

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: P886967

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3500K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886967
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-59)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/10/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3500K
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: -

Summary

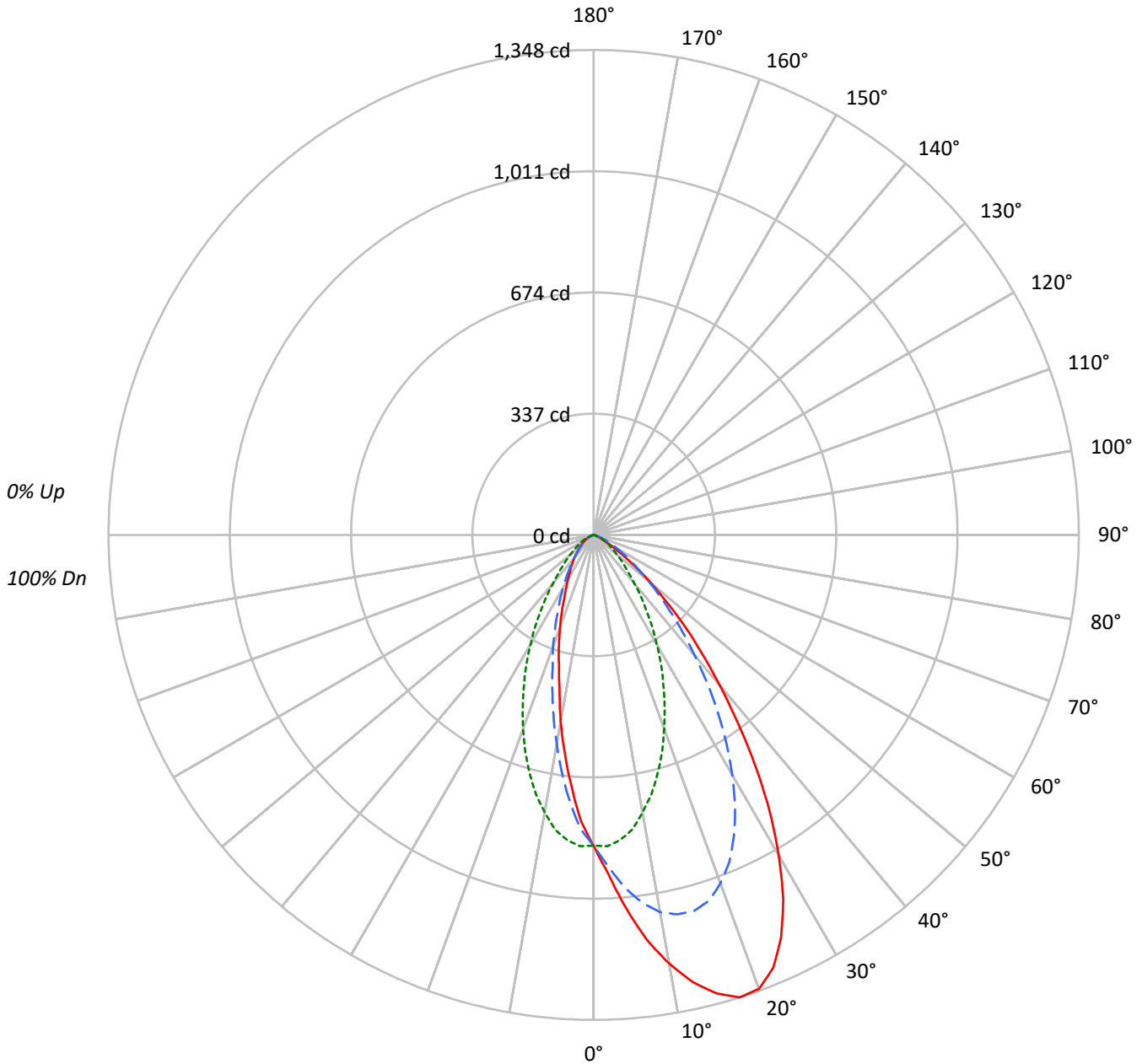
Lumens per Lamp: N/A
Luminaire Lumens: 1015.6 lumens
Efficiency: N/A
Efficacy: 57.7 lumens/watt
Spacing Criteria (0/90/45): 1.08 / 0.79 / 0.96
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

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	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92								
2	106	100	95	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83								
3	99	92	86	82	97	90	85	81	88	83	79	85	81	78	83	80	77	75								
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68								
5	88	78	71	66	86	77	71	66	75	70	65	73	69	65	72	68	64	63								
6	82	72	65	60	81	71	65	60	70	64	60	68	63	59	67	62	59	57								
7	78	67	60	56	76	66	60	55	65	59	55	64	59	55	63	58	54	53								
8	73	63	56	51	72	62	56	51	61	55	51	60	54	51	59	54	50	49								
9	69	59	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45								
10	66	55	48	44	65	54	48	44	54	48	44	53	48	44	52	47	44	42								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	83671	83671	83671	83671	83671
5°	101417	95607	82746	72691	68334
10°	119057	104739	76994	58107	51821
15°	132286	108442	68871	44490	37429
20°	138402	106247	59031	33969	28144
25°	131764	98649	48902	25076	20512
30°	114983	86184	39241	18961	15985
35°	92564	71129	30015	14121	12867
40°	68644	55087	22245	10648	10648
45°	48937	41265	16660	8028	8617
50°	31182	29652	12539	6270	7234
55°	17295	20800	9728	5219	5759
60°	8060	14357	7847	4127	4553
65°	4401	9410	5387	3668	3668
70°	2408	5127	3626	3031	2408
75°	1198	2396	1609	1609	412
80°	0	614	614	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 48937 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	81.3	8.0
10°-20°	214.5	21.1
20°-30°	266.7	26.3
30°-40°	222.2	21.9
40°-50°	135.1	13.3
50°-60°	65.1	6.4
60°-70°	25.2	2.5
70°-80°	5.4	0.5
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°	562.5	55.4
0°-40°	784.7	77.3
0°-60°	984.9	97.0
0°-90°	1015.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1015.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	864	864	864	864	864	
5°	1043	983	851	748	703	105
15°	1319	1081	687	444	373	372
25°	1233	923	458	235	192	558
35°	783	601	254	119	109	486
45°	357	301	122	59	63	276
55°	102	123	58	31	34	97
65°	19	41	24	16	16	21
75°	3	6	4	4	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°	863.7	863.7	863.7	863.7	863.7	863.7	863.7	863.7	863.7	863.7	863.7
2.5°	943.7	944.8	944.8	934.1	927.7	916.0	904.2	892.5	876.5	865.9	840.3
5°	1042.9	1036.5	1031.1	1016.2	995.9	970.4	940.5	909.6	879.7	850.9	790.1
7.5°	1135.6	1127.1	1115.4	1084.5	1051.4	1009.8	962.9	913.8	865.9	825.3	740.0
10°	1210.3	1201.7	1179.4	1143.1	1093.0	1036.5	970.4	907.4	845.6	782.7	677.1
12.5°	1273.2	1260.4	1233.7	1184.7	1116.4	1043.9	965.0	887.2	808.3	739.0	608.9
15°	1319.0	1303.0	1268.9	1204.9	1125.0	1037.5	943.7	854.1	765.6	686.7	546.0
17.5°	1347.8	1328.6	1281.7	1209.2	1116.4	1015.1	910.6	808.3	719.8	631.3	485.2
20°	1342.5	1319.0	1271.1	1190.0	1085.5	975.7	864.8	761.4	660.1	572.6	423.3
22.5°	1303.0	1283.9	1231.6	1149.5	1042.9	925.6	812.5	704.8	605.7	515.0	366.8
25°	1232.7	1215.6	1166.6	1085.5	982.1	863.7	745.4	640.9	543.8	457.5	315.6
27.5°	1141.0	1127.1	1075.9	1002.3	906.4	796.5	680.3	580.1	485.2	405.2	269.8
30°	1027.9	1015.1	969.3	908.5	821.1	719.8	614.2	518.2	427.6	350.8	227.1
32.5°	909.6	894.6	865.9	801.9	733.6	638.7	547.0	453.2	367.9	301.8	191.9
35°	782.7	768.8	746.4	697.4	640.9	562.0	476.6	391.3	315.6	253.8	159.9
37.5°	655.8	652.6	633.4	599.3	549.2	484.1	405.2	334.8	266.6	214.3	132.2
40°	542.8	543.8	526.8	502.2	462.8	408.4	348.7	280.4	221.8	175.9	108.8
42.5°	442.5	442.5	430.8	414.8	388.1	342.3	291.1	234.6	182.3	144.0	88.5
45°	357.2	345.5	347.6	337.0	318.8	283.6	235.7	185.5	151.4	121.6	73.6
47.5°	269.8	274.0	277.2	276.2	260.2	230.3	190.9	154.6	129.0	102.4	62.9
50°	206.9	206.9	213.3	217.5	209.0	184.5	153.6	129.0	104.5	83.2	52.2
52.5°	146.1	152.5	162.1	173.8	165.3	148.2	128.0	103.4	87.4	69.3	43.7
55°	102.4	105.6	119.4	132.2	129.0	117.3	100.2	84.2	69.3	57.6	36.3
57.5°	65.0	67.2	85.3	99.2	100.2	92.8	80.0	67.2	56.5	49.1	30.9
60°	41.6	45.9	56.5	72.5	75.7	72.5	62.9	53.3	48.0	40.5	26.7
62.5°	27.7	30.9	39.5	49.1	56.5	56.5	46.9	43.7	37.3	32.0	23.5
65°	19.2	21.3	26.7	34.1	41.6	40.5	37.3	33.1	28.8	23.5	18.1
67.5°	12.8	14.9	18.1	23.5	27.7	28.8	26.7	23.5	20.3	18.1	13.9
70°	8.5	9.6	11.7	16.0	18.1	18.1	18.1	16.0	13.9	12.8	9.6
72.5°	5.3	6.4	7.5	9.6	10.7	11.7	10.7	10.7	9.6	8.5	6.4
75°	3.2	4.3	4.3	5.3	6.4	6.4	6.4	5.3	5.3	4.3	4.3
77.5°	2.1	2.1	2.1	2.1	2.1	3.2	3.2	2.1	2.1	1.1	2.1
80°	0.0	1.1	1.1	1.1	1.1	1.1	1.1	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	0.0	0.0	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	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°	863.7	863.7	863.7
2.5°	818.9	807.2	797.6
5°	747.5	717.6	702.7
7.5°	670.7	628.1	613.1
10°	590.7	537.4	526.8
12.5°	515.0	460.7	437.2
15°	443.6	389.2	373.2
17.5°	378.5	334.8	321.0
20°	329.5	287.9	273.0
22.5°	279.4	241.0	230.3
25°	234.6	203.7	191.9
27.5°	201.5	171.7	165.3
30°	169.5	146.1	142.9
32.5°	142.9	125.8	122.6
35°	119.4	107.7	108.8
37.5°	101.3	92.8	94.9
40°	84.2	81.0	84.2
42.5°	70.4	71.4	73.6
45°	58.6	62.9	62.9
47.5°	49.1	54.4	55.4
50°	41.6	46.9	48.0
52.5°	36.3	40.5	40.5
55°	30.9	34.1	34.1
57.5°	26.7	28.8	28.8
60°	21.3	23.5	23.5
62.5°	18.1	19.2	19.2
65°	16.0	16.0	16.0
67.5°	12.8	12.8	11.7
70°	10.7	9.6	8.5
72.5°	7.5	6.4	4.3
75°	4.3	3.2	1.1
77.5°	1.1	1.1	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
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report





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

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