

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: P886662

Luminaire Tested: ML310LSFL9FS1E-TIR4D25AWW-TL3SWMW-1000LM-2700K

Issue Date: 7/8/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886662  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-22)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/8/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML310LSFL9FS1E-TIR4D25AWW-TL3SWMW-1000LM-2700K  
Description: 3IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

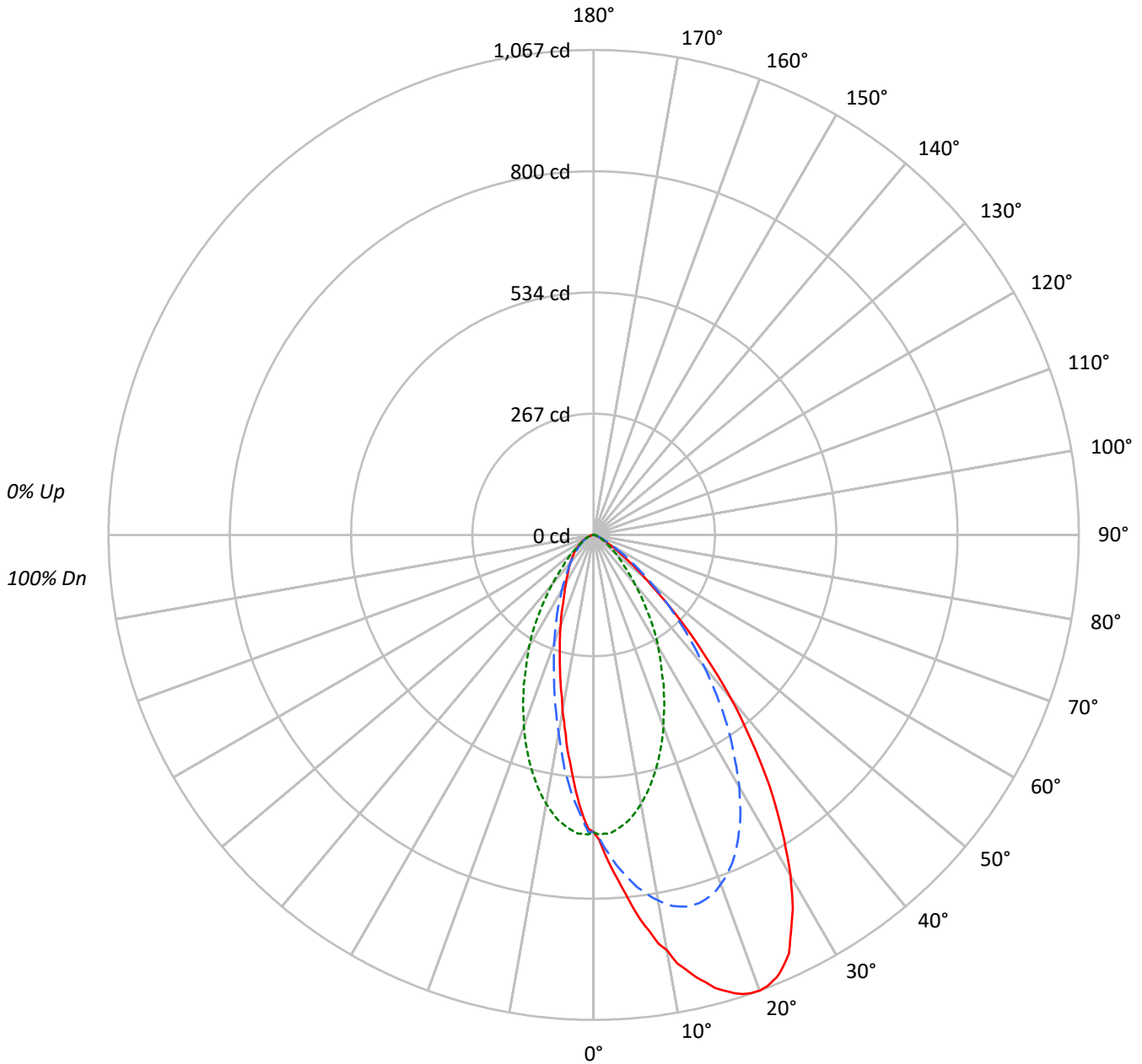
Lumens per Lamp: N/A  
Luminaire Lumens: 828.2 lumens  
Efficiency: N/A  
Efficacy: 60.0 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 0.81 / 1.01  
Luminous Opening: Rectangular (W 0.25' x L: 0.25' x H: 0')  
CIE Type: Direct

Input Watts (W): 13.8  
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	112	109	106	104	110	107	104	102	103	101	99	99	97	96	96	94	93	91								
2	105	100	95	91	103	98	94	90	95	91	88	92	89	86	89	86	84	82								
3	99	91	85	81	97	90	84	80	87	83	79	85	81	77	82	79	76	74								
4	93	84	77	72	91	83	77	72	80	75	71	78	74	70	76	73	69	68								
5	87	77	70	65	85	76	70	65	74	69	64	73	68	64	71	67	63	62								
6	82	72	65	60	80	71	64	59	69	63	59	68	62	58	66	62	58	56								
7	77	66	59	55	76	66	59	54	64	58	54	63	58	54	62	57	53	52								
8	73	62	55	50	71	61	55	50	60	54	50	59	54	50	58	53	49	48								
9	69	58	51	46	67	57	51	46	56	50	46	55	50	46	54	49	46	44								
10	65	54	47	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°	112634	112634	112634	112634	112634
5°	136748	129055	111854	98196	91800
10°	162288	142789	105103	77646	68903
15°	184021	150305	94676	59908	51350
20°	195573	149828	82291	46552	38854
25°	193086	142045	69170	36105	29834
30°	172218	127373	56478	27642	24262
35°	141705	107751	43310	21655	20394
40°	105891	85095	31700	17761	17761
45°	68440	63325	22651	14370	15588
50°	39118	44477	16880	11789	13932
55°	21319	28225	11710	10509	12010
60°	11367	16017	9300	9300	10333
65°	6520	9373	7743	7743	8150
70°	4028	5791	6546	7050	6546
75°	1996	3660	5323	5989	4658
80°	992	1984	2975	4959	4959
85°	0	1976	3952	5928	5928

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 30°  
 Vertical Angle: 45°  
 Luminance: 71119 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	61.9	7.5
10°-20°	166.4	20.1
20°-30°	215.3	26.0
30°-40°	188.2	22.7
40°-50°	114.4	13.8
50°-60°	51.6	6.2
60°-70°	20.8	2.5
70°-80°	7.7	0.9
80°-90°	2.0	0.2
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°	443.6	53.6
0°-40°	631.8	76.3
0°-60°	797.8	96.3
0°-90°	828.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	828.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	654	654	654	654	654	
5°	791	746	647	568	531	80
15°	1032	843	531	336	288	291
25°	1016	748	364	190	157	458
35°	674	512	206	103	97	416
45°	281	260	93	59	64	221
55°	71	94	39	35	40	69
65°	16	23	19	19	20	17
75°	3	6	8	9	7	4
85°	0	1	2	3	3	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°	654.0	654.0	654.0	654.0	654.0	654.0	654.0	654.0	654.0	654.0	654.0
1°	670.0	669.0	667.0	665.0	666.0	665.0	662.0	661.0	661.0	659.0	658.0
2°	702.0	698.0	694.0	696.0	692.0	686.0	678.0	671.0	664.0	658.0	643.0
3°	732.0	728.0	728.0	723.0	713.0	703.0	692.0	679.0	668.0	658.0	633.0
4°	760.0	758.0	754.0	743.0	737.0	721.0	704.0	687.0	670.0	653.0	618.0
5°	791.0	791.0	782.0	772.0	756.0	737.0	715.0	691.0	669.0	647.0	603.0
6°	823.0	823.0	811.0	796.0	777.0	750.0	724.0	698.0	667.0	640.0	586.0
7°	855.0	850.0	839.0	820.0	796.0	765.0	731.0	699.0	663.0	633.0	569.0
8°	880.0	875.0	861.0	841.0	810.0	775.0	738.0	699.0	659.0	623.0	551.0
9°	910.0	903.0	889.0	861.0	826.0	786.0	742.0	697.0	653.0	612.0	532.0
10°	928.0	928.0	911.0	881.0	840.0	793.0	745.0	696.0	647.0	601.0	513.0
11°	960.0	952.0	927.0	898.0	853.0	801.0	746.0	691.0	638.0	588.0	494.0
12°	978.0	970.0	948.0	912.0	863.0	806.0	745.0	685.0	627.0	575.0	476.0
13°	998.0	991.0	965.0	923.0	871.0	807.0	743.0	679.0	617.0	561.0	456.0
14°	1014.1	1008.0	980.0	934.0	877.0	809.0	739.0	671.0	604.0	546.0	434.0
15°	1032.1	1021.1	990.0	941.0	878.0	808.0	733.0	661.0	593.0	531.0	419.0
16°	1043.1	1033.1	999.0	946.0	879.0	806.0	727.0	650.0	579.0	516.0	397.0
17°	1054.1	1044.1	1006.0	950.0	878.0	800.0	719.0	639.0	568.0	499.0	378.0
18°	1062.1	1051.1	1012.1	950.0	875.0	793.0	707.0	626.0	551.0	483.0	361.0
19°	1066.1	1053.1	1012.1	949.0	871.0	784.0	697.0	613.0	535.0	466.0	342.0
20°	1067.1	1053.1	1013.1	945.0	862.0	773.0	683.0	599.0	518.0	449.0	324.0
21°	1064.1	1050.1	1007.0	939.0	855.0	761.0	670.0	581.0	501.0	429.0	307.0
22.5°	1053.1	1038.1	993.0	923.0	835.0	742.0	647.0	556.0	477.0	406.0	283.0
23°	1047.1	1034.1	988.0	917.0	830.0	733.0	637.0	549.0	465.0	397.0	276.0
24°	1032.1	1020.1	974.0	903.0	814.0	719.0	619.0	532.0	450.0	379.0	260.0
25°	1016.1	997.0	956.0	885.0	796.0	699.0	603.0	513.0	433.0	364.0	245.0
26°	987.0	973.0	933.0	863.0	778.0	679.0	584.0	493.0	415.0	344.0	233.0
27°	959.0	949.0	911.0	841.0	759.0	660.0	565.0	476.0	393.0	328.0	217.0
28°	933.0	922.0	880.0	815.0	735.0	640.0	541.0	457.0	378.0	313.0	205.0
29°	899.0	891.0	852.0	794.0	710.0	617.0	522.0	437.0	361.0	297.0	193.0
30°	866.0	857.0	819.0	763.0	687.0	594.0	502.0	418.0	344.0	284.0	183.0
32.5°	771.0	768.0	734.0	686.0	617.0	533.0	449.0	369.0	301.0	247.0	158.0
35°	674.0	671.0	640.0	604.0	550.0	475.0	394.0	321.0	257.0	206.0	133.0
37.5°	568.0	565.0	550.0	518.0	478.0	410.0	340.0	275.0	214.0	173.0	112.0
40°	471.0	468.0	461.0	438.0	407.0	350.0	289.0	226.0	177.0	141.0	92.0
42.5°	368.0	372.0	370.0	362.0	342.0	292.0	242.0	188.0	146.0	114.0	76.0
45°	281.0	283.0	288.0	292.0	278.0	242.0	198.0	149.0	114.0	93.0	63.0
47.5°	204.0	209.0	220.0	228.0	224.0	197.0	157.0	119.0	93.0	77.0	54.0
50°	146.0	149.0	160.0	177.0	177.0	155.0	122.0	91.0	75.0	63.0	48.0
52.5°	105.0	107.0	117.0	130.0	134.0	118.0	94.0	72.0	59.0	49.0	40.0
55°	71.0	74.0	84.0	98.0	98.0	90.0	69.0	54.0	45.0	39.0	33.0
57.5°	48.0	51.0	58.0	70.0	70.0	64.0	52.0	40.0	35.0	31.0	28.0
60°	33.0	34.0	42.0	48.0	49.0	44.0	37.0	31.0	28.0	27.0	25.0



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**CANDELA DISTRIBUTION (continued):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
67.5°	11.0	12.0	13.0	15.0	16.0	16.0	16.0	17.0	17.0	16.0	17.0
70°	8.0	8.0	9.0	10.0	11.0	12.0	12.0	14.0	13.0	13.0	14.0
72.5°	5.0	6.0	6.0	7.0	8.0	8.0	10.0	10.0	10.0	10.0	11.0
75°	3.0	4.0	4.0	4.0	5.0	6.0	7.0	7.0	7.0	8.0	9.0
77.5°	2.0	2.0	3.0	3.0	3.0	4.0	5.0	5.0	5.0	5.0	6.0
80°	1.0	1.0	1.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0	4.0
82.5°	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	3.0	3.0	3.0
85°	0.0	0.0	0.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	2.0
87.5°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
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°	654.0	654.0	654.0
1°	654.0	653.0	647.0
2°	632.0	623.0	623.0
3°	610.0	598.0	595.0
4°	589.0	567.0	564.0
5°	568.0	540.0	531.0
6°	544.0	512.0	500.0
7°	521.0	484.0	475.0
8°	494.0	458.0	443.0
9°	467.0	431.0	416.0
10°	444.0	405.0	394.0
11°	421.0	381.0	366.0
12°	397.0	358.0	346.0
13°	378.0	336.0	325.0
14°	356.0	319.0	306.0
15°	336.0	298.0	288.0
16°	319.0	282.0	271.0
17°	299.0	266.0	255.0
18°	284.0	251.0	240.0
19°	268.0	236.0	227.0
20°	254.0	224.0	212.0
21°	240.0	209.0	201.0
22.5°	219.0	192.0	183.0
23°	212.0	184.0	177.0
24°	201.0	175.0	166.0
25°	190.0	164.0	157.0
26°	179.0	154.0	148.0
27°	169.0	146.0	141.0
28°	157.0	137.0	134.0
29°	148.0	130.0	128.0
30°	139.0	124.0	122.0
32.5°	120.0	109.0	108.0
35°	103.0	96.0	97.0
37.5°	90.0	86.0	88.0
40°	79.0	76.0	79.0
42.5°	68.0	68.0	72.0
45°	59.0	62.0	64.0
47.5°	51.0	56.0	58.0
50°	44.0	51.0	52.0
52.5°	39.0	46.0	45.0
55°	35.0	40.0	40.0
57.5°	31.0	35.0	34.0
60°	27.0	30.0	30.0





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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
67.5°	16.0	18.0	16.0
70°	14.0	14.0	13.0
72.5°	11.0	11.0	10.0
75°	9.0	8.0	7.0
77.5°	7.0	6.0	6.0
80°	5.0	5.0	5.0
82.5°	4.0	4.0	4.0
85°	3.0	3.0	3.0
87.5°	2.0	2.0	2.0
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



Report Generated By 670245859 / DESKTOP-T8S5UU9

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Scaled Data Report





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

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Scaled Data Report





62.5°	22.0	24.0	29.0	34.0	35.0	31.0	27.0	25.0	23.0	23.0	22.0
65°	16.0	17.0	20.0	23.0	24.0	22.0	20.0	20.0	20.0	19.0	19.0

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62.5°	23.0	25.0	25.0
65°	19.0	21.0	20.0

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Scaled Data Report



(END OF REPORT)