

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: P886974

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMW-1200LM-5000K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886974
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-5000K
Description: 4IN 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: 1173.2 lumens
Efficiency: N/A
Efficacy: 66.7 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

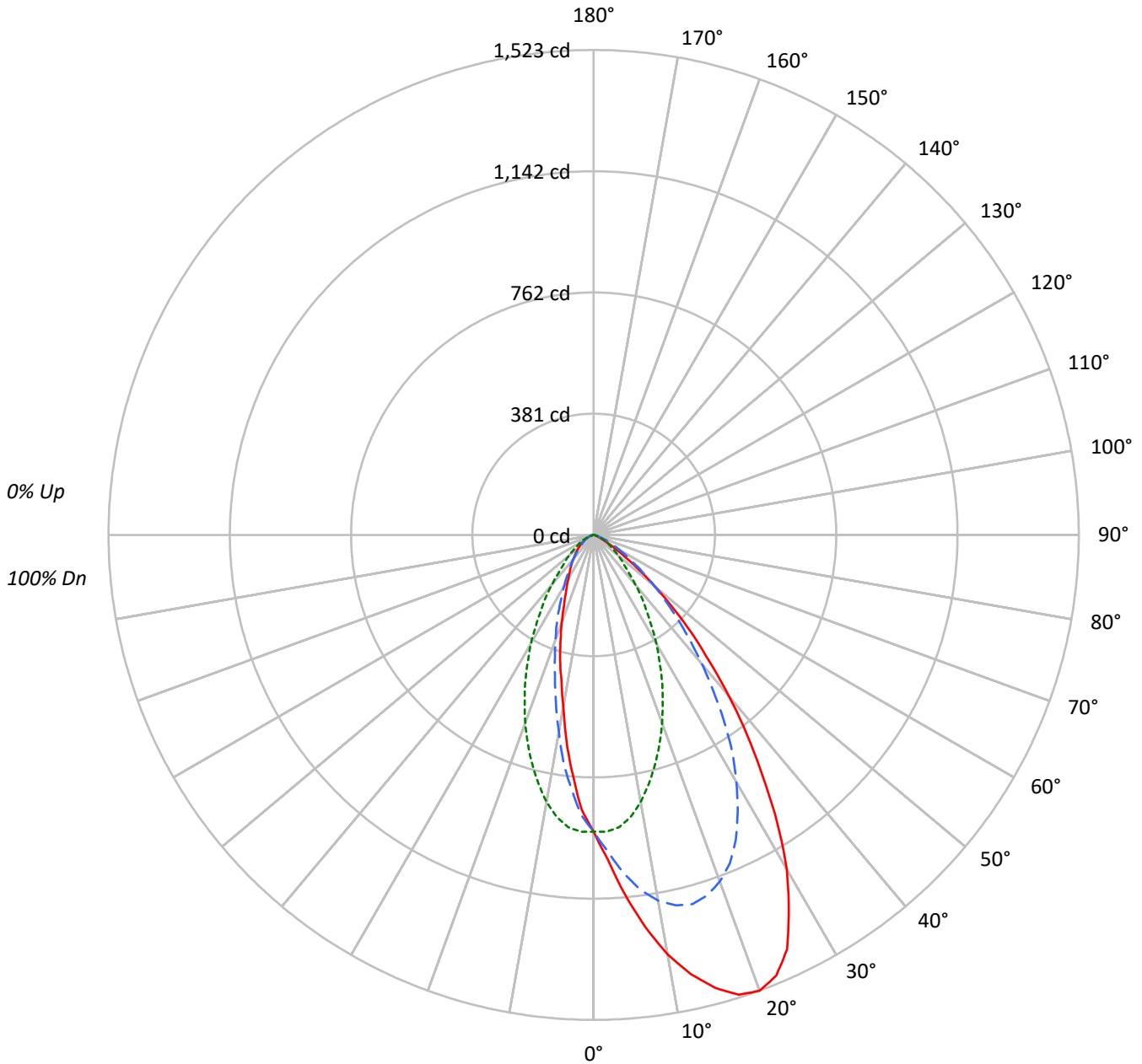
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					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					100			
1	112	109	106	104	110	107	104	102	103	101	99	99	97	96	96	94	93	91					91			
2	105	100	95	91	103	98	93	90	95	91	88	91	88	86	89	86	84	82					82			
3	99	91	85	81	97	90	84	80	87	82	79	84	81	77	82	79	76	74					74			
4	93	84	77	72	91	82	76	72	80	75	71	78	74	70	76	72	69	67					67			
5	87	77	70	65	85	76	70	65	74	69	64	72	68	64	71	66	63	61					61			
6	82	71	64	59	80	70	64	59	69	63	59	67	62	58	66	61	58	56					56			
7	77	66	59	54	75	65	59	54	64	58	54	63	57	53	62	57	53	52					52			
8	73	62	55	50	71	61	54	50	60	54	50	59	53	49	58	53	49	48					48			
9	69	57	51	46	67	57	50	46	56	50	46	55	50	46	54	49	46	44					44			
10	65	54	47	43	64	53	47	43	53	47	43	52	46	43	51	46	42	41					41			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	90259	90259	90259	90259	90259
5°	110315	103518	89592	77923	73391
10°	131530	114685	83752	61865	53848
15°	147651	120371	74758	46957	40769
20°	157051	119407	64722	36021	30134
25°	153505	112913	54279	27385	22404
30°	135622	100256	44040	20717	17719
35°	109500	84292	34024	15835	14877
40°	83655	66721	25773	12368	12520
45°	59363	50903	18824	9727	10686
50°	37557	37301	15101	7716	8952
55°	20453	26162	11992	6891	7668
60°	9474	18048	9707	6316	6549
65°	5066	11874	7473	5341	5066
70°	3286	6770	5608	4957	3626
75°	2171	3706	3930	3069	1759
80°	669	1953	1283	1953	1283
85°	0	1334	1334	1334	1334

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 59363 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	88.0	7.5
10°-20°	235.5	20.1
20°-30°	301.5	25.7
30°-40°	260.2	22.2
40°-50°	163.3	13.9
50°-60°	80.9	6.9
60°-70°	32.8	2.8
70°-80°	9.8	0.8
80°-90°	1.3	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°	625.0	53.3
0°-40°	885.2	75.5
0°-60°	1129.3	96.3
0°-90°	1173.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1173.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	932	932	932	932	932	
5°	1134	1064	921	801	755	114
15°	1472	1200	745	468	406	416
25°	1436	1056	508	256	210	647
35°	926	713	288	134	126	578
45°	433	372	137	71	78	336
55°	121	155	71	41	45	116
65°	22	52	33	23	22	25
75°	6	10	10	8	5	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°	931.7	931.7	931.7	931.7	931.7	931.7	931.7	931.7	931.7	931.7	931.7
2.5°	1020.3	1026.1	1010.9	1010.9	999.3	988.8	978.3	962.0	948.1	932.9	903.8
5°	1134.4	1129.7	1115.8	1104.1	1080.8	1048.2	1021.4	987.7	951.5	921.3	853.7
7.5°	1241.6	1235.7	1211.3	1186.8	1148.4	1098.3	1048.2	993.5	938.7	892.1	793.2
10°	1337.1	1327.7	1298.6	1253.2	1199.6	1132.1	1061.0	984.2	914.3	851.4	726.8
12.5°	1412.8	1400.0	1366.2	1306.8	1234.6	1148.4	1059.9	965.5	878.2	800.1	655.7
15°	1472.2	1460.5	1412.8	1342.9	1250.9	1149.5	1041.2	936.4	833.9	745.4	587.0
17.5°	1514.1	1497.8	1438.4	1353.4	1245.0	1127.4	1009.8	892.1	783.8	687.2	521.8
20°	1523.4	1502.4	1438.4	1344.0	1222.9	1093.6	967.9	839.7	726.8	627.8	456.6
22.5°	1497.8	1475.7	1410.4	1309.1	1186.8	1045.9	911.9	779.2	665.0	566.0	396.0
25°	1436.1	1411.6	1349.9	1252.0	1127.4	985.3	844.4	723.3	609.1	507.8	338.9
27.5°	1326.6	1314.9	1259.0	1167.0	1048.2	910.8	772.2	654.6	540.4	447.2	291.2
30°	1212.4	1200.8	1153.0	1072.7	960.9	831.6	704.6	585.8	478.7	393.7	248.1
32.5°	1073.8	1059.9	1026.1	956.2	866.5	753.6	626.6	517.1	420.5	336.6	213.1
35°	925.9	925.9	896.8	842.1	764.0	661.5	552.1	450.7	362.2	287.7	177.0
37.5°	789.7	793.2	768.7	718.6	655.7	575.4	475.2	384.3	307.5	246.9	149.1
40°	661.5	653.4	640.6	611.5	560.2	495.0	406.5	328.4	259.7	203.8	124.6
42.5°	534.6	540.4	525.3	509.0	472.9	418.1	347.1	277.2	213.1	166.6	102.5
45°	433.3	430.9	426.3	414.6	396.0	347.1	287.7	223.6	174.7	137.4	85.0
47.5°	333.1	336.6	335.4	335.4	322.6	287.7	235.3	180.5	146.8	120.0	73.4
50°	249.2	258.6	264.4	269.0	260.9	234.1	182.9	149.1	124.6	100.2	62.9
52.5°	179.4	184.0	200.3	219.0	210.8	184.0	150.2	124.6	102.5	83.9	53.6
55°	121.1	130.4	147.9	166.6	165.4	144.4	122.3	101.3	86.2	71.0	45.4
57.5°	76.9	81.5	102.5	124.6	124.6	114.1	97.8	85.0	67.6	57.1	38.4
60°	48.9	52.4	67.6	88.5	95.5	90.8	79.2	64.1	57.1	50.1	34.9
62.5°	32.6	33.8	45.4	60.6	69.9	69.9	59.4	52.4	46.6	40.8	30.3
65°	22.1	23.3	30.3	40.8	51.2	52.4	45.4	40.8	37.3	32.6	25.6
67.5°	15.1	16.3	21.0	28.0	33.8	36.1	34.9	32.6	29.1	24.5	19.8
70°	11.6	11.6	14.0	18.6	23.3	24.5	24.5	24.5	22.1	19.8	16.3
72.5°	8.2	9.3	9.3	12.8	15.1	16.3	17.5	17.5	16.3	15.1	12.8
75°	5.8	5.8	7.0	8.2	9.3	10.5	11.6	11.6	11.6	10.5	9.3
77.5°	3.5	3.5	4.7	4.7	5.8	7.0	7.0	7.0	5.8	5.8	5.8
80°	1.2	1.2	2.3	2.3	3.5	3.5	3.5	3.5	2.3	2.3	3.5
82.5°	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.3
85°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	1.2	1.2
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°	931.7	931.7	931.7
2.5°	881.7	865.4	863.0
5°	801.3	774.5	754.7
7.5°	722.1	669.7	653.4
10°	628.9	573.0	547.4
12.5°	546.2	486.8	467.0
15°	468.2	417.0	406.5
17.5°	405.3	358.7	343.6
20°	349.4	305.1	292.3
22.5°	302.8	258.6	244.6
25°	256.2	220.1	209.6
27.5°	217.8	187.5	181.7
30°	185.2	160.7	158.4
32.5°	158.4	139.8	140.9
35°	133.9	122.3	125.8
37.5°	116.5	108.3	111.8
40°	97.8	95.5	99.0
42.5°	83.9	85.0	88.5
45°	71.0	75.7	78.0
47.5°	60.6	67.6	68.7
50°	51.2	59.4	59.4
52.5°	45.4	52.4	52.4
55°	40.8	45.4	45.4
57.5°	37.3	39.6	39.6
60°	32.6	32.6	33.8
62.5°	26.8	28.0	28.0
65°	23.3	23.3	22.1
67.5°	19.8	19.8	17.5
70°	17.5	16.3	12.8
72.5°	12.8	11.6	8.2
75°	8.2	7.0	4.7
77.5°	4.7	3.5	2.3
80°	3.5	2.3	2.3
82.5°	2.3	2.3	1.2
85°	1.2	1.2	1.2
87.5°	1.2	1.2	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

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Scaled Data Report





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

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