

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: P886821

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4RWMB-1020LM-3000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886821  
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-3000K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

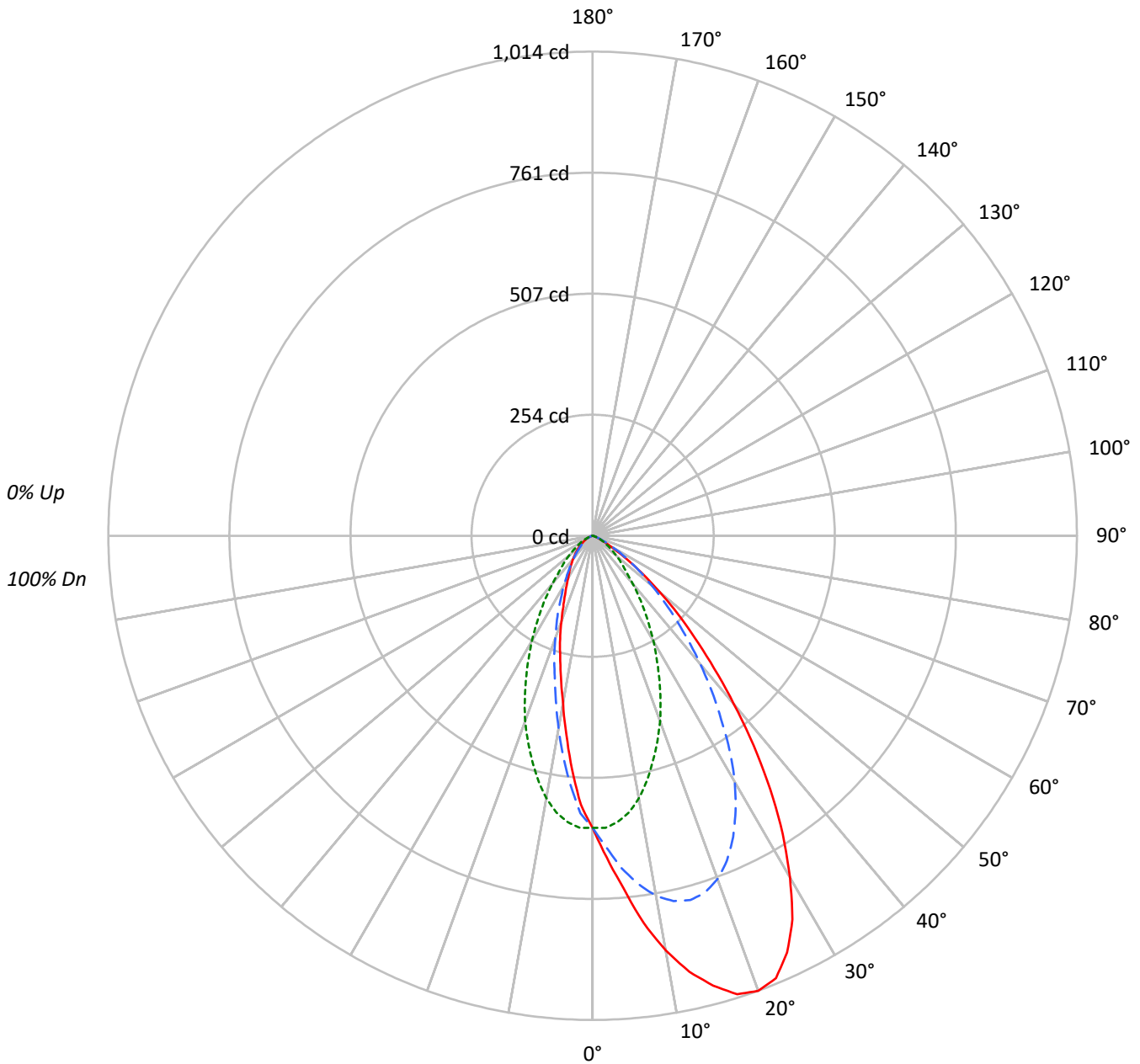
Lumens per Lamp: N/A  
Luminaire Lumens: 765.6 lumens  
Efficiency: N/A  
Efficacy: 43.5 lumens/watt  
Spacing Criteria (0/90/45): 1.15 / 0.8 / 0.99  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage 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	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				
1	113	109	106	104	110	107	105	102	103	101	99	99	98	96	96	95	93	91				
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83				
3	99	92	86	81	97	90	85	81	87	83	79	85	81	78	83	79	77	75				
4	93	84	78	73	91	83	77	72	81	76	71	79	74	71	77	73	70	68				
5	87	78	71	66	86	77	70	65	75	69	65	73	68	64	71	67	64	62				
6	82	72	65	60	80	71	64	60	69	64	59	68	63	59	66	62	58	57				
7	77	67	60	55	76	66	59	55	64	59	54	63	58	54	62	57	54	52				
8	73	62	55	50	72	61	55	50	60	54	50	59	54	50	58	53	50	48				
9	69	58	51	47	68	57	51	47	56	50	46	55	50	46	54	50	46	44				
10	65	54	48	43	64	54	47	43	53	47	43	52	47	43	51	46	43	41				

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

	0°	45°	90°	135°	180°
0°	134090	134090	134090	134090	134090
5°	163020	153863	132467	115606	108144
10°	196322	170560	124313	91247	79402
15°	221409	179297	110807	69399	59524
20°	236621	178562	96375	53088	44431
25°	233046	168445	79819	40406	33171
30°	209171	150757	64339	30232	25953
35°	173625	125574	49898	23102	21603
40°	131618	100331	37184	17547	18005
45°	93560	76054	28282	13521	15257
50°	62190	54617	21731	10746	12656
55°	36395	37944	16363	8946	10169
60°	16621	22279	13069	7412	8157
65°	8354	11726	8769	5863	6278
70°	4680	5706	5706	4167	3590
75°	2033	2033	2711	1356	678
80°	0	505	1010	0	0
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 94801 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	57.7	7.5
10°-20°	154.8	20.2
20°-30°	199.4	26.0
30°-40°	172.8	22.6
40°-50°	108.5	14.2
50°-60°	52.0	6.8
60°-70°	17.5	2.3
70°-80°	2.9	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°	411.9	53.8
0°-40°	584.6	76.4
0°-60°	745.1	97.3
0°-90°	765.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	765.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	612	612	612	612	612	
5°	741	699	602	525	491	75
15°	975	790	488	306	262	276
25°	963	696	330	167	137	436
35°	649	469	186	86	81	402
45°	302	245	91	44	49	237
55°	95	99	43	23	27	88
65°	16	23	17	11	12	18
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°	611.5	611.5	611.5	611.5	611.5	611.5	611.5	611.5	611.5	611.5	611.5
2.5°	674.4	666.4	668.0	663.9	657.5	647.8	641.3	631.7	622.8	612.3	593.7
5°	740.6	741.4	732.5	722.8	711.5	686.5	668.0	646.2	623.6	601.8	559.1
7.5°	818.0	813.2	801.9	777.7	752.7	719.6	686.5	651.8	617.9	584.1	519.5
10°	881.7	874.5	856.7	825.3	790.6	741.4	696.2	646.2	600.2	558.3	476.0
12.5°	935.0	928.5	904.3	862.4	813.2	754.3	693.8	633.3	576.8	525.2	427.6
15°	975.3	966.5	935.0	886.6	825.3	754.3	684.9	612.3	547.8	488.1	381.6
17.5°	1006.8	993.1	952.7	896.3	822.9	743.8	663.1	586.5	514.7	451.0	336.4
20°	1014.0	1001.9	956.0	890.6	810.8	719.6	634.9	550.2	478.4	413.0	295.3
22.5°	1002.8	984.2	942.3	871.3	783.3	688.1	598.6	515.5	437.2	371.1	254.9
25°	963.2	950.3	905.1	831.7	743.8	648.6	555.8	467.9	397.7	329.9	221.0
27.5°	905.9	890.6	846.3	782.5	697.8	599.4	509.8	426.8	355.0	290.4	189.6
30°	826.1	815.6	777.7	713.1	642.2	548.6	462.3	382.4	313.0	254.1	162.2
32.5°	740.6	726.0	695.4	643.0	576.0	492.9	411.4	335.6	271.1	218.6	136.3
35°	648.6	640.5	609.9	561.5	504.2	434.0	361.4	291.2	233.1	186.4	114.6
37.5°	553.4	543.7	524.4	485.6	440.5	377.5	310.6	250.1	198.5	157.3	95.2
40°	459.8	453.4	438.9	411.4	375.9	325.1	263.0	209.7	164.6	129.9	79.1
42.5°	376.7	375.1	366.3	346.1	317.0	271.1	224.3	174.3	136.3	106.5	63.7
45°	301.7	305.7	296.9	284.8	263.0	227.5	184.7	143.6	113.7	91.2	54.1
47.5°	241.2	238.0	237.2	232.3	213.8	184.7	148.4	118.6	98.4	77.4	46.8
50°	182.3	181.5	185.5	186.4	171.0	149.2	121.0	100.0	79.9	63.7	38.7
52.5°	133.9	135.5	142.0	146.8	137.1	117.8	100.0	79.9	66.2	53.2	33.1
55°	95.2	95.2	104.9	110.5	105.7	92.8	76.6	62.9	51.6	42.8	26.6
57.5°	59.7	62.1	71.8	79.1	77.4	69.4	57.3	47.6	41.1	35.5	23.4
60°	37.9	39.5	47.6	53.2	53.2	48.4	41.9	36.3	33.9	29.8	20.2
62.5°	24.2	26.6	31.5	36.3	37.1	32.3	28.2	28.2	26.6	23.4	16.9
65°	16.1	16.9	21.0	23.4	23.4	21.8	21.0	21.0	20.2	16.9	12.1
67.5°	10.5	11.3	13.7	15.3	14.5	12.9	14.5	15.3	14.5	12.9	9.7
70°	7.3	7.3	8.1	9.7	8.9	8.9	9.7	9.7	9.7	8.9	6.5
72.5°	4.8	4.8	4.8	4.8	4.8	4.8	5.6	6.5	6.5	6.5	4.0
75°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	3.2	3.2	3.2	1.6
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°	611.5	611.5	611.5
2.5°	581.6	574.4	563.9
5°	525.2	502.6	491.3
7.5°	468.7	434.0	420.3
10°	409.8	371.1	356.6
12.5°	354.2	317.8	304.9
15°	305.7	272.7	262.2
17.5°	267.0	235.6	226.7
20°	227.5	199.3	190.4
22.5°	196.8	170.2	160.5
25°	167.0	142.8	137.1
27.5°	141.2	121.8	117.8
30°	119.4	105.7	102.5
32.5°	101.6	92.0	91.2
35°	86.3	79.9	80.7
37.5°	73.4	69.4	71.8
40°	61.3	61.3	62.9
42.5°	52.4	54.1	56.5
45°	43.6	47.6	49.2
47.5°	36.3	41.1	42.8
50°	31.5	35.5	37.1
52.5°	27.4	30.7	31.5
55°	23.4	26.6	26.6
57.5°	20.2	21.8	22.6
60°	16.9	18.6	18.6
62.5°	13.7	15.3	15.3
65°	11.3	12.1	12.1
67.5°	8.9	8.9	8.9
70°	6.5	6.5	5.6
72.5°	3.2	3.2	3.2
75°	1.6	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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Signify Classified - Internal  
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Scaled Data Report





— 0°-180°    - - 45°-225°    - - - - 90°-270°

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