

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: P886654

Luminaire Tested: ML310LSFL9FS1E-TIR4D25AWW-TL3RWSL-1000LM-3500K

Issue Date: 7/5/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886654  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-11)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/5/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML310LSFL9FS1E-TIR4D25AWW-TL3RWSL-1000LM-3500K  
Description: 3IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

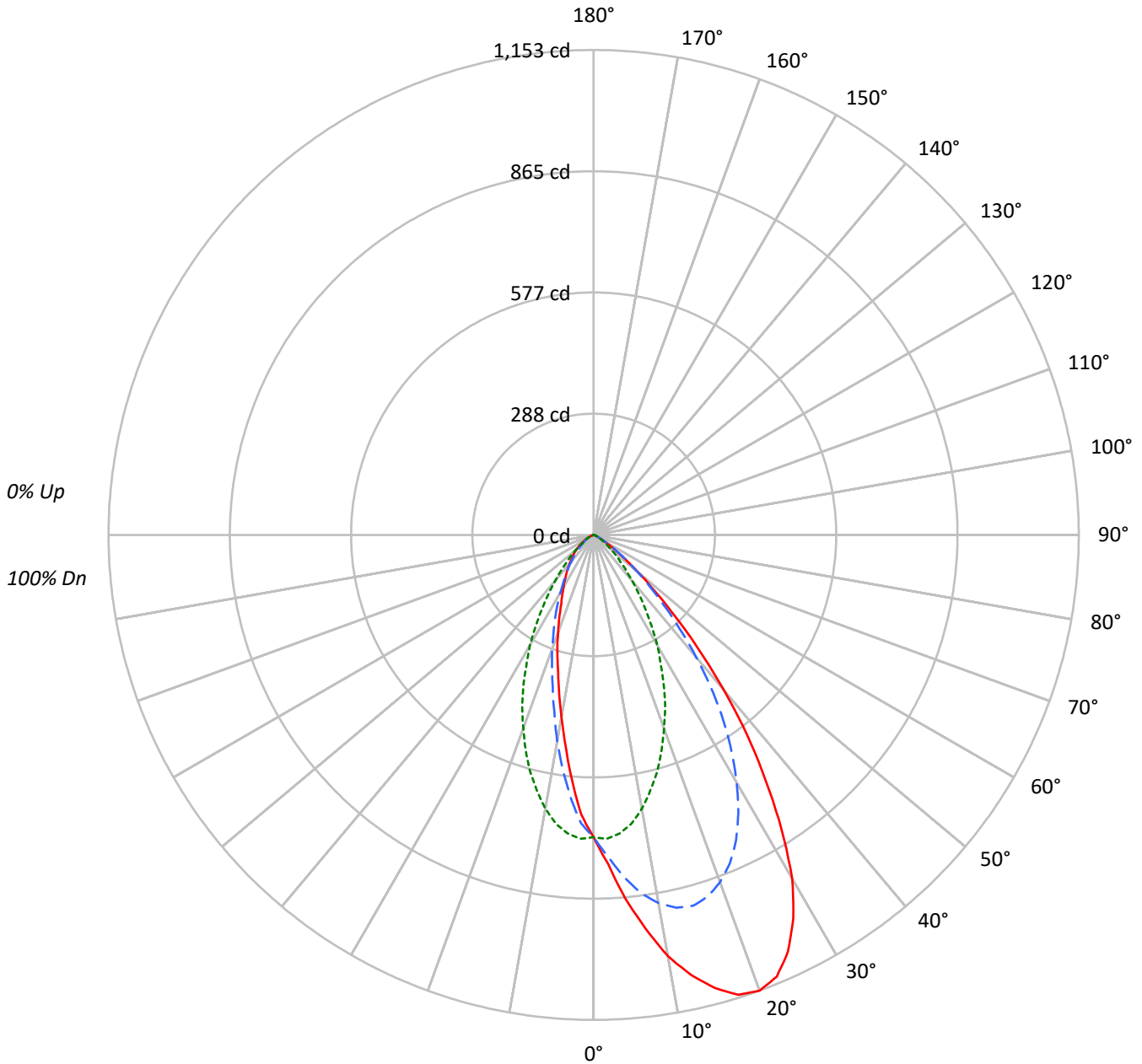
Lumens per Lamp: N/A  
Luminaire Lumens: 847.8 lumens  
Efficiency: N/A  
Efficacy: 61.4 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 0.81 / 0.99  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct

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	100	100	98	97	96	95	94	92				
	1	113	110	107	104	110	108	105	103	103	101	100	100	98	97	96	95	94	92	92	92	90	89	93	90	87	90	88	86	84	
	2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	86	84	84	84	81	81	86	82	82	81	86	82	79	76
	3	100	93	87	83	98	91	86	82	89	84	81	86	82	79	84	81	78	76	76	76	73	73	80	76	72	78	74	71	70	
	4	94	86	79	75	92	84	79	74	82	77	73	80	76	72	78	74	71	70	70	70	67	75	70	66	73	69	66	64		
	5	89	79	73	68	87	78	72	67	76	71	67	75	70	66	73	69	66	64	64	64	61	70	65	61	68	64	60	59		
	6	83	73	67	62	82	73	66	62	71	65	61	70	65	61	68	64	60	59	59	59	57	65	60	56	64	59	56	54		
	7	79	68	62	57	77	68	61	57	66	61	56	65	60	56	64	59	56	54	54	54	52	61	56	52	60	55	52	50		
	8	74	64	57	52	73	63	57	52	62	56	52	61	56	52	60	55	52	50	50	50	48	57	52	48	56	51	48	47		
	9	70	60	53	49	69	59	53	49	58	52	48	57	52	48	56	51	48	47	47	47	45	66	55	49	45	55	49	45	43	
	10	67	56	50	45	66	55	49	45	55	49	45	54	49	45	53	48	45	43	43	43	41	54	49	45	53	48	45	43		

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

	0°	45°	90°	135°	180°
0°	157597	157597	157597	157597	157597
5°	191151	179385	156790	137948	129231
10°	226471	197881	147158	110975	97861
15°	253214	207220	132328	85449	74302
20°	269033	204896	114040	67136	57638
25°	264451	193802	95473	52261	44253
30°	239100	172090	76645	39804	36284
35°	190945	143563	56965	30356	30356
40°	137458	108532	40705	23558	25419
45°	84567	73139	27538	18234	21553
50°	46702	45235	18592	13509	17500
55°	23321	25978	11851	10208	13916
60°	10789	12894	8464	7499	10306
65°	4981	6097	6123	4981	6123
70°	2052	3077	4103	2757	3398
75°	932	1779	1779	1779	1779
80°	0	0	1389	1389	1389
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 20°  
 Vertical Angle: 45°  
 Luminance: 84908 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	67.9	8.0
10°-20°	182.0	21.5
20°-30°	233.8	27.6
30°-40°	198.7	23.4
40°-50°	109.5	12.9
50°-60°	41.2	4.9
60°-70°	12.0	1.4
70°-80°	2.5	0.3
80°-90°	0.3	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°	483.7	57.1
0°-40°	682.4	80.5
0°-60°	833.1	98.3
0°-90°	847.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	847.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	719	719	719	719	719	
5°	868	815	712	627	587	87
15°	1115	913	583	376	327	315
25°	1093	801	395	216	183	495
35°	713	536	213	113	113	443
45°	273	236	89	59	70	218
55°	61	68	31	27	36	61
65°	10	12	12	10	12	11
75°	1	2	2	2	2	2
85°	0	0	0	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°	718.7	718.7	718.7	718.7	718.7	718.7	718.7	718.7	718.7	718.7	718.7
2.5°	782.8	782.8	780.7	775.4	767.9	761.5	750.8	742.2	732.6	723.0	701.6
5°	868.4	865.2	855.6	842.7	826.7	803.2	780.7	759.3	734.7	712.3	663.1
7.5°	943.3	939.0	926.1	901.6	875.9	841.7	803.2	764.7	727.2	691.9	618.1
10°	1017.1	1007.4	988.2	955.0	913.3	864.1	811.7	760.4	708.0	660.9	571.1
12.5°	1071.6	1063.0	1036.3	995.7	939.0	877.0	809.6	743.3	680.2	622.4	517.6
15°	1115.4	1104.7	1070.5	1018.1	949.7	875.9	794.6	719.7	647.0	582.9	463.1
17.5°	1146.5	1130.4	1088.7	1023.5	944.3	858.8	774.3	685.5	608.5	536.9	410.7
20°	1152.9	1139.0	1090.8	1018.1	925.1	831.0	735.8	644.9	562.5	488.7	361.5
22.5°	1136.8	1121.9	1070.5	993.5	897.3	793.5	695.1	602.1	514.4	443.8	316.6
25°	1093.0	1078.0	1026.7	950.7	854.5	747.5	641.7	549.7	467.4	394.6	272.7
27.5°	1027.7	1005.3	964.6	889.8	796.7	693.0	587.1	496.2	412.8	344.4	232.1
30°	944.3	915.5	881.2	816.0	728.3	631.0	529.4	439.5	362.5	302.7	198.9
32.5°	832.0	821.3	785.0	730.4	656.6	563.6	469.5	386.1	313.4	254.5	170.0
35°	713.3	702.6	683.4	638.5	576.4	496.2	408.5	328.3	265.2	212.8	140.1
37.5°	597.8	587.1	570.0	542.2	488.7	426.7	348.6	279.1	222.4	175.4	116.6
40°	480.2	475.9	462.0	441.7	404.3	354.0	290.9	231.0	180.7	142.2	94.1
42.5°	370.0	367.9	358.3	346.5	323.0	282.3	239.6	186.1	143.3	113.4	74.9
45°	272.7	267.4	273.8	264.2	250.3	221.4	183.9	144.4	110.2	88.8	58.8
47.5°	194.6	195.7	198.9	201.1	190.4	166.8	138.0	105.9	85.6	72.7	48.1
50°	136.9	135.8	143.3	149.7	140.1	125.1	99.5	81.3	65.2	54.5	38.5
52.5°	94.1	95.2	103.7	108.0	105.9	88.8	70.6	56.7	48.1	40.6	29.9
55°	61.0	64.2	70.6	75.9	74.9	61.0	49.2	40.6	36.4	31.0	23.5
57.5°	39.6	40.6	47.1	51.3	50.3	40.6	33.2	29.9	26.7	23.5	17.1
60°	24.6	25.7	29.9	34.2	32.1	26.7	22.5	21.4	20.3	19.3	15.0
62.5°	15.0	16.0	19.3	22.5	20.3	17.1	15.0	16.0	16.0	15.0	11.8
65°	9.6	9.6	11.8	13.9	12.8	10.7	10.7	11.8	12.8	11.8	9.6
67.5°	5.3	6.4	7.5	8.6	7.5	7.5	8.6	9.6	9.6	9.6	7.5
70°	3.2	4.3	4.3	4.3	4.3	5.3	5.3	6.4	7.5	6.4	5.3
72.5°	2.1	2.1	2.1	3.2	3.2	3.2	3.2	4.3	4.3	4.3	4.3
75°	1.1	1.1	1.1	1.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1
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	0.0	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°	718.7	718.7	718.7
2.5°	686.6	675.9	666.3
5°	626.7	601.0	587.1
7.5°	561.5	521.9	508.0
10°	498.4	450.2	439.5
12.5°	432.1	392.5	379.7
15°	376.4	339.0	327.3
17.5°	328.3	294.1	286.6
20°	287.7	256.7	247.0
22.5°	248.1	220.3	212.8
25°	216.0	191.4	182.9
27.5°	185.0	164.7	161.5
30°	157.2	144.4	143.3
32.5°	133.7	125.1	127.3
35°	113.4	110.2	113.4
37.5°	98.4	97.3	100.5
40°	82.3	84.5	88.8
42.5°	69.5	74.9	79.1
45°	58.8	66.3	69.5
47.5°	48.1	57.8	61.0
50°	39.6	50.3	51.3
52.5°	32.1	41.7	43.8
55°	26.7	34.2	36.4
57.5°	22.5	27.8	28.9
60°	17.1	21.4	23.5
62.5°	12.8	17.1	17.1
65°	9.6	11.8	11.8
67.5°	6.4	8.6	8.6
70°	4.3	5.3	5.3
72.5°	3.2	3.2	3.2
75°	2.1	2.1	2.1
77.5°	1.1	1.1	1.1
80°	1.1	1.1	1.1
82.5°	1.1	1.1	1.1
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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