

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: P887049

Luminaire Tested: ML412LSFL9FS1E-TIR4D40FL-TL4SDSL-1200LM-5000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887049  
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-5000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH 40D TIR, METALLIC SILVER TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

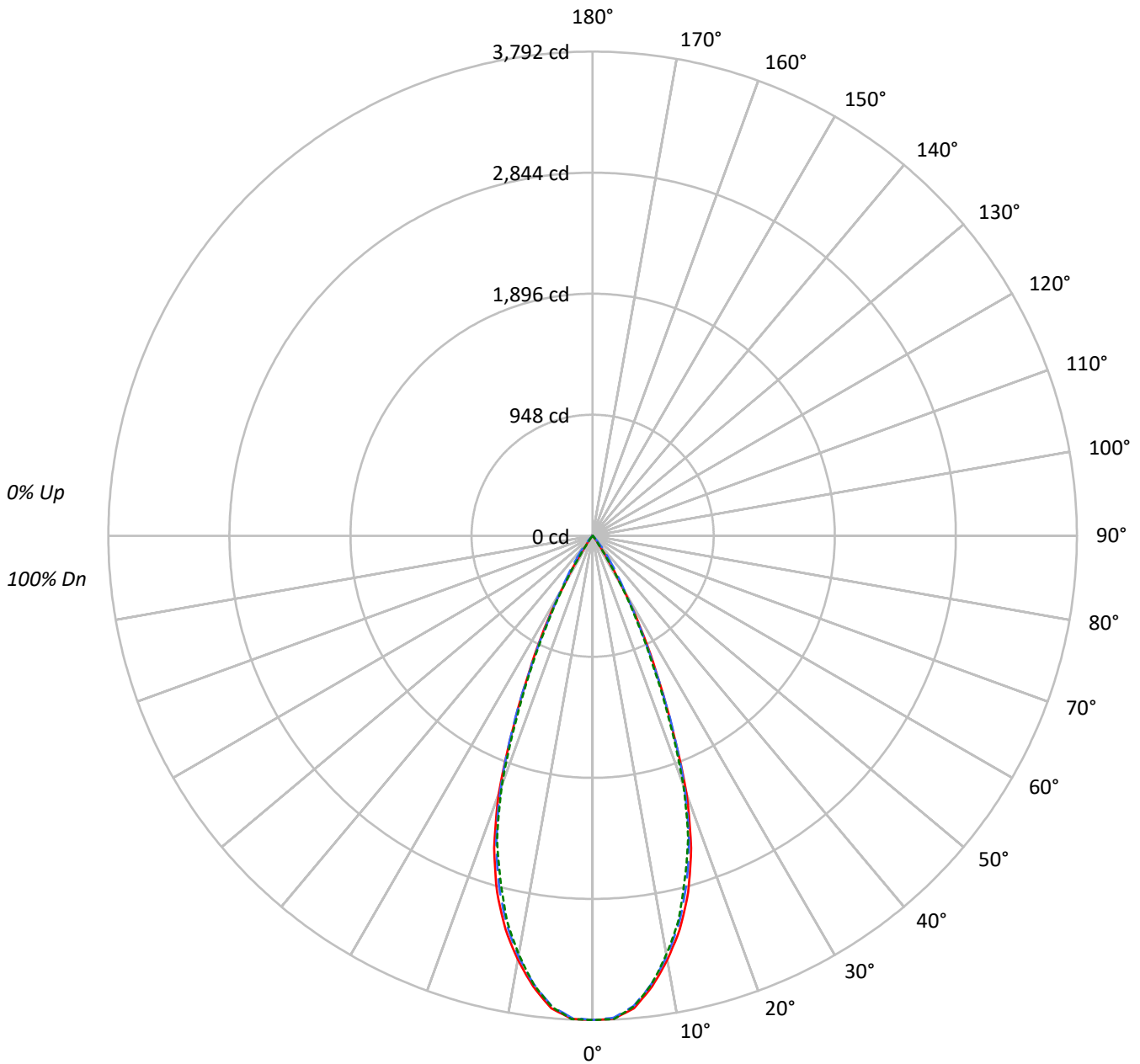
Lumens per Lamp: N/A  
Luminaire Lumens: 1783.7 lumens  
Efficiency: N/A  
Efficacy: 101.3 lumens/watt  
Spacing Criteria (0/90/45): 0.7 / 0.69 / 0.64  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): 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					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	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°	367332	367332	367332
5°	361257	359332	359896
10°	331625	328988	327375
15°	289957	284230	279556
20°	221639	217082	213959
25°	125682	124185	118947
30°	51747	56837	49141
35°	10336	26042	9094
40°	2061	9434	2061
45°	795	2069	644
50°	527	708	527
55°	388	388	388
60°	446	446	233
65°	275	275	275
70°	340	340	340
75°	449	449	449
80°	0	669	669
85°	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 45°  
 Vertical Angle: 45°  
 Luminance: 2069 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	341.8	19.2
10°-20°	776.6	43.5
20°-30°	538.5	30.2
30°-40°	112.4	6.3
40°-50°	9.3	0.5
50°-60°	2.3	0.1
60°-70°	1.4	0.1
70°-80°	1.2	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°	1656.9	92.9
0°-40°	1769.3	99.2
0°-60°	1780.9	99.8
0°-90°	1783.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1783.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3792	3792	3792	3792	3792	
5°	3715	3706	3695	3696	3701	343
15°	2891	2878	2834	2806	2787	789
25°	1176	1176	1162	1134	1113	547
35°	87	136	220	126	77	87
45°	6	6	15	6	5	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°	3791.8	3791.8	3791.8	3791.8	3791.8
2.5°	3786.0	3784.8	3777.8	3781.3	3788.3
5°	3714.9	3705.6	3695.1	3696.3	3700.9
7.5°	3561.1	3566.9	3539.0	3544.8	3541.3
10°	3371.2	3359.5	3344.4	3338.5	3328.0
12.5°	3155.6	3141.6	3114.8	3090.3	3093.8
15°	2891.1	2878.2	2834.0	2806.0	2787.4
17.5°	2564.8	2549.6	2510.0	2499.5	2486.7
20°	2149.9	2139.5	2105.7	2076.5	2075.4
22.5°	1624.4	1644.2	1641.9	1594.1	1575.5
25°	1175.8	1175.8	1161.8	1133.8	1112.8
27.5°	813.4	795.9	770.3	762.1	742.3
30°	462.6	497.6	508.1	482.4	439.3
32.5°	217.9	289.0	339.1	271.5	191.1
35°	87.4	136.3	220.2	125.9	76.9
37.5°	38.5	59.4	137.5	54.8	36.1
40°	16.3	26.8	74.6	25.6	16.3
42.5°	9.3	12.8	36.1	11.7	8.2
45°	5.8	5.8	15.1	5.8	4.7
47.5°	3.5	4.7	7.0	3.5	3.5
50°	3.5	3.5	4.7	3.5	3.5
52.5°	2.3	2.3	3.5	2.3	2.3
55°	2.3	2.3	2.3	2.3	2.3
57.5°	2.3	2.3	2.3	2.3	2.3
60°	2.3	2.3	2.3	2.3	1.2
62.5°	1.2	1.2	2.3	1.2	1.2
65°	1.2	1.2	1.2	1.2	1.2
67.5°	1.2	1.2	1.2	1.2	1.2
70°	1.2	1.2	1.2	1.2	1.2
72.5°	1.2	1.2	1.2	1.2	1.2
75°	1.2	1.2	1.2	1.2	1.2
77.5°	1.2	1.2	1.2	1.2	1.2
80°	0.0	1.2	1.2	1.2	1.2
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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