

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: P886954

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-5000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886954
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-5000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT
Ballast/Driver: -

Summary

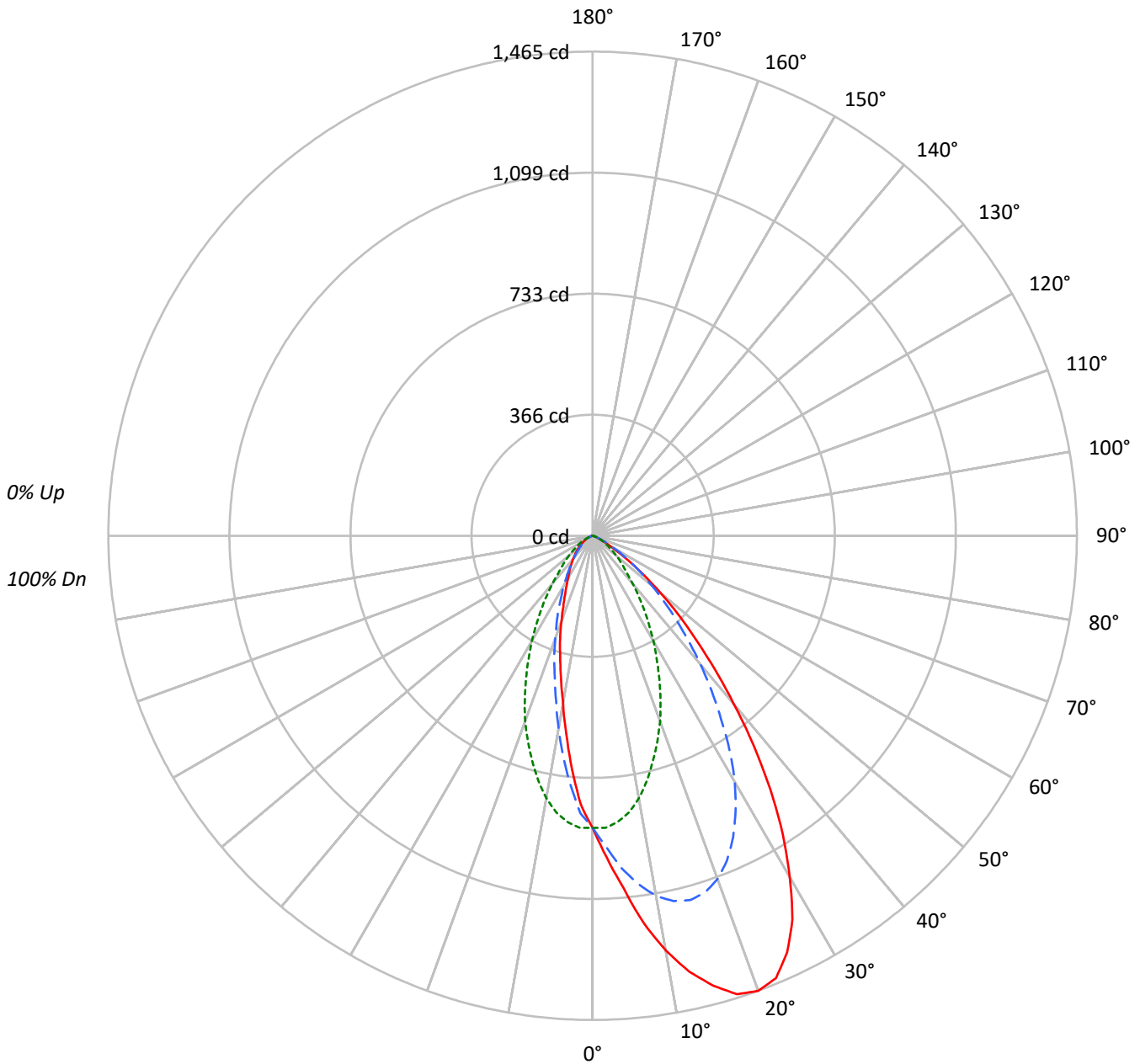
Lumens per Lamp: N/A
Luminaire Lumens: 1106.1 lumens
Efficiency: N/A
Efficacy: 62.8 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 0.8 / 0.99
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

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°	193713	193713	193713	193713	193713
5°	235505	222286	191371	167004	156240
10°	283651	246410	179578	131839	114694
15°	319866	259025	160069	100273	85994
20°	341863	257961	139242	76703	64172
25°	336697	243353	115337	58382	47930
30°	302173	217780	92951	43678	37474
35°	250828	181415	72063	33381	31186
40°	190156	144957	53701	25362	26020
45°	135177	109872	40841	19506	22049
50°	89856	78923	31419	15522	18285
55°	52567	54803	23626	12922	14719
60°	24033	32190	18902	10745	11753
65°	12089	16941	12712	8457	9080
70°	6732	8207	8207	5963	5257
75°	2965	2965	3982	1949	1017
80°	0	758	1515	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 136975 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	83.3	7.5
10°-20°	223.7	20.2
20°-30°	288.0	26.0
30°-40°	249.6	22.6
40°-50°	156.7	14.2
50°-60°	75.1	6.8
60°-70°	25.3	2.3
70°-80°	4.3	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°	595.0	53.8
0°-40°	844.6	76.4
0°-60°	1076.4	97.3
0°-90°	1106.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1106.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	883	883	883	883	883	
5°	1070	1010	869	759	710	109
15°	1409	1141	705	442	379	399
25°	1392	1006	477	241	198	630
35°	937	678	269	125	116	580
45°	436	354	132	63	71	343
55°	138	143	62	34	38	127
65°	23	33	24	16	18	26
75°	4	4	5	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°	883.4	883.4	883.4	883.4	883.4	883.4	883.4	883.4	883.4	883.4	883.4
2.5°	974.3	962.7	965.0	959.2	949.9	935.9	926.5	912.6	899.7	884.6	857.8
5°	1069.9	1071.1	1058.2	1044.3	1027.9	991.8	965.0	933.5	900.9	869.4	807.7
7.5°	1181.8	1174.8	1158.5	1123.5	1087.4	1039.6	991.8	941.7	892.7	843.8	750.6
10°	1273.9	1263.4	1237.7	1192.3	1142.2	1071.1	1005.8	933.5	867.1	806.5	687.6
12.5°	1350.8	1341.4	1306.5	1245.9	1174.8	1089.7	1002.3	914.9	833.3	758.7	617.7
15°	1409.0	1396.2	1350.8	1280.8	1192.3	1089.7	989.5	884.6	791.4	705.1	551.3
17.5°	1454.5	1434.7	1376.4	1294.8	1188.8	1074.6	958.0	847.3	743.6	651.5	486.0
20°	1465.0	1447.5	1381.1	1286.7	1171.3	1039.6	917.2	794.8	691.1	596.7	426.6
22.5°	1448.7	1421.9	1361.3	1258.7	1131.7	994.1	864.8	744.7	631.7	536.1	368.3
25°	1391.6	1372.9	1307.7	1201.6	1074.6	937.0	803.0	676.0	574.6	476.7	319.3
27.5°	1308.8	1286.7	1222.6	1130.5	1008.1	865.9	736.6	616.5	512.8	419.6	273.9
30°	1193.4	1178.3	1123.5	1030.3	927.7	792.5	667.8	552.4	452.2	367.1	234.3
32.5°	1069.9	1048.9	1004.6	928.9	832.1	712.1	594.4	484.8	391.6	315.8	197.0
35°	937.0	925.4	881.1	811.2	728.4	627.0	522.1	420.7	336.8	269.2	165.5
37.5°	799.5	785.5	757.6	701.6	636.3	545.4	448.7	361.3	286.7	227.3	137.5
40°	664.3	655.0	634.0	594.4	543.1	469.7	379.9	303.0	237.8	187.6	114.2
42.5°	544.3	541.9	529.1	500.0	458.0	391.6	324.0	251.7	197.0	153.8	92.1
45°	435.9	441.7	428.9	411.4	379.9	328.7	266.9	207.5	164.3	131.7	78.1
47.5°	348.5	343.8	342.6	335.7	308.8	266.9	214.4	171.3	142.2	111.9	67.6
50°	263.4	262.2	268.1	269.2	247.1	215.6	174.8	144.5	115.4	92.1	55.9
52.5°	193.5	195.8	205.1	212.1	198.1	170.2	144.5	115.4	95.6	76.9	47.8
55°	137.5	137.5	151.5	159.7	152.7	134.0	110.7	90.9	74.6	61.8	38.5
57.5°	86.2	89.7	103.7	114.2	111.9	100.2	82.7	68.8	59.4	51.3	33.8
60°	54.8	57.1	68.8	76.9	76.9	69.9	60.6	52.4	48.9	43.1	29.1
62.5°	35.0	38.5	45.5	52.4	53.6	46.6	40.8	40.8	38.5	33.8	24.5
65°	23.3	24.5	30.3	33.8	33.8	31.5	30.3	30.3	29.1	24.5	17.5
67.5°	15.2	16.3	19.8	22.1	21.0	18.6	21.0	22.1	21.0	18.6	14.0
70°	10.5	10.5	11.7	14.0	12.8	12.8	14.0	14.0	14.0	12.8	9.3
72.5°	7.0	7.0	7.0	7.0	7.0	7.0	8.2	9.3	9.3	9.3	5.8
75°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.7	4.7	4.7	2.3
77.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
80°	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	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	1.2	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°	883.4	883.4	883.4
2.5°	840.3	829.8	814.7
5°	758.7	726.1	709.8
7.5°	677.1	627.0	607.2
10°	592.1	536.1	515.1
12.5°	511.6	459.2	440.5
15°	441.7	393.9	378.8
17.5°	385.8	340.3	327.5
20°	328.7	287.9	275.0
22.5°	284.4	245.9	231.9
25°	241.3	206.3	198.1
27.5°	204.0	176.0	170.2
30°	172.5	152.7	148.0
32.5°	146.8	132.9	131.7
35°	124.7	115.4	116.5
37.5°	106.1	100.2	103.7
40°	88.6	88.6	90.9
42.5°	75.8	78.1	81.6
45°	62.9	68.8	71.1
47.5°	52.4	59.4	61.8
50°	45.5	51.3	53.6
52.5°	39.6	44.3	45.5
55°	33.8	38.5	38.5
57.5°	29.1	31.5	32.6
60°	24.5	26.8	26.8
62.5°	19.8	22.1	22.1
65°	16.3	17.5	17.5
67.5°	12.8	12.8	12.8
70°	9.3	9.3	8.2
72.5°	4.7	4.7	4.7
75°	2.3	1.2	1.2
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



Report Generated By 670245859 / DESKTOP-T8S5UU9

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
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Peachtree City, GA 30269

Scaled Data Report





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

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