

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: P886953

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-4000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886953
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-47)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/9/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-4000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1050.2 lumens
Efficiency: N/A
Efficacy: 59.7 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 0.8 / 0.99
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

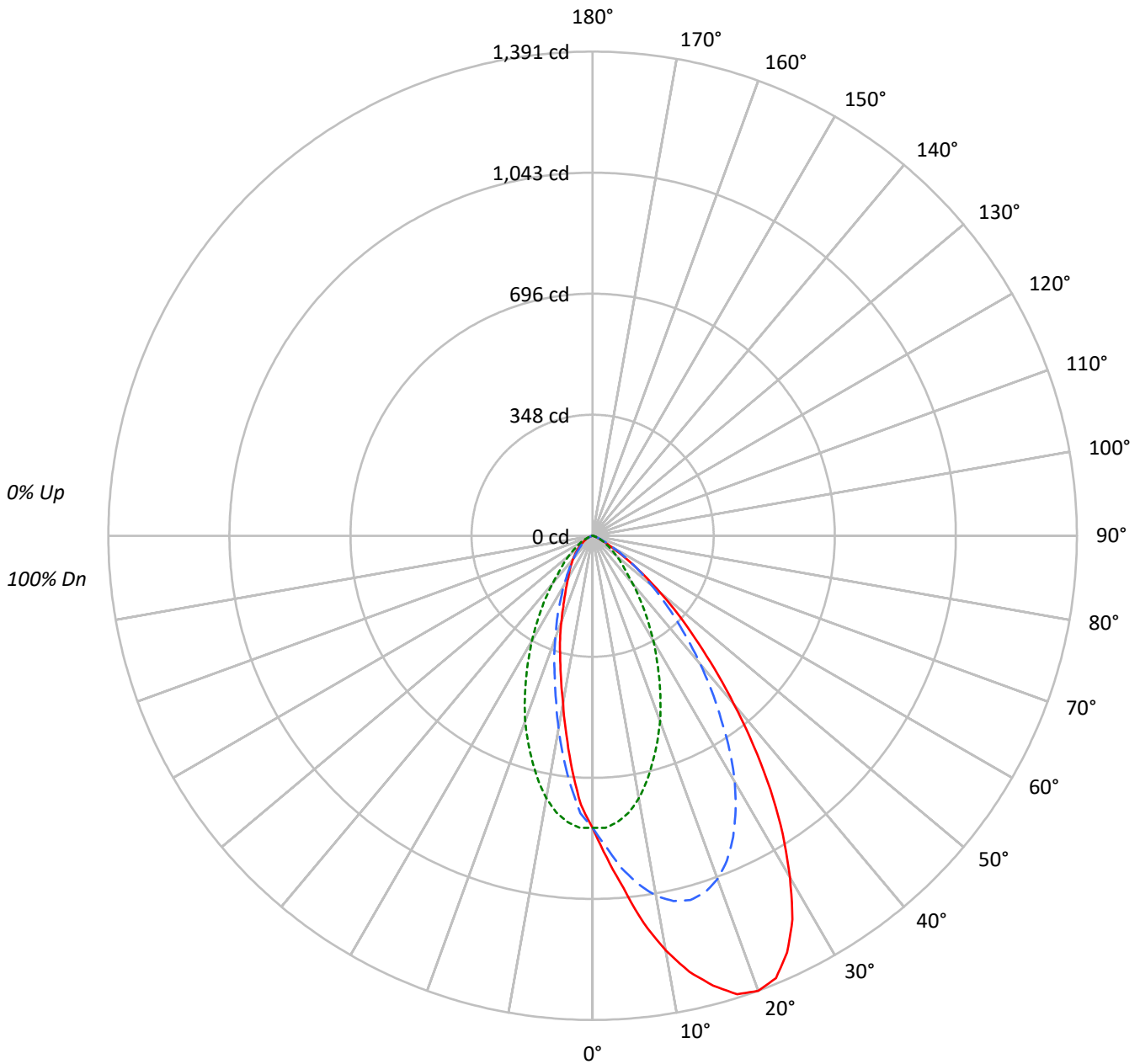
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20										
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	87	83	79	85	81	78	83	79	77	75								
4	93	84	78	73	91	83	77	72	81	76	71	79	74	71	77	73	70	68								
5	87	78	71	66	86	77	70	65	75	69	65	73	68	64	71	67	64	62								
6	82	72	65	60	80	71	64	60	69	64	59	68	63	59	66	62	58	57								
7	77	67	60	55	76	66	59	55	64	59	54	63	58	54	62	57	54	52								
8	73	62	55	50	72	61	55	50	60	54	50	59	54	50	58	53	50	48								
9	69	58	51	47	68	57	51	47	56	50	46	55	50	46	54	50	46	44								
10	65	54	48	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°	183933	183933	183933	183933	183933
5°	223618	211060	181708	158573	148338
10°	269311	233964	170516	125181	108905
15°	303725	245949	151987	95211	81658
20°	324595	244940	132218	72830	60952
25°	319688	231062	109506	55431	45511
30°	286930	206791	88267	41475	35575
35°	238166	172260	68422	31695	29634
40°	180567	137644	51010	24074	24703
45°	128354	104336	38764	18545	20932
50°	85319	74931	29816	14737	17364
55°	49929	52051	22441	12272	13954
60°	22805	30568	17937	10175	11183
65°	11467	16085	12038	8042	8613
70°	6411	7822	7822	5706	4937
75°	2796	2796	3728	1864	932
80°	0	695	1389	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 130060 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	79.1	7.5
10°-20°	212.4	20.2
20°-30°	273.5	26.0
30°-40°	237.0	22.6
40°-50°	148.8	14.2
50°-60°	71.3	6.8
60°-70°	24.0	2.3
70°-80°	4.0	0.4
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°	565.0	53.8
0°-40°	802.0	76.4
0°-60°	1022.1	97.3
0°-90°	1050.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1050.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	839	839	839	839	839	
5°	1016	959	826	720	674	103
15°	1338	1083	670	419	360	378
25°	1321	955	453	229	188	598
35°	890	644	256	118	111	551
45°	414	336	125	60	68	326
55°	131	136	59	32	36	121
65°	22	31	23	16	17	25
75°	3	3	4	2	1	4
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°	838.8	838.8	838.8	838.8	838.8	838.8	838.8	838.8	838.8	838.8	838.8
2.5°	925.1	914.1	916.3	910.7	901.9	888.6	879.8	866.5	854.3	839.9	814.5
5°	1015.9	1017.0	1004.8	991.5	976.0	941.7	916.3	886.4	855.4	825.5	766.9
7.5°	1122.1	1115.5	1100.0	1066.8	1032.5	987.1	941.7	894.1	847.7	801.2	712.7
10°	1209.5	1199.6	1175.2	1132.1	1084.5	1017.0	955.0	886.4	823.3	765.8	652.9
12.5°	1282.6	1273.7	1240.5	1183.0	1115.5	1034.7	951.7	868.7	791.2	720.4	586.5
15°	1337.9	1325.7	1282.6	1216.2	1132.1	1034.7	939.5	839.9	751.4	669.5	523.4
17.5°	1381.1	1362.2	1306.9	1229.5	1128.8	1020.3	909.6	804.5	706.0	618.6	461.5
20°	1391.0	1374.4	1311.3	1221.7	1112.2	987.1	870.9	754.7	656.2	566.6	405.0
22.5°	1375.5	1350.1	1292.5	1195.1	1074.5	943.9	821.1	707.1	599.8	509.0	349.7
25°	1321.3	1303.6	1241.6	1140.9	1020.3	889.7	762.5	641.8	545.6	452.6	303.2
27.5°	1242.7	1221.7	1160.8	1073.4	957.2	822.2	699.4	585.4	486.9	398.4	260.1
30°	1133.2	1118.8	1066.8	978.3	880.9	752.5	634.1	524.5	429.4	348.6	222.4
32.5°	1015.9	996.0	953.9	882.0	790.1	676.1	564.4	460.4	371.8	299.9	187.0
35°	889.7	878.7	836.6	770.2	691.6	595.4	495.8	399.5	319.8	255.6	157.1
37.5°	759.1	745.9	719.3	666.2	604.2	517.9	426.0	343.1	272.2	215.8	130.6
40°	630.8	621.9	602.0	564.4	515.7	446.0	360.8	287.7	225.8	178.2	108.4
42.5°	516.8	514.6	502.4	474.7	434.9	371.8	307.6	239.0	187.0	146.1	87.4
45°	413.9	419.4	407.2	390.6	360.8	312.1	253.4	197.0	156.0	125.0	74.1
47.5°	330.9	326.5	325.3	318.7	293.3	253.4	203.6	162.7	135.0	106.2	64.2
50°	250.1	249.0	254.5	255.6	234.6	204.7	166.0	137.2	109.6	87.4	53.1
52.5°	183.7	185.9	194.8	201.4	188.1	161.6	137.2	109.6	90.7	73.0	45.4
55°	130.6	130.6	143.9	151.6	145.0	127.3	105.1	86.3	70.8	58.7	36.5
57.5°	81.9	85.2	98.5	108.4	106.2	95.2	78.6	65.3	56.4	48.7	32.1
60°	52.0	54.2	65.3	73.0	73.0	66.4	57.5	49.8	46.5	40.9	27.7
62.5°	33.2	36.5	43.2	49.8	50.9	44.3	38.7	38.7	36.5	32.1	23.2
65°	22.1	23.2	28.8	32.1	32.1	29.9	28.8	28.8	27.7	23.2	16.6
67.5°	14.4	15.5	18.8	21.0	19.9	17.7	19.9	21.0	19.9	17.7	13.3
70°	10.0	10.0	11.1	13.3	12.2	12.2	13.3	13.3	13.3	12.2	8.9
72.5°	6.6	6.6	6.6	6.6	6.6	6.6	7.7	8.9	8.9	8.9	5.5
75°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	4.4	4.4	4.4	2.2
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	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	0.0
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	1.1	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°	838.8	838.8	838.8
2.5°	797.9	787.9	773.5
5°	720.4	689.4	673.9
7.5°	642.9	595.4	576.5
10°	562.2	509.0	489.1
12.5°	485.8	436.0	418.3
15°	419.4	374.0	359.7
17.5°	366.3	323.1	311.0
20°	312.1	273.3	261.2
22.5°	270.0	233.5	220.2
25°	229.1	195.9	188.1
27.5°	193.7	167.1	161.6
30°	163.8	145.0	140.5
32.5°	139.4	126.2	125.0
35°	118.4	109.6	110.7
37.5°	100.7	95.2	98.5
40°	84.1	84.1	86.3
42.5°	71.9	74.1	77.5
45°	59.8	65.3	67.5
47.5°	49.8	56.4	58.7
50°	43.2	48.7	50.9
52.5°	37.6	42.1	43.2
55°	32.1	36.5	36.5
57.5°	27.7	29.9	31.0
60°	23.2	25.5	25.5
62.5°	18.8	21.0	21.0
65°	15.5	16.6	16.6
67.5°	12.2	12.2	12.2
70°	8.9	8.9	7.7
72.5°	4.4	4.4	4.4
75°	2.2	1.1	1.1
77.5°	0.0	0.0	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
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report





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

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