

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: P887046

Luminaire Tested: ML412LSFL9FS1E-TIR4D40FL-TL4SDSL-1200LM-3000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887046  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-52)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D40FL-TL4SDSL-1200LM-3000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 40D TIR, METALLIC SILVER TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

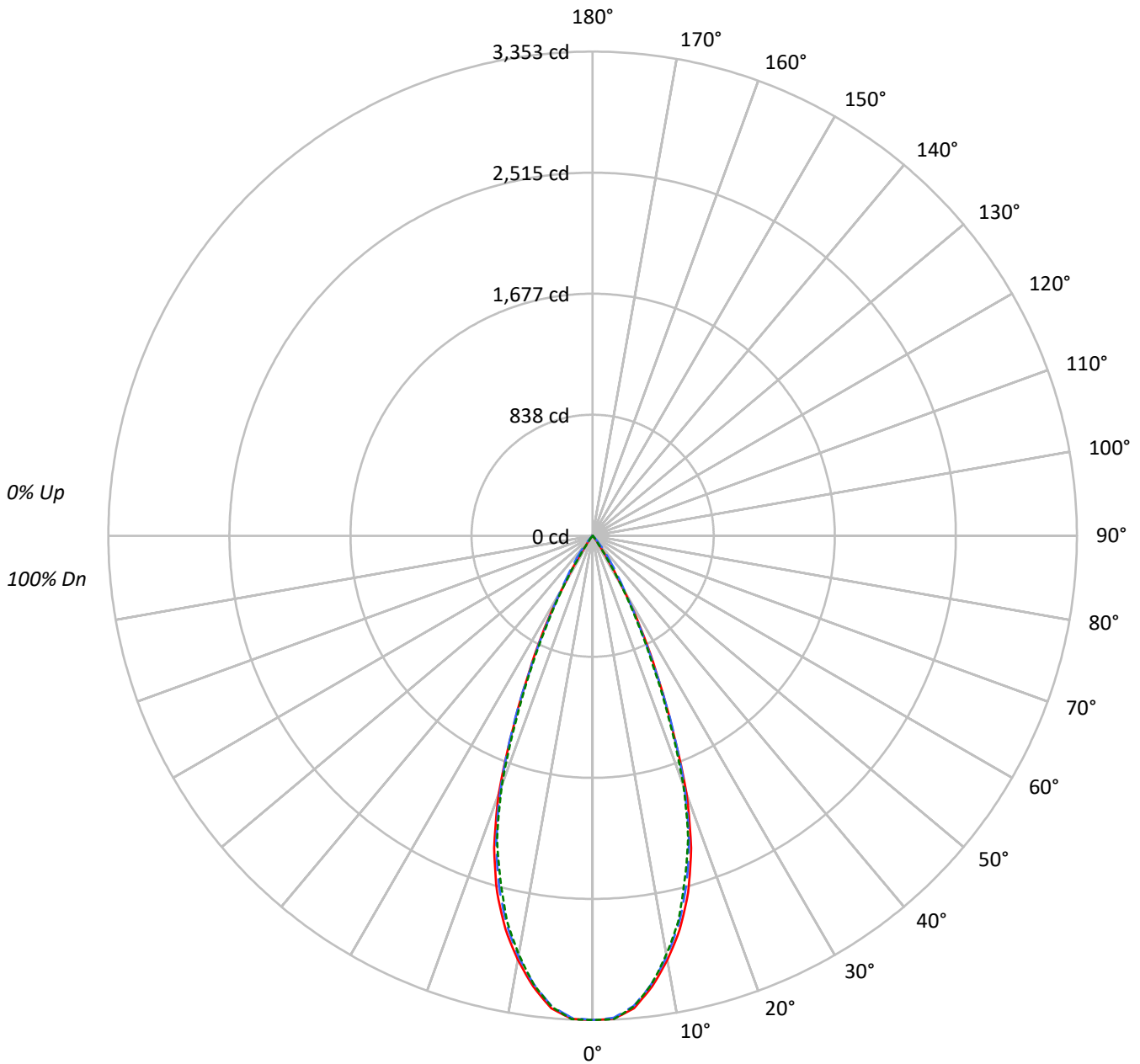
Lumens per Lamp: N/A  
Luminaire Lumens: 1577.3 lumens  
Efficiency: N/A  
Efficacy: 89.6 lumens/watt  
Spacing Criteria (0/90/45): 0.7 / 0.69 / 0.64  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): 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				
RW	70	50	30	10	70	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	106	103	100	108	104	101	99	101	99	97	98	96	94	96	94	93	91		
3	106	101	96	93	104	99	95	92	97	94	91	94	92	90	92	90	88	87		
4	102	96	91	88	100	95	90	87	92	89	86	91	88	85	89	86	84	83		
5	98	91	86	83	96	90	86	83	89	85	82	87	84	81	86	83	80	79		
6	94	87	82	79	93	86	82	78	85	81	78	84	80	77	82	79	77	76		
7	91	83	78	75	90	83	78	75	82	77	74	80	77	74	79	76	74	73		
8	88	80	75	72	87	79	75	72	78	74	71	77	74	71	77	73	71	70		
9	84	77	72	69	84	76	72	68	75	71	68	75	71	68	74	70	68	67		
10	82	74	69	66	81	73	69	66	73	68	66	72	68	65	71	68	65	64		

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

	0°	45°	90°
0°	324833	324833	324833
5°	319461	317759	318255
10°	293250	290919	289503
15°	256399	251344	247202
20°	196000	191959	189196
25°	111134	109819	105191
30°	45763	50260	43458
35°	9142	23038	8042
40°	1821	8334	1821
45°	712	1836	562
50°	467	618	467
55°	355	355	355
60°	407	407	194
65°	229	229	229
70°	283	283	283
75°	374	374	374
80°	0	558	558
85°	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 1836 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	302.2	19.2
10°-20°	686.7	43.5
20°-30°	476.2	30.2
30°-40°	99.4	6.3
40°-50°	8.3	0.5
50°-60°	2.1	0.1
60°-70°	1.2	0.1
70°-80°	1.0	0.1
80°-90°	0.1	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°	1465.2	92.9
0°-40°	1564.6	99.2
0°-60°	1574.9	99.9
0°-90°	1577.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1577.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3353	3353	3353	3353	3353	
5°	3285	3277	3268	3269	3273	303
15°	2556	2545	2506	2481	2465	697
25°	1040	1040	1027	1003	984	484
35°	77	121	195	111	68	77
45°	5	5	13	5	4	5
55°	2	2	2	2	2	2
65°	1	1	1	1	1	1
75°	1	1	1	1	1	1
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3353.1	3353.1	3353.1	3353.1	3353.1
2.5°	3347.9	3346.9	3340.7	3343.8	3350.0
5°	3285.1	3276.8	3267.6	3268.6	3272.7
7.5°	3149.1	3154.2	3129.5	3134.6	3131.5
10°	2981.1	2970.8	2957.4	2952.2	2943.0
12.5°	2790.5	2778.1	2754.4	2732.8	2735.8
15°	2556.5	2545.2	2506.1	2481.3	2464.8
17.5°	2268.0	2254.6	2219.6	2210.3	2199.0
20°	1901.2	1891.9	1862.0	1836.3	1835.2
22.5°	1436.4	1454.0	1451.9	1409.7	1393.2
25°	1039.7	1039.7	1027.4	1002.6	984.1
27.5°	719.3	703.8	681.1	673.9	656.4
30°	409.1	440.0	449.3	426.6	388.5
32.5°	192.7	255.6	299.9	240.1	169.0
35°	77.3	120.6	194.8	111.3	68.0
37.5°	34.0	52.6	121.6	48.4	31.9
40°	14.4	23.7	65.9	22.7	14.4
42.5°	8.2	11.3	31.9	10.3	7.2
45°	5.2	5.2	13.4	5.2	4.1
47.5°	3.1	4.1	6.2	3.1	3.1
50°	3.1	3.1	4.1	3.1	3.1
52.5°	2.1	2.1	3.1	2.1	2.1
55°	2.1	2.1	2.1	2.1	2.1
57.5°	2.1	2.1	2.1	2.1	2.1
60°	2.1	2.1	2.1	2.1	1.0
62.5°	1.0	1.0	2.1	1.0	1.0
65°	1.0	1.0	1.0	1.0	1.0
67.5°	1.0	1.0	1.0	1.0	1.0
70°	1.0	1.0	1.0	1.0	1.0
72.5°	1.0	1.0	1.0	1.0	1.0
75°	1.0	1.0	1.0	1.0	1.0
77.5°	1.0	1.0	1.0	1.0	1.0
80°	0.0	1.0	1.0	1.0	1.0
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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