Efficiency: N/A  
Efficacy: 89.7 lumens/watt  
Spacing Criteria (0/90/45): 0.7 / 0.69 / 0.65  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

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	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	103	99	95	92	96	93	90	94	91	89	91	89	87	86								
4	101	95	90	87	100	94	89	86	92	88	85	90	87	84	88	85	83	82								
5	97	90	85	82	96	89	85	81	88	84	81	86	83	80	85	82	79	78								
6	94	86	81	78	92	85	81	77	84	80	77	83	79	76	82	78	76	75								
7	90	82	77	74	89	82	77	74	81	76	73	79	76	73	78	75	73	71								
8	87	79	74	71	86	78	74	70	77	73	70	76	73	70	76	72	70	68								
9	84	76	71	67	83	75	71	67	74	70	67	74	70	67	73	69	67	66								
10	81	73	68	65	80	72	68	65	72	67	64	71	67	64	70	67	64	63								

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

	0°	45°	90°
0°	316453	316453	316453
5°	310660	310553	309853
10°	286689	285273	282636
15°	251193	248195	244273
20°	191639	189299	187711
25°	110300	107991	104026
30°	45394	49991	42619
35°	9378	23511	8893
40°	2732	9118	2997
45°	1699	2959	1699
50°	1552	1869	1552
55°	1740	1740	1571
60°	1589	1802	1589
65°	1650	1650	1650
70°	1756	1756	1756
75°	1535	1909	1535
80°	1729	1729	1729
85°	2334	2334	2334

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 2959 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	295.1	18.7
10°-20°	674.0	42.7
20°-30°	471.4	29.8
30°-40°	101.5	6.4
40°-50°	14.2	0.9
50°-60°	8.9	0.6
60°-70°	7.4	0.5
70°-80°	4.9	0.3
80°-90°	1.9	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°	1440.5	91.2
0°-40°	1542.0	97.6
0°-60°	1565.1	99.1
0°-90°	1579.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1579.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3267	3267	3267	3267	3267	
5°	3195	3197	3194	3185	3186	296
15°	2505	2490	2475	2440	2436	683
25°	1032	1018	1010	994	973	478
35°	79	126	199	114	75	78
45°	12	13	22	13	12	11
55°	10	10	10	10	9	9
65°	7	7	7	7	7	7
75°	4	5	5	5	4	5
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°	3266.6	3266.6	3266.6	3266.6	3266.6
2.5°	3263.6	3261.5	3258.4	3258.4	3260.5
5°	3194.6	3196.6	3193.5	3185.3	3186.3
7.5°	3073.0	3080.2	3066.9	3061.7	3053.5
10°	2914.4	2912.4	2900.0	2882.5	2873.2
12.5°	2734.2	2726.0	2693.0	2676.6	2671.4
15°	2504.6	2490.1	2474.7	2439.7	2435.6
17.5°	2220.3	2213.1	2191.5	2161.6	2151.3
20°	1858.9	1859.9	1836.2	1811.5	1820.8
22.5°	1423.2	1443.8	1416.0	1392.3	1382.0
25°	1031.9	1018.5	1010.3	993.8	973.2
27.5°	715.7	703.4	687.9	679.7	648.8
30°	405.8	450.0	446.9	420.2	381.0
32.5°	192.6	256.4	304.8	230.7	177.1
35°	79.3	125.6	198.8	114.3	75.2
37.5°	38.1	57.7	124.6	56.6	37.1
40°	21.6	30.9	72.1	29.9	23.7
42.5°	15.4	17.5	39.1	17.5	15.4
45°	12.4	13.4	21.6	13.4	12.4
47.5°	11.3	11.3	14.4	11.3	11.3
50°	10.3	11.3	12.4	10.3	10.3
52.5°	10.3	10.3	11.3	10.3	10.3
55°	10.3	10.3	10.3	10.3	9.3
57.5°	9.3	9.3	9.3	9.3	9.3
60°	8.2	9.3	9.3	8.2	8.2
62.5°	8.2	8.2	8.2	8.2	7.2
65°	7.2	7.2	7.2	7.2	7.2
67.5°	6.2	7.2	7.2	7.2	6.2
70°	6.2	6.2	6.2	6.2	6.2
72.5°	5.1	5.1	5.1	5.1	5.1
75°	4.1	5.1	5.1	5.1	4.1
77.5°	4.1	4.1	4.1	4.1	4.1
80°	3.1	3.1	3.1	3.1	3.1
82.5°	2.1	3.1	2.1	2.1	2.1
85°	2.1	2.1	2.1	2.1	2.1
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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