

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: P887090

Luminaire Tested: ML412LSFLD2W1E-TIR4D25AWW-TL4SWSL-600LM-2700K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887090  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-58)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFLD2W1E-TIR4D25AWW-TL4SWSL-600LM-2700K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

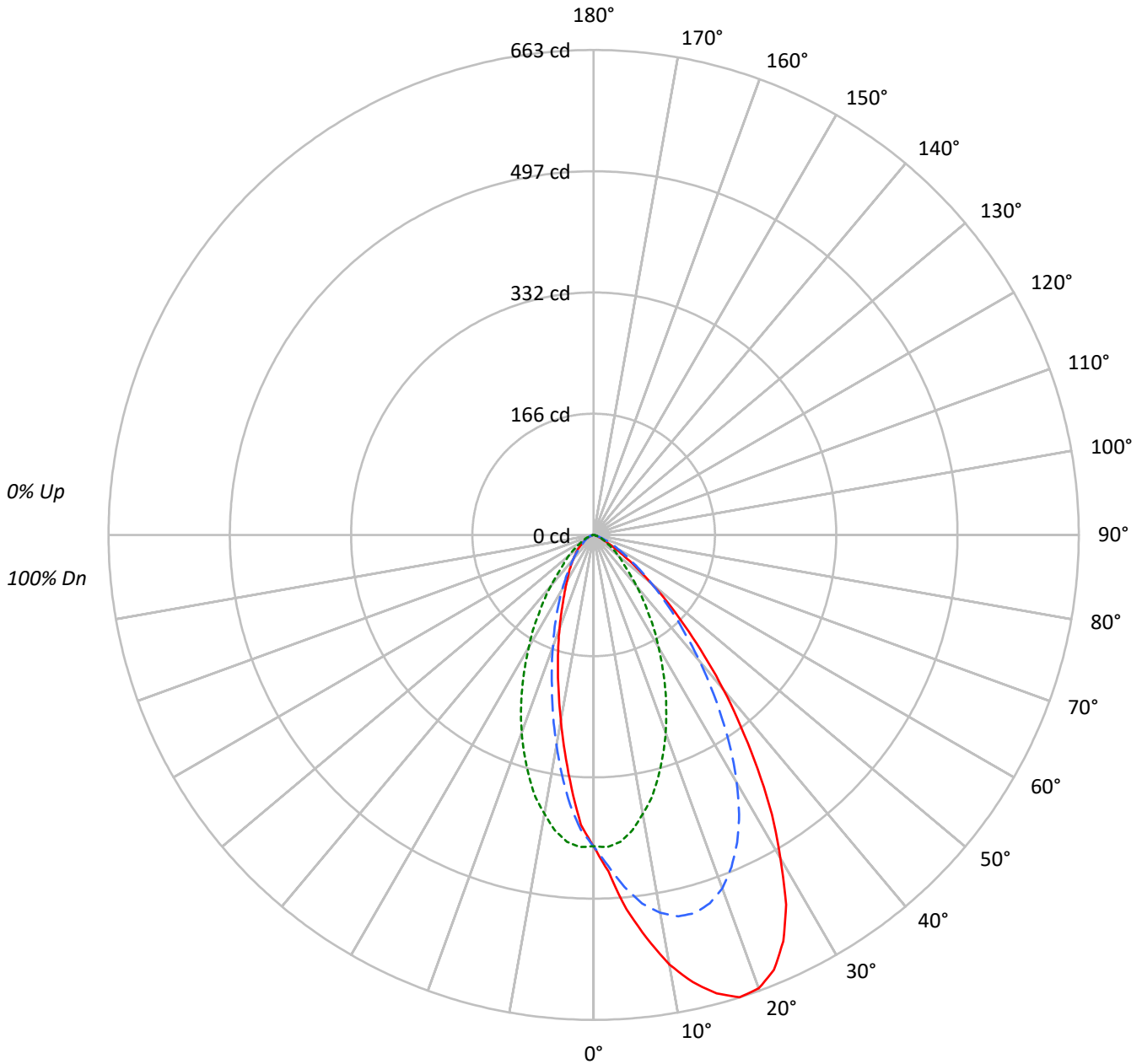
Lumens per Lamp: N/A  
Luminaire Lumens: 512.4 lumens  
Efficiency: N/A  
Efficacy: 54.5 lumens/watt  
Spacing Criteria (0/90/45): 1.08 / 0.8 / 0.97  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

Input Watts (W): 9.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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	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	88	83	79	85	81	78	83	79	77	75								
4	93	84	78	73	91	83	77	72	81	76	72	79	74	71	77	73	70	68								
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	62								
6	82	72	65	60	81	71	65	60	70	64	59	68	63	59	67	62	59	57								
7	77	67	60	55	76	66	60	55	65	59	55	63	58	54	62	58	54	52								
8	73	62	55	51	72	62	55	51	60	55	50	59	54	50	58	54	50	48								
9	69	58	52	47	68	58	51	47	57	51	47	56	50	47	55	50	46	45								
10	65	55	48	44	64	54	48	44	53	47	44	52	47	43	52	47	43	42								

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

	0°	45°	90°	135°	180°
0°	41230	41230	41230	41230	41230
5°	49945	46965	40940	35981	33725
10°	58668	51610	38069	28704	25360
15°	65080	53677	34270	22034	18885
20°	68010	53031	29660	16763	14062
25°	65513	49618	24702	12763	10454
30°	57050	43721	19856	9609	8121
35°	46194	36118	15339	7179	6694
40°	34878	28473	11521	5526	5463
45°	24112	21434	8316	4233	4576
50°	15357	15553	6677	3255	3723
55°	8783	10776	4949	2787	3040
60°	4379	7430	3681	2403	2403
65°	2476	4894	2957	1994	1880
70°	1445	2705	1898	1614	1303
75°	973	1347	1160	973	374
80°	279	558	279	0	0
85°	0	0	556	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 24318 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	40.1	7.8
10°-20°	106.4	20.8
20°-30°	133.7	26.1
30°-40°	112.9	22.0
40°-50°	69.2	13.5
50°-60°	33.7	6.6
60°-70°	13.1	2.6
70°-80°	3.2	0.6
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°	280.1	54.7
0°-40°	393.0	76.7
0°-60°	495.9	96.8
0°-90°	512.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	512.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	426	426	426	426	426	
5°	514	483	421	370	347	51
15°	649	535	342	220	188	183
25°	613	464	231	119	98	277
35°	391	305	130	61	57	243
45°	176	156	61	31	33	139
55°	52	64	29	16	18	49
65°	11	21	13	9	8	12
75°	3	4	3	3	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°	425.6	425.6	425.6	425.6	425.6	425.6	425.6	425.6	425.6	425.6	425.6
2.5°	460.1	464.2	461.1	461.1	454.9	450.8	444.6	439.5	433.8	427.1	414.3
5°	513.6	510.5	504.8	499.2	488.9	477.0	464.2	448.7	435.4	421.0	391.6
7.5°	555.8	553.7	547.5	535.2	518.7	497.6	475.5	452.3	429.7	407.1	365.9
10°	596.4	590.8	581.5	562.5	538.8	510.5	479.6	449.3	417.9	387.0	336.0
12.5°	626.3	620.1	606.7	582.5	552.7	515.6	477.6	440.0	400.4	367.4	304.1
15°	648.9	644.3	625.3	595.9	557.3	513.1	468.8	424.6	381.3	341.7	271.7
17.5°	662.8	655.6	633.5	597.5	552.7	503.3	453.4	405.0	359.2	314.9	240.8
20°	659.7	653.0	629.9	589.7	540.9	487.9	433.3	379.8	331.4	287.7	211.5
22.5°	643.8	638.6	612.9	570.2	519.8	463.7	407.6	352.5	303.1	259.4	183.7
25°	612.9	604.7	580.0	542.4	493.0	435.4	376.2	324.2	273.8	231.1	157.0
27.5°	569.7	559.4	537.8	504.3	457.0	404.0	344.8	292.3	245.5	203.3	134.8
30°	510.0	506.9	485.3	459.6	415.3	366.4	313.4	259.9	216.1	177.5	114.8
32.5°	453.4	447.2	432.3	406.0	371.6	326.8	277.4	231.6	190.9	154.4	97.3
35°	390.6	388.0	373.1	356.1	325.2	285.6	243.9	202.8	162.6	129.7	82.3
37.5°	329.9	329.4	317.0	307.2	279.4	249.1	209.4	170.9	138.4	110.1	67.9
40°	275.8	272.7	265.5	254.7	237.8	212.5	177.5	143.6	115.3	91.1	56.1
42.5°	223.3	221.8	218.2	211.5	198.1	177.5	149.8	119.9	94.2	74.6	45.8
45°	176.0	177.5	177.5	173.4	164.7	148.2	123.5	97.8	76.7	60.7	37.6
47.5°	138.4	137.4	139.5	138.4	134.8	120.9	99.8	78.2	64.3	52.0	31.9
50°	101.9	105.5	107.6	111.7	108.6	97.8	79.3	64.8	54.0	44.3	27.3
52.5°	75.1	76.7	81.8	89.5	87.5	77.2	63.8	54.5	44.8	36.5	23.2
55°	52.0	53.5	61.2	68.4	67.4	60.2	52.0	44.3	36.0	29.3	19.0
57.5°	34.0	35.5	42.2	52.5	52.5	47.9	42.2	35.0	28.3	23.2	16.0
60°	22.6	23.7	29.3	37.1	38.6	38.1	33.4	26.2	22.1	19.0	13.4
62.5°	14.9	16.0	20.6	26.2	29.3	29.3	24.7	20.1	18.0	16.0	11.3
65°	10.8	11.3	14.4	17.5	21.1	21.6	18.0	16.0	14.4	12.9	9.8
67.5°	7.7	7.7	10.3	12.4	14.9	14.4	13.4	11.8	10.8	9.3	7.7
70°	5.1	5.7	6.7	8.2	9.8	9.3	9.3	8.7	7.7	6.7	5.7
72.5°	3.6	4.1	4.6	5.7	6.2	6.2	6.2	5.7	5.1	4.6	4.1
75°	2.6	2.6	2.6	3.1	3.6	3.6	4.1	3.6	3.1	3.1	2.6
77.5°	1.5	1.5	1.5	1.5	2.1	2.1	2.1	1.5	1.5	1.0	1.5
80°	0.5	0.5	0.5	1.0	1.0	1.0	1.0	0.5	0.5	0.5	0.5
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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°	425.6	425.6	425.6
2.5°	403.5	397.3	396.8
5°	370.0	355.1	346.8
7.5°	330.9	309.8	300.0
10°	291.8	266.6	257.8
12.5°	255.2	228.5	220.3
15°	219.7	194.0	188.3
17.5°	189.9	166.2	160.6
20°	162.6	142.5	136.4
22.5°	140.0	120.9	114.8
25°	119.4	102.9	97.8
27.5°	101.9	87.5	84.4
30°	85.9	74.6	72.6
32.5°	72.0	64.3	63.8
35°	60.7	55.1	56.6
37.5°	52.5	47.9	49.4
40°	43.7	41.7	43.2
42.5°	37.1	36.0	38.1
45°	30.9	31.9	33.4
47.5°	26.2	28.3	29.3
50°	21.6	24.7	24.7
52.5°	18.5	21.6	21.1
55°	16.5	18.5	18.0
57.5°	14.4	15.4	14.9
60°	12.4	12.9	12.4
62.5°	10.3	10.8	10.3
65°	8.7	8.7	8.2
67.5°	7.2	6.7	6.7
70°	5.7	5.1	4.6
72.5°	4.1	3.6	2.6
75°	2.6	2.1	1.0
77.5°	1.0	0.5	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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