

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: P886822

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4RWMB-1020LM-3500K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886822  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-47)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL95FS1E-TIR4D25AWW-TL4RWMB-1020LM-3500K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

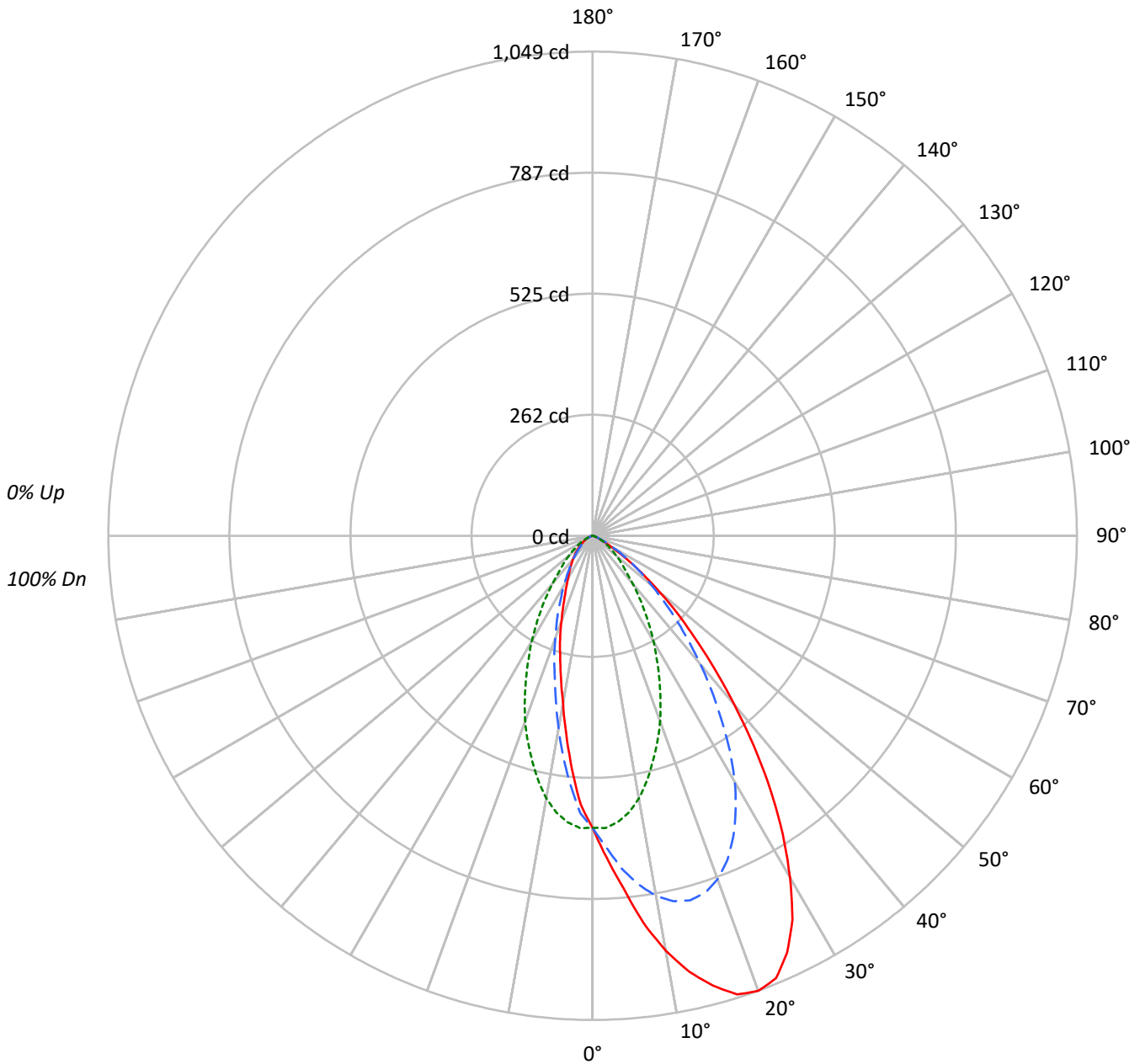
Lumens per Lamp: N/A  
Luminaire Lumens: 792.3 lumens  
Efficiency: N/A  
Efficacy: 45.0 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 0.8 / 0.99  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage 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					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	113	109	106	104	110	107	105	102	103	101	99	99	98	96	96	95	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83					83			
3	99	92	86	81	97	90	85	81	87	83	79	85	81	78	83	79	77	75					75			
4	93	84	78	73	91	83	77	72	81	76	71	79	74	71	77	73	70	68					68			
5	87	78	71	66	86	77	70	65	75	69	65	73	68	64	71	67	64	62					62			
6	82	72	65	60	80	71	64	60	69	64	59	68	63	59	66	62	58	57					57			
7	77	67	60	55	76	66	59	55	64	59	54	63	58	54	62	57	54	52					52			
8	73	62	55	50	72	61	55	50	60	54	50	59	54	50	58	53	50	48					48			
9	69	58	51	47	68	57	51	47	56	50	46	55	50	46	54	50	46	44					44			
10	65	54	48	43	64	54	47	43	53	47	43	52	47	43	51	46	43	41					41			

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

	0°	45°	90°	135°	180°
0°	138761	138761	138761	138761	138761
5°	168699	159245	137090	119634	111908
10°	203180	176505	128633	94432	82163
15°	229150	185552	114666	71828	61589
20°	244881	184781	99759	54931	45971
25°	241175	174325	82626	41809	34333
30°	216464	156011	66593	31296	26840
35°	179675	129965	51638	23905	22352
40°	136227	103837	38472	18177	18635
45°	96816	78706	29243	13986	15785
50°	64373	56544	22515	11121	13100
55°	37657	39263	16898	9252	10552
60°	17192	23068	13552	7675	8420
65°	8665	12115	9080	6071	6486
70°	4809	5898	5898	4296	3719
75°	2118	2118	2796	1440	678
80°	0	505	1010	0	0
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 98119 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.7	7.5
10°-20°	160.2	20.2
20°-30°	206.3	26.0
30°-40°	178.8	22.6
40°-50°	112.3	14.2
50°-60°	53.8	6.8
60°-70°	18.1	2.3
70°-80°	3.0	0.4
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°	426.2	53.8
0°-40°	605.0	76.4
0°-60°	771.1	97.3
0°-90°	792.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	792.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	633	633	633	633	633	
5°	766	723	623	544	508	78
15°	1009	817	505	316	271	286
25°	997	720	342	173	142	451
35°	671	486	193	89	84	416
45°	312	254	94	45	51	246
55°	98	103	44	24	28	91
65°	17	23	18	12	12	19
75°	2	2	3	2	1	3
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0



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**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	632.8	632.8	632.8	632.8	632.8	632.8	632.8	632.8	632.8	632.8	632.8
2.5°	698.0	689.6	691.3	687.1	680.4	670.4	663.7	653.7	644.5	633.7	614.5
5°	766.4	767.2	758.1	748.0	736.4	710.5	691.3	668.7	645.4	622.8	578.6
7.5°	846.6	841.5	829.9	804.8	778.9	744.7	710.5	674.6	639.5	604.4	537.7
10°	912.5	905.0	886.6	854.1	818.2	767.2	720.5	668.7	621.1	577.7	492.6
12.5°	967.6	960.9	935.9	892.5	841.5	780.6	718.0	655.4	596.9	543.5	442.5
15°	1009.4	1000.2	967.6	917.5	854.1	780.6	708.8	633.7	566.9	505.1	394.9
17.5°	1041.9	1027.7	986.0	927.5	851.6	769.8	686.3	607.0	532.6	466.7	348.1
20°	1049.4	1036.9	989.3	921.7	839.0	744.7	657.0	569.4	495.1	427.5	305.6
22.5°	1037.7	1018.5	975.1	901.7	810.7	712.1	619.5	533.5	452.5	384.0	263.8
25°	996.8	983.5	936.7	860.8	769.8	671.2	575.2	484.2	411.6	341.5	228.8
27.5°	937.6	921.7	875.8	809.8	722.2	620.3	527.6	441.6	367.3	300.6	196.2
30°	854.9	844.1	804.8	738.0	664.6	567.7	478.4	395.7	323.9	263.0	167.8
32.5°	766.4	751.4	719.7	665.4	596.1	510.1	425.8	347.3	280.5	226.3	141.1
35°	671.2	662.9	631.2	581.1	521.8	449.2	374.0	301.4	241.3	192.9	118.6
37.5°	572.7	562.7	542.7	502.6	455.8	390.7	321.4	258.8	205.4	162.8	98.5
40°	475.9	469.2	454.2	425.8	389.0	336.5	272.2	217.1	170.3	134.4	81.8
42.5°	389.9	388.2	379.0	358.2	328.1	280.5	232.1	180.3	141.1	110.2	66.0
45°	312.2	316.4	307.2	294.7	272.2	235.4	191.2	148.6	117.7	94.3	55.9
47.5°	249.6	246.3	245.5	240.4	221.2	191.2	153.6	122.7	101.9	80.1	48.4
50°	188.7	187.8	192.0	192.9	177.0	154.5	125.2	103.5	82.7	66.0	40.1
52.5°	138.6	140.3	146.9	151.9	141.9	121.9	103.5	82.7	68.5	55.1	34.2
55°	98.5	98.5	108.5	114.4	109.4	96.0	79.3	65.1	53.4	44.2	27.6
57.5°	61.8	64.3	74.3	81.8	80.1	71.8	59.3	49.3	42.6	36.7	24.2
60°	39.2	40.9	49.3	55.1	55.1	50.1	43.4	37.6	35.1	30.9	20.9
62.5°	25.0	27.6	32.6	37.6	38.4	33.4	29.2	29.2	27.6	24.2	17.5
65°	16.7	17.5	21.7	24.2	24.2	22.5	21.7	21.7	20.9	17.5	12.5
67.5°	10.9	11.7	14.2	15.9	15.0	13.4	15.0	15.9	15.0	13.4	10.0
70°	7.5	7.5	8.3	10.0	9.2	9.2	10.0	10.0	10.0	9.2	6.7
72.5°	5.0	5.0	5.0	5.0	5.0	5.0	5.8	6.7	6.7	6.7	4.2
75°	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3.3	3.3	3.3	1.7
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
80°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	632.8	632.8	632.8
2.5°	601.9	594.4	583.6
5°	543.5	520.1	508.4
7.5°	485.1	449.2	435.0
10°	424.1	384.0	369.0
12.5°	366.5	328.9	315.6
15°	316.4	282.2	271.3
17.5°	276.3	243.8	234.6
20°	235.4	206.2	197.0
22.5°	203.7	176.2	166.1
25°	172.8	147.8	141.9
27.5°	146.1	126.1	121.9
30°	123.6	109.4	106.0
32.5°	105.2	95.2	94.3
35°	89.3	82.7	83.5
37.5°	76.0	71.8	74.3
40°	63.5	63.5	65.1
42.5°	54.3	55.9	58.4
45°	45.1	49.3	50.9
47.5°	37.6	42.6	44.2
50°	32.6	36.7	38.4
52.5°	28.4	31.7	32.6
55°	24.2	27.6	27.6
57.5°	20.9	22.5	23.4
60°	17.5	19.2	19.2
62.5°	14.2	15.9	15.9
65°	11.7	12.5	12.5
67.5°	9.2	9.2	9.2
70°	6.7	6.7	5.8
72.5°	3.3	3.3	3.3
75°	1.7	0.8	0.8
77.5°	0.0	0.0	0.0
80°	0.0	0.0	0.0
82.5°	0.0	0.0	0.0
85°	0.0	0.0	0.0
87.5°	0.0	0.0	0.0
90°	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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