

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: P886831

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4RWSL-1020LM-3000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886831  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-46)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL95FS1E-TIR4D25AWW-TL4RWSL-1020LM-3000K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

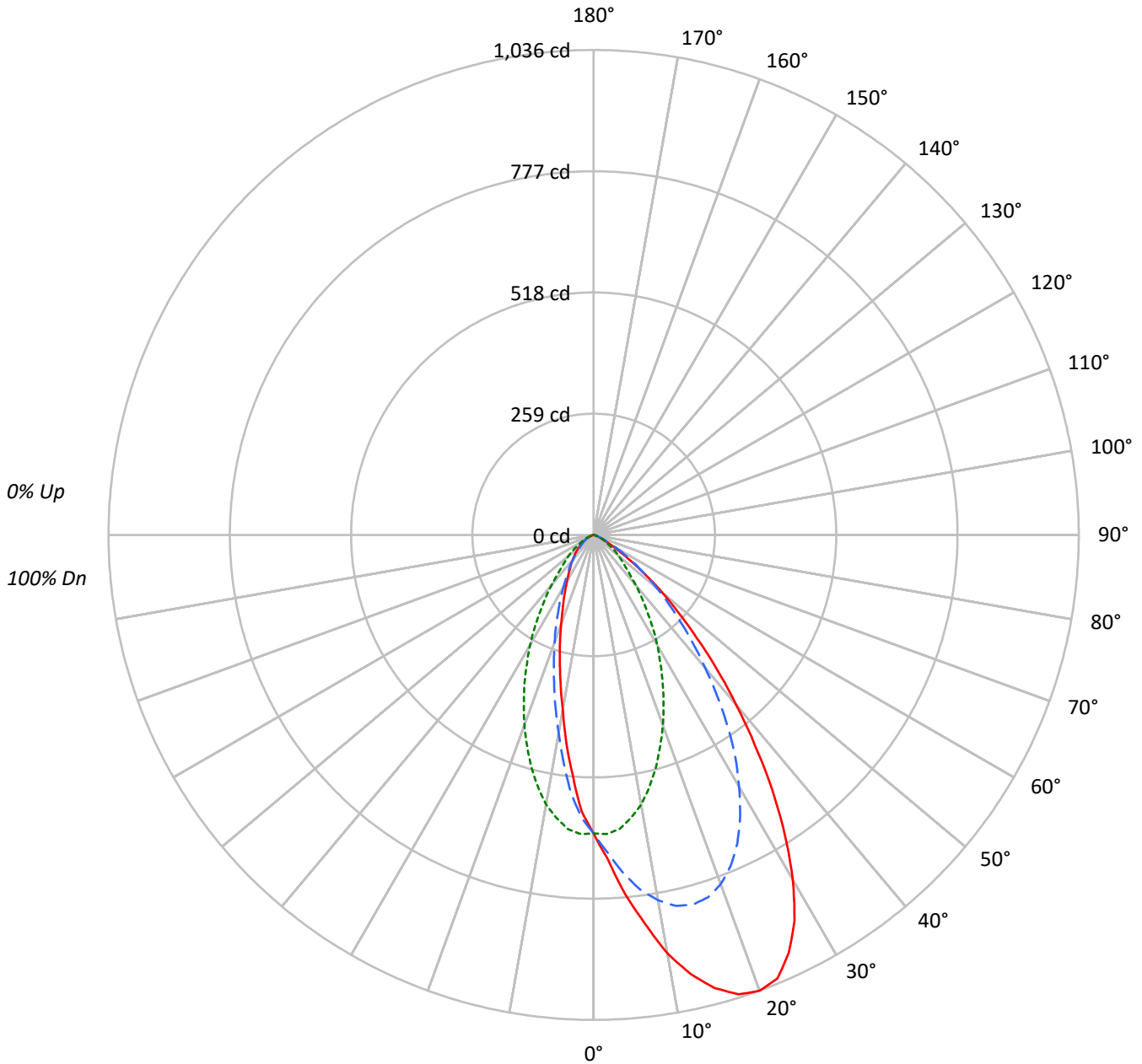
Lumens per Lamp: N/A  
Luminaire Lumens: 805.8 lumens  
Efficiency: N/A  
Efficacy: 45.8 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 0.8 / 1  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct

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	112	109	106	104	110	107	104	102	103	101	99	99	98	96	96	94	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83					83			
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75					75			
4	93	84	77	73	91	83	77	72	81	75	71	78	74	70	76	73	69	68					68			
5	87	77	71	65	85	76	70	65	74	69	65	73	68	64	71	67	63	62					62			
6	82	72	65	60	80	71	64	59	69	63	59	68	62	58	66	62	58	56					56			
7	77	66	59	54	76	66	59	54	64	58	54	63	58	54	62	57	53	52					52			
8	73	62	55	50	71	61	55	50	60	54	50	59	53	50	58	53	49	48					48			
9	69	58	51	46	67	57	51	46	56	50	46	55	50	46	54	49	46	44					44			
10	65	54	47	43	64	53	47	43	53	47	43	52	46	43	51	46	43	41					41			

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

	0°	45°	90°	135°	180°
0°	139879	139879	139879	139879	139879
5°	169535	159586	138807	121946	113251
10°	202201	176427	130191	95879	84389
15°	227561	185642	116618	73962	63156
20°	241824	185271	100879	56822	47231
25°	238441	175704	84489	43115	36292
30°	215426	157227	68821	32663	28587
35°	177882	133311	53110	25029	23530
40°	135511	105855	39932	19379	19866
45°	96785	81140	29522	15257	16994
50°	65465	59836	23948	11838	14021
55°	36701	40543	17892	10169	11393
60°	18025	24055	13069	8508	9210
65°	9184	12972	10066	6693	7108
70°	5193	6475	6732	5193	4680
75°	2711	3389	4067	2033	1356
80°	1010	1010	1010	0	0
85°	0	0	2013	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 97778 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	60.1	7.5
10°-20°	161.2	20.0
20°-30°	208.0	25.8
30°-40°	182.0	22.6
40°-50°	115.0	14.3
50°-60°	55.8	6.9
60°-70°	19.3	2.4
70°-80°	4.2	0.5
80°-90°	0.2	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°	429.3	53.3
0°-40°	611.3	75.9
0°-60°	782.1	97.1
0°-90°	805.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	805.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	638	638	638	638	638	
5°	770	725	631	554	514	77
15°	1002	818	514	326	278	283
25°	986	726	349	178	150	447
35°	664	498	198	94	88	412
45°	312	262	95	49	55	245
55°	96	106	47	27	30	92
65°	18	25	19	13	14	20
75°	3	4	5	2	2	4
85°	0	0	1	0	0	0
90°	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°	637.9	637.9	637.9	637.9	637.9	637.9	637.9	637.9	637.9	637.9	637.9
2.5°	693.6	691.1	696.0	688.7	682.3	675.8	670.2	656.5	649.2	639.5	621.8
5°	770.2	769.4	762.9	749.2	734.7	715.3	696.8	671.8	652.4	630.6	587.1
7.5°	837.1	837.9	826.6	804.8	781.5	747.6	715.3	679.8	643.6	609.7	543.6
10°	908.1	898.4	882.3	854.8	814.5	770.2	723.4	674.2	626.6	584.7	498.4
12.5°	961.3	950.0	929.0	889.5	840.3	783.1	722.6	662.1	603.2	550.8	451.6
15°	1002.4	993.6	964.5	913.7	852.4	783.1	711.3	641.9	573.4	513.7	400.0
17.5°	1029.0	1018.6	980.7	922.6	850.8	772.6	691.1	610.5	537.9	472.6	357.3
20°	1036.3	1024.2	983.9	917.7	837.9	750.0	661.3	577.4	498.4	432.3	310.5
22.5°	1025.8	1009.7	967.7	900.8	812.9	717.7	626.6	537.1	456.5	389.5	270.2
25°	985.5	974.2	930.7	858.1	773.4	679.0	579.8	495.2	414.5	349.2	235.5
27.5°	929.0	911.3	874.2	808.1	726.6	628.2	533.9	448.4	371.0	308.1	200.0
30°	850.8	836.3	799.2	741.9	666.1	575.8	485.5	404.0	329.8	271.8	171.8
32.5°	760.5	754.0	718.6	671.0	604.0	521.8	434.7	358.1	290.3	234.7	146.8
35°	664.5	654.0	628.2	592.7	533.9	462.1	384.7	311.3	247.6	198.4	122.6
37.5°	565.3	561.3	541.1	508.9	463.7	401.6	333.1	266.1	212.9	167.7	102.4
40°	473.4	475.8	456.5	433.9	395.2	344.4	286.3	226.6	176.6	139.5	85.5
42.5°	389.5	386.3	375.8	362.1	336.3	290.3	237.9	188.7	146.0	113.7	70.2
45°	312.1	315.3	309.7	298.4	279.8	243.5	197.6	152.4	119.4	95.2	57.3
47.5°	244.4	243.5	249.2	245.2	230.6	200.0	161.3	125.0	99.2	81.5	49.2
50°	191.9	189.5	192.7	195.2	189.5	161.3	129.8	104.0	84.7	70.2	44.4
52.5°	137.9	140.3	146.8	154.0	150.8	128.2	104.8	84.7	71.0	58.9	36.3
55°	96.0	100.8	107.3	118.5	113.7	98.4	81.5	68.5	54.8	46.8	30.6
57.5°	63.7	66.1	75.0	87.1	83.9	73.4	62.1	51.6	41.9	35.5	25.0
60°	41.1	42.7	50.8	59.7	57.3	52.4	45.2	37.9	33.1	29.8	21.0
62.5°	26.6	28.2	33.9	39.5	39.5	35.5	30.6	29.0	26.6	24.2	17.7
65°	17.7	19.4	23.4	27.4	25.8	24.2	21.8	21.8	21.0	19.4	14.5
67.5°	12.1	12.9	16.1	17.7	16.9	15.3	15.3	16.9	16.1	14.5	10.5
70°	8.1	8.9	10.5	11.3	10.5	9.7	10.5	12.1	11.3	10.5	8.1
72.5°	5.6	5.6	6.5	6.5	6.5	6.5	7.3	8.1	8.1	7.3	5.6
75°	3.2	3.2	3.2	4.0	4.0	4.0	4.8	4.8	4.8	4.8	3.2
77.5°	1.6	1.6	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	1.6
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	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°	637.9	637.9	637.9
2.5°	603.2	593.6	591.1
5°	554.0	525.0	514.5
7.5°	490.3	456.5	447.6
10°	430.6	392.7	379.0
12.5°	376.6	336.3	325.8
15°	325.8	287.9	278.2
17.5°	282.3	248.4	238.7
20°	243.5	212.9	202.4
22.5°	209.7	181.5	172.6
25°	178.2	154.0	150.0
27.5°	152.4	133.1	129.8
30°	129.0	114.5	112.9
32.5°	109.7	99.2	100.0
35°	93.5	87.1	87.9
37.5°	81.5	75.8	79.0
40°	67.7	66.1	69.4
42.5°	58.1	58.1	61.3
45°	49.2	51.6	54.8
47.5°	41.1	45.2	47.6
50°	34.7	39.5	41.1
52.5°	29.8	34.7	35.5
55°	26.6	29.8	29.8
57.5°	23.4	25.0	25.0
60°	19.4	21.0	21.0
62.5°	16.1	16.9	16.9
65°	12.9	13.7	13.7
67.5°	10.5	10.5	10.5
70°	8.1	7.3	7.3
72.5°	4.8	4.8	4.0
75°	2.4	1.6	1.6
77.5°	0.8	0.8	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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