

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: P886666

Luminaire Tested: ML310LSFL9FS1E-TIR4D25AWW-TL3SWMW-1000LM-5000K

Issue Date: 7/8/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886666  
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-5000K  
Description: 3IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM  
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 959.6 lumens  
Efficiency: N/A  
Efficacy: 69.5 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

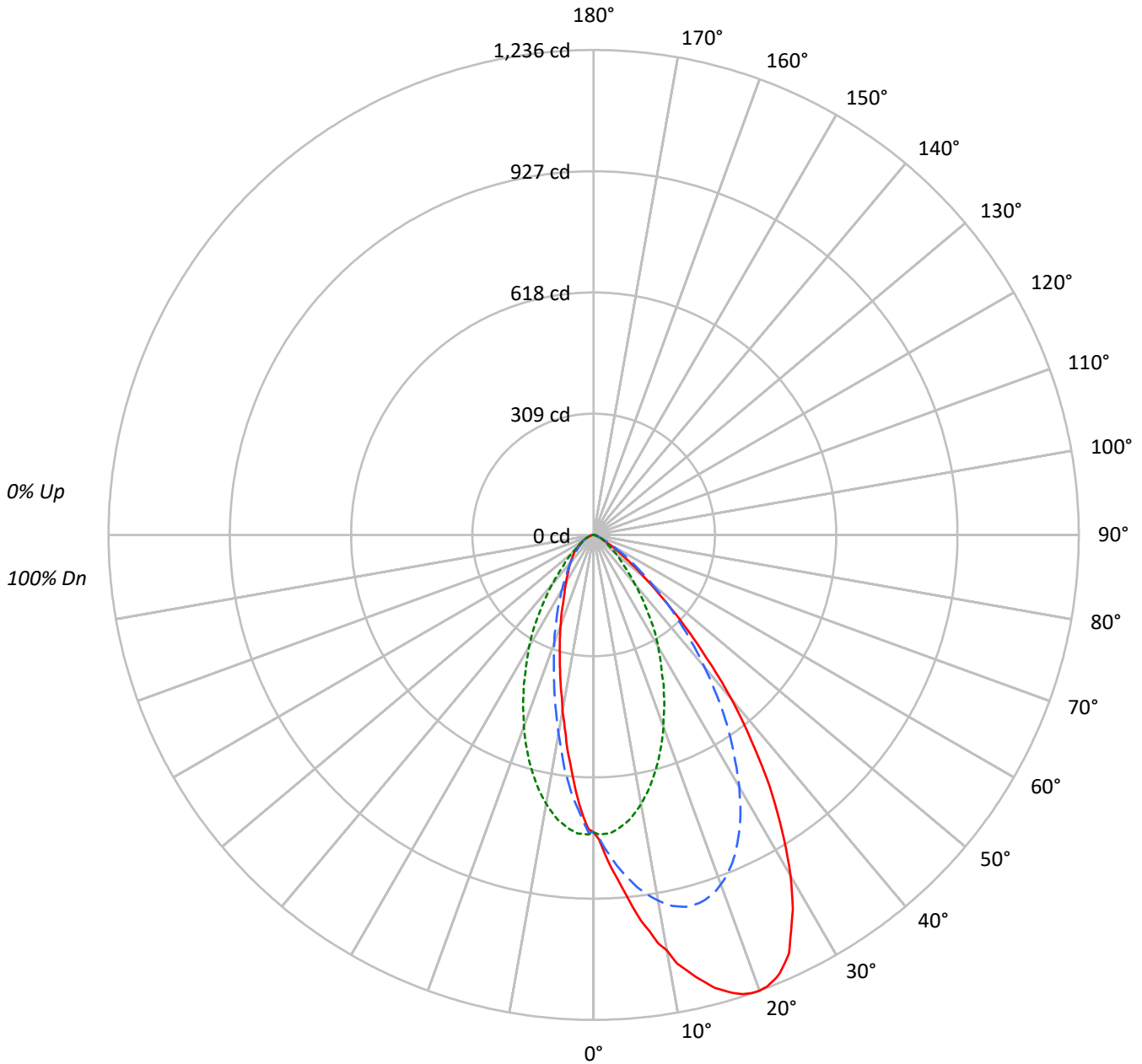
Input Watts (W): 13.8  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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°	130510	130510	130510	130510	130510
5°	158445	149542	129609	113790	106373
10°	188048	165453	121786	89975	79832
15°	213209	174161	109707	69411	59498
20°	226584	173608	95358	53938	45012
25°	223718	164582	80153	41844	34566
30°	199542	147588	65447	32037	28120
35°	164201	124854	50185	25082	23632
40°	122707	98606	36736	20571	20571
45°	79303	73372	26256	16659	18072
50°	45334	51537	19559	13664	16156
55°	24711	32713	13572	12191	13902
60°	13158	18566	10781	10781	11987
65°	7539	10860	8965	8965	9454
70°	4683	6697	7604	8157	7604
75°	2329	4259	6188	6920	5390
80°	1190	2281	3471	5752	5752
85°	0	2371	4545	6916	6916

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 30°  
 Vertical Angle: 45°  
 Luminance: 82396 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	71.7	7.5
10°-20°	192.8	20.1
20°-30°	249.5	26.0
30°-40°	218.0	22.7
40°-50°	132.5	13.8
50°-60°	59.8	6.2
60°-70°	24.1	2.5
70°-80°	8.9	0.9
80°-90°	2.3	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°	514.0	53.6
0°-40°	732.0	76.3
0°-60°	924.4	96.3
0°-90°	959.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	959.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	758	758	758	758	758	
5°	916	865	750	658	615	93
15°	1196	977	615	389	334	338
25°	1177	866	422	220	182	531
35°	781	594	239	119	112	482
45°	326	301	108	68	74	257
55°	82	109	45	41	46	80
65°	18	27	22	22	23	20
75°	4	6	9	10	8	4
85°	0	1	2	4	4	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°	757.8	757.8	757.8	757.8	757.8	757.8	757.8	757.8	757.8	757.8	757.8
1°	776.3	775.2	772.9	770.5	771.7	770.5	767.1	765.9	765.9	763.6	762.4
2°	813.4	808.8	804.1	806.5	801.8	794.9	785.6	777.5	769.4	762.4	745.1
3°	848.2	843.5	843.5	837.8	826.2	814.6	801.8	786.8	774.0	762.4	733.5
4°	880.6	878.3	873.7	860.9	854.0	835.4	815.7	796.0	776.3	756.6	716.1
5°	916.5	916.5	906.1	894.5	876.0	854.0	828.5	800.7	775.2	749.7	698.7
6°	953.6	953.6	939.7	922.3	900.3	869.0	838.9	808.8	772.9	741.6	679.0
7°	990.7	984.9	972.2	950.1	922.3	886.4	847.0	809.9	768.2	733.5	659.3
8°	1019.7	1013.9	997.7	974.5	938.6	898.0	855.1	809.9	763.6	721.9	638.5
9°	1054.4	1046.3	1030.1	997.7	957.1	910.8	859.8	807.6	756.6	709.1	616.4
10°	1075.3	1075.3	1055.6	1020.8	973.3	918.9	863.2	806.5	749.7	696.4	594.4
11°	1112.4	1103.1	1074.1	1040.5	988.4	928.1	864.4	800.7	739.3	681.3	572.4
12°	1133.2	1124.0	1098.5	1056.7	1000.0	933.9	863.2	793.7	726.5	666.3	551.5
13°	1156.4	1148.3	1118.2	1069.5	1009.2	935.1	860.9	786.8	714.9	650.0	528.4
14°	1174.9	1168.0	1135.5	1082.2	1016.2	937.4	856.3	777.5	699.9	632.7	502.9
15°	1195.8	1183.0	1147.1	1090.4	1017.4	936.2	849.3	765.9	687.1	615.3	485.5
16°	1208.5	1197.0	1157.6	1096.1	1018.5	933.9	842.4	753.2	670.9	597.9	460.0
17°	1221.3	1209.7	1165.7	1100.8	1017.4	927.0	833.1	740.4	658.2	578.2	438.0
18°	1230.6	1217.8	1172.6	1100.8	1013.9	918.9	819.2	725.4	638.5	559.7	418.3
19°	1235.2	1220.1	1172.6	1099.6	1009.2	908.4	807.6	710.3	619.9	540.0	396.3
20°	1236.3	1220.1	1173.8	1095.0	998.8	895.7	791.4	694.1	600.2	520.3	375.4
21°	1232.9	1216.7	1166.8	1088.0	990.7	881.8	776.3	673.2	580.5	497.1	355.7
22.5°	1220.1	1202.7	1150.6	1069.5	967.5	859.8	749.7	644.2	552.7	470.4	327.9
23°	1213.2	1198.1	1144.8	1062.5	961.7	849.3	738.1	636.1	538.8	460.0	319.8
24°	1195.8	1181.9	1128.6	1046.3	943.2	833.1	717.2	616.4	521.4	439.2	301.3
25°	1177.3	1155.2	1107.7	1025.5	922.3	809.9	698.7	594.4	501.7	421.8	283.9
26°	1143.7	1127.4	1081.1	1000.0	901.5	786.8	676.7	571.2	480.9	398.6	270.0
27°	1111.2	1099.6	1055.6	974.5	879.5	764.8	654.7	551.5	455.4	380.1	251.4
28°	1081.1	1068.3	1019.7	944.4	851.7	741.6	626.9	529.5	438.0	362.7	237.5
29°	1041.7	1032.4	987.2	920.0	822.7	714.9	604.8	506.4	418.3	344.1	223.6
30°	1003.4	993.0	949.0	884.1	796.0	688.3	581.7	484.3	398.6	329.1	212.0
32.5°	893.4	889.9	850.5	794.9	714.9	617.6	520.3	427.6	348.8	286.2	183.1
35°	781.0	777.5	741.6	699.9	637.3	550.4	456.5	371.9	297.8	238.7	154.1
37.5°	658.2	654.7	637.3	600.2	553.9	475.1	394.0	318.6	248.0	200.5	129.8
40°	545.8	542.3	534.2	507.5	471.6	405.6	334.9	261.9	205.1	163.4	106.6
42.5°	426.4	431.0	428.7	419.5	396.3	338.3	280.4	217.8	169.2	132.1	88.1
45°	325.6	327.9	333.7	338.3	322.1	280.4	229.4	172.6	132.1	107.8	73.0
47.5°	236.4	242.2	254.9	264.2	259.6	228.3	181.9	137.9	107.8	89.2	62.6
50°	169.2	172.6	185.4	205.1	205.1	179.6	141.4	105.4	86.9	73.0	55.6
52.5°	121.7	124.0	135.6	150.6	155.3	136.7	108.9	83.4	68.4	56.8	46.3
55°	82.3	85.7	97.3	113.6	113.6	104.3	80.0	62.6	52.1	45.2	38.2
57.5°	55.6	59.1	67.2	81.1	81.1	74.2	60.3	46.3	40.6	35.9	32.4
60°	38.2	39.4	48.7	55.6	56.8	51.0	42.9	35.9	32.4	31.3	29.0



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**CANDELA DISTRIBUTION (continued):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
67.5°	12.7	13.9	15.1	17.4	18.5	18.5	18.5	19.7	19.7	18.5	19.7
70°	9.3	9.3	10.4	11.6	12.7	13.9	13.9	16.2	15.1	15.1	16.2
72.5°	5.8	7.0	7.0	8.1	9.3	9.3	11.6	11.6	11.6	11.6	12.7
75°	3.5	4.6	4.6	4.6	5.8	7.0	8.1	8.1	8.1	9.3	10.4
77.5°	2.3	2.3	3.5	3.5	3.5	4.6	5.8	5.8	5.8	5.8	7.0
80°	1.2	1.2	1.2	2.3	2.3	2.3	3.5	3.5	3.5	3.5	4.6
82.5°	1.2	1.2	1.2	1.2	1.2	2.3	2.3	2.3	3.5	3.5	3.5
85°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	2.3	2.3	2.3	2.3
87.5°	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2
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°	757.8	757.8	757.8
1°	757.8	756.6	749.7
2°	732.3	721.9	721.9
3°	706.8	692.9	689.4
4°	682.5	657.0	653.5
5°	658.2	625.7	615.3
6°	630.3	593.3	579.4
7°	603.7	560.8	550.4
8°	572.4	530.7	513.3
9°	541.1	499.4	482.0
10°	514.5	469.3	456.5
11°	487.8	441.5	424.1
12°	460.0	414.8	400.9
13°	438.0	389.3	376.6
14°	412.5	369.6	354.6
15°	389.3	345.3	333.7
16°	369.6	326.8	314.0
17°	346.5	308.2	295.5
18°	329.1	290.8	278.1
19°	310.5	273.5	263.0
20°	294.3	259.6	245.6
21°	278.1	242.2	232.9
22.5°	253.8	222.5	212.0
23°	245.6	213.2	205.1
24°	232.9	202.8	192.3
25°	220.2	190.0	181.9
26°	207.4	178.4	171.5
27°	195.8	169.2	163.4
28°	181.9	158.7	155.3
29°	171.5	150.6	148.3
30°	161.1	143.7	141.4
32.5°	139.0	126.3	125.1
35°	119.3	111.2	112.4
37.5°	104.3	99.6	102.0
40°	91.5	88.1	91.5
42.5°	78.8	78.8	83.4
45°	68.4	71.8	74.2
47.5°	59.1	64.9	67.2
50°	51.0	59.1	60.3
52.5°	45.2	53.3	52.1
55°	40.6	46.3	46.3
57.5°	35.9	40.6	39.4
60°	31.3	34.8	34.8





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**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
67.5°	18.5	20.9	18.5
70°	16.2	16.2	15.1
72.5°	12.7	12.7	11.6
75°	10.4	9.3	8.1
77.5°	8.1	7.0	7.0
80°	5.8	5.8	5.8
82.5°	4.6	4.6	4.6
85°	3.5	3.5	3.5
87.5°	2.3	2.3	2.3
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°	25.5	27.8	33.6	39.4	40.6	35.9	31.3	29.0	26.7	26.7	25.5
65°	18.5	19.7	23.2	26.7	27.8	25.5	23.2	23.2	23.2	22.0	22.0

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62.5°	26.7	29.0	29.0
65°	22.0	24.3	23.2

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Scaled Data Report



(END OF REPORT)