

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: P886971

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMW-1200LM-3000K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886971
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-57)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/10/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMW-1200LM-3000K
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1037.4 lumens
Efficiency: N/A
Efficacy: 58.9 lumens/watt
Spacing Criteria (0/90/45): 1.12 / 0.8 / 0.99
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

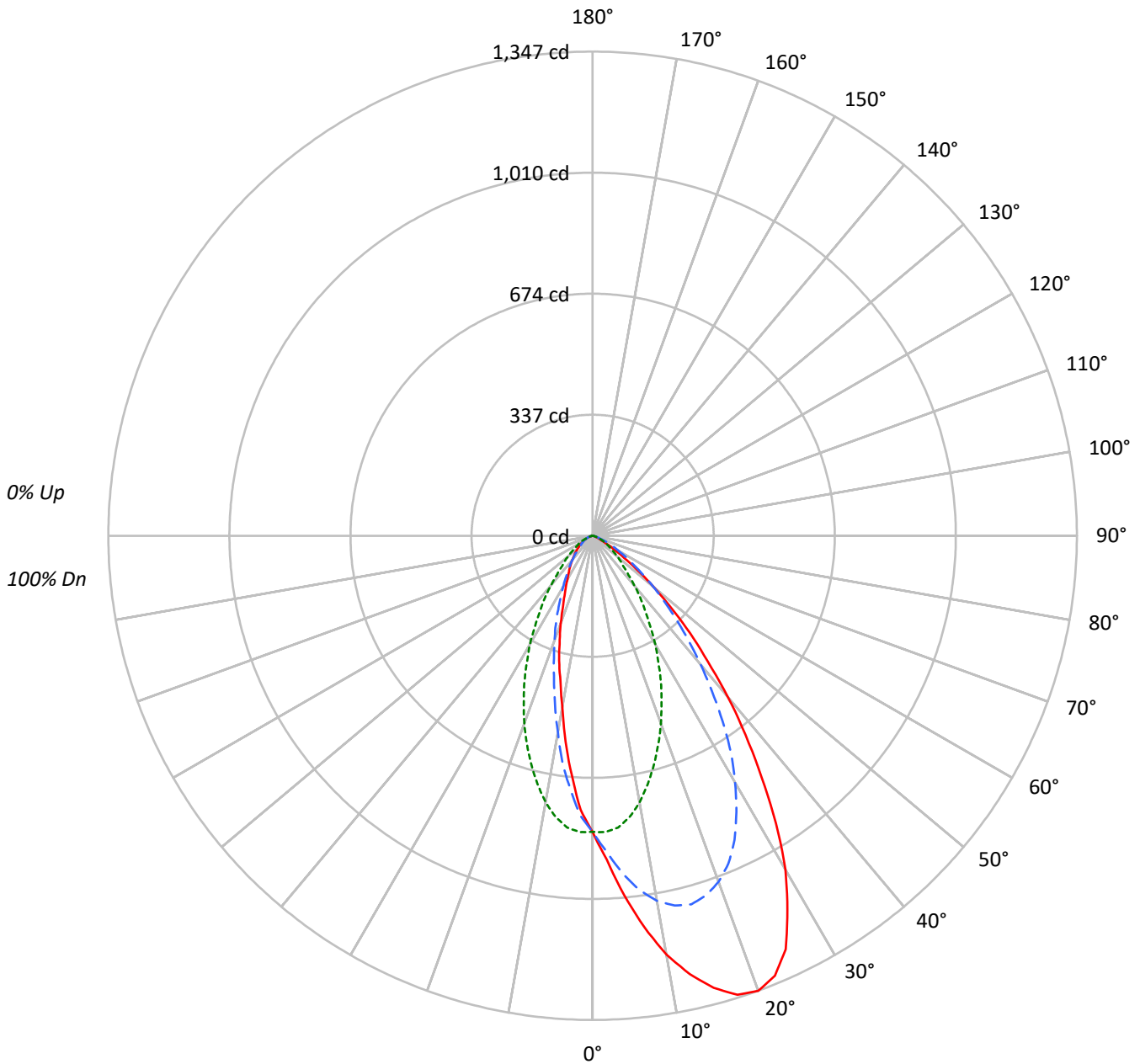
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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	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	93	90	95	91	88	91	88	86	89	86	84	82								
3	99	91	85	81	97	90	84	80	87	82	79	84	81	77	82	79	76	74								
4	93	84	77	72	91	83	76	72	80	75	71	78	74	70	76	72	69	67								
5	87	77	70	65	85	76	70	65	74	69	64	72	68	64	71	66	63	61								
6	82	71	64	59	80	70	64	59	69	63	59	67	62	58	66	61	58	56								
7	77	66	59	54	75	65	59	54	64	58	54	63	57	53	62	57	53	52								
8	73	62	55	50	71	61	54	50	60	54	50	59	53	49	58	53	49	48								
9	69	57	51	46	67	57	50	46	56	50	46	55	50	46	54	49	46	44								
10	65	54	47	43	64	53	47	43	53	47	43	52	46	43	51	46	42	41								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	79816	79816	79816	79816	79816
5°	97547	91542	79226	68908	64902
10°	116313	101414	74063	54713	47621
15°	130561	106441	66113	41521	36045
20°	138876	105593	57227	31856	26649
25°	135740	99851	47994	24221	19817
30°	119927	88656	38939	18323	15672
35°	96834	74541	30086	14002	13151
40°	73980	59001	22788	10939	11065
45°	52486	45012	16646	8604	9453
50°	33217	32983	13353	6827	7912
55°	18089	23130	10607	6080	6790
60°	8389	15965	8583	5580	5793
65°	4493	10499	6602	4722	4493
70°	2917	5976	4957	4362	3201
75°	1909	3275	3481	2695	1535
80°	558	1729	1172	1729	1172
85°	0	1112	1112	1112	1112

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 52486 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	77.8	7.5
10°-20°	208.2	20.1
20°-30°	266.6	25.7
30°-40°	230.1	22.2
40°-50°	144.4	13.9
50°-60°	71.5	6.9
60°-70°	29.0	2.8
70°-80°	8.7	0.8
80°-90°	1.1	0.1
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°	552.7	53.3
0°-40°	782.8	75.5
0°-60°	998.6	96.3
0°-90°	1037.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1037.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	824	824	824	824	824	
5°	1003	941	815	709	667	101
15°	1302	1061	659	414	359	368
25°	1270	934	449	227	185	572
35°	819	630	254	118	111	511
45°	383	329	122	63	69	297
55°	107	137	63	36	40	103
65°	20	46	29	21	20	22
75°	5	9	9	7	4	6
85°	0	1	1	1	1	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°	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9	823.9
2.5°	902.2	907.4	894.0	894.0	883.7	874.4	865.1	850.7	838.4	825.0	799.2
5°	1003.1	999.0	986.7	976.4	955.8	926.9	903.2	873.4	841.4	814.7	754.9
7.5°	1097.9	1092.7	1071.1	1049.5	1015.5	971.2	926.9	878.5	830.1	788.9	701.4
10°	1182.4	1174.1	1148.4	1108.2	1060.8	1001.1	938.3	870.3	808.5	752.9	642.7
12.5°	1249.3	1238.0	1208.1	1155.6	1091.7	1015.5	937.2	853.8	776.6	707.6	579.8
15°	1301.8	1291.5	1249.3	1187.5	1106.1	1016.5	920.8	828.1	737.4	659.2	519.1
17.5°	1338.9	1324.5	1272.0	1196.8	1101.0	997.0	892.9	788.9	693.1	607.7	461.4
20°	1347.1	1328.6	1272.0	1188.5	1081.4	967.1	855.9	742.6	642.7	555.1	403.7
22.5°	1324.5	1304.9	1247.2	1157.6	1049.5	924.9	806.4	689.0	588.1	500.5	350.2
25°	1269.9	1248.3	1193.7	1107.2	997.0	871.3	746.7	639.6	538.6	449.0	299.7
27.5°	1173.1	1162.8	1113.3	1032.0	926.9	805.4	682.8	578.8	477.9	395.5	257.5
30°	1072.1	1061.8	1019.6	948.6	849.7	735.4	623.1	518.1	423.3	348.1	219.4
32.5°	949.6	937.2	907.4	845.6	766.3	666.4	554.1	457.3	371.8	297.6	188.5
35°	818.8	818.8	793.0	744.6	675.6	585.0	488.2	398.6	320.3	254.4	156.5
37.5°	698.3	701.4	679.7	635.5	579.8	508.8	420.2	339.9	271.9	218.3	131.8
40°	585.0	577.8	566.5	540.7	495.4	437.7	359.4	290.4	229.7	180.2	110.2
42.5°	472.7	477.9	464.5	450.1	418.1	369.7	306.9	245.1	188.5	147.3	90.6
45°	383.1	381.1	377.0	366.7	350.2	306.9	254.4	197.7	154.5	121.5	75.2
47.5°	294.6	297.6	296.6	296.6	285.3	254.4	208.0	159.6	129.8	106.1	64.9
50°	220.4	228.6	233.8	237.9	230.7	207.0	161.7	131.8	110.2	88.6	55.6
52.5°	158.6	162.7	177.1	193.6	186.4	162.7	132.9	110.2	90.6	74.2	47.4
55°	107.1	115.4	130.8	147.3	146.2	127.7	108.1	89.6	76.2	62.8	40.2
57.5°	68.0	72.1	90.6	110.2	110.2	100.9	86.5	75.2	59.7	50.5	34.0
60°	43.3	46.3	59.7	78.3	84.5	80.3	70.0	56.6	50.5	44.3	30.9
62.5°	28.8	29.9	40.2	53.6	61.8	61.8	52.5	46.3	41.2	36.0	26.8
65°	19.6	20.6	26.8	36.0	45.3	46.3	40.2	36.0	33.0	28.8	22.7
67.5°	13.4	14.4	18.5	24.7	29.9	31.9	30.9	28.8	25.7	21.6	17.5
70°	10.3	10.3	12.4	16.5	20.6	21.6	21.6	21.6	19.6	17.5	14.4
72.5°	7.2	8.2	8.2	11.3	13.4	14.4	15.4	15.4	14.4	13.4	11.3
75°	5.1	5.1	6.2	7.2	8.2	9.3	10.3	10.3	10.3	9.3	8.2
77.5°	3.1	3.1	4.1	4.1	5.1	6.2	6.2	6.2	5.1	5.1	5.1
80°	1.0	1.0	2.1	2.1	3.1	3.1	3.1	3.1	2.1	2.1	3.1
82.5°	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1
85°	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
87.5°	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0
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°	823.9	823.9	823.9
2.5°	779.7	765.2	763.2
5°	708.6	684.9	667.4
7.5°	638.6	592.2	577.8
10°	556.2	506.7	484.1
12.5°	483.0	430.5	413.0
15°	414.0	368.7	359.4
17.5°	358.4	317.2	303.8
20°	309.0	269.8	258.5
22.5°	267.8	228.6	216.3
25°	226.6	194.7	185.4
27.5°	192.6	165.8	160.7
30°	163.8	142.1	140.1
32.5°	140.1	123.6	124.6
35°	118.4	108.1	111.2
37.5°	103.0	95.8	98.9
40°	86.5	84.5	87.5
42.5°	74.2	75.2	78.3
45°	62.8	66.9	69.0
47.5°	53.6	59.7	60.8
50°	45.3	52.5	52.5
52.5°	40.2	46.3	46.3
55°	36.0	40.2	40.2
57.5°	33.0	35.0	35.0
60°	28.8	28.8	29.9
62.5°	23.7	24.7	24.7
65°	20.6	20.6	19.6
67.5°	17.5	17.5	15.4
70°	15.4	14.4	11.3
72.5°	11.3	10.3	7.2
75°	7.2	6.2	4.1
77.5°	4.1	3.1	2.1
80°	3.1	2.1	2.1
82.5°	2.1	2.1	1.0
85°	1.0	1.0	1.0
87.5°	1.0	1.0	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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Peachtree City, GA 30269

Scaled Data Report





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

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