

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: P886839

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-5000K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886839  
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: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-5000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 868.7 lumens  
Efficiency: N/A  
Efficacy: 49.4 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

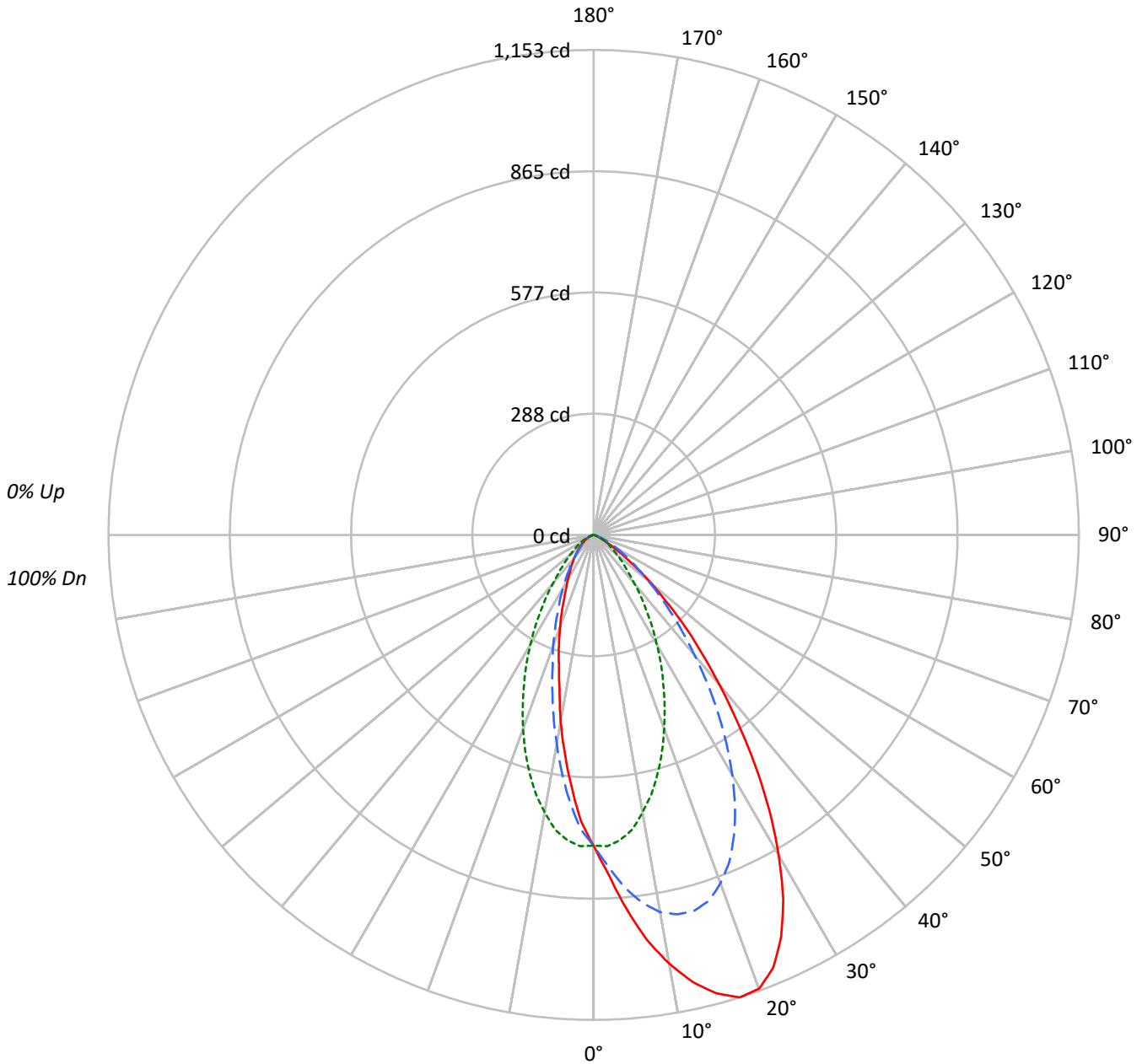
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					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	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92					92			
2	106	100	95	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83					83			
3	99	92	86	82	97	90	85	81	88	83	80	85	81	78	83	80	77	75					75			
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68					68			
5	88	78	71	66	86	77	71	66	75	70	65	73	69	65	72	68	64	63					63			
6	82	72	65	60	81	71	65	60	70	64	60	68	63	59	67	62	59	57					57			
7	78	67	60	56	76	66	60	55	65	59	55	64	59	55	63	58	54	53					53			
8	73	63	56	51	72	62	56	51	61	55	51	60	54	51	59	54	50	49					49			
9	69	59	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45					45			
10	66	55	48	44	65	54	48	44	54	48	44	53	48	44	52	47	44	42					42			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°	135°	180°
0°	71572	71572	71572	71572	71572
5°	86743	81779	70775	62179	58454
10°	101833	89585	65859	49706	44325
15°	113150	92751	58912	38051	32013
20°	118381	90876	50495	29052	24072
25°	112705	84379	41826	21453	17551
30°	98349	73712	33570	16220	13670
35°	79177	60840	25675	12086	10998
40°	58704	47113	19033	9118	9118
45°	41854	35299	14248	6878	7371
50°	26661	25365	10716	5365	6179
55°	14795	17793	8327	4476	4932
60°	6898	12284	6723	3526	3894
65°	3759	8057	4607	3140	3140
70°	2068	4390	3087	2578	2068
75°	1011	2059	1347	1347	337
80°	0	502	502	0	0
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 41854 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	69.6	8.0
10°-20°	183.4	21.1
20°-30°	228.1	26.3
30°-40°	190.1	21.9
40°-50°	115.6	13.3
50°-60°	55.7	6.4
60°-70°	21.5	2.5
70°-80°	4.6	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°	481.1	55.4
0°-40°	671.2	77.3
0°-60°	842.5	97.0
0°-90°	868.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	868.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	739	739	739	739	739	
5°	892	841	728	639	601	90
15°	1128	925	587	379	319	318
25°	1054	789	391	201	164	478
35°	670	514	217	102	93	416
45°	306	258	104	50	54	236
55°	88	105	49	26	29	83
65°	16	35	20	14	14	18
75°	3	6	4	4	1	3
85°	0	0	0	0	0	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°	738.8	738.8	738.8	738.8	738.8	738.8	738.8	738.8	738.8	738.8	738.8
2.5°	807.2	808.1	808.1	799.0	793.5	783.5	773.4	763.4	749.7	740.6	718.7
5°	892.0	886.5	882.0	869.2	851.9	830.0	804.4	778.0	752.5	727.8	675.8
7.5°	971.4	964.1	954.0	927.6	899.3	863.7	823.6	781.6	740.6	705.9	633.0
10°	1035.2	1027.9	1008.7	977.7	934.9	886.5	830.0	776.2	723.3	669.5	579.2
12.5°	1089.0	1078.1	1055.3	1013.3	954.9	892.9	825.4	758.8	691.3	632.1	520.8
15°	1128.2	1114.5	1085.4	1030.6	962.2	887.4	807.2	730.6	654.9	587.4	467.0
17.5°	1152.9	1136.4	1096.3	1034.3	954.9	868.3	778.9	691.3	615.6	539.9	415.0
20°	1148.3	1128.2	1087.2	1017.9	928.5	834.5	739.7	651.2	564.6	489.8	362.1
22.5°	1114.5	1098.1	1053.4	983.2	892.0	791.7	695.0	602.9	518.1	440.5	313.8
25°	1054.4	1039.8	997.8	928.5	840.0	738.8	637.5	548.2	465.2	391.3	270.0
27.5°	975.9	964.1	920.3	857.3	775.3	681.3	581.9	496.2	415.0	346.6	230.8
30°	879.2	868.3	829.1	777.1	702.3	615.6	525.4	443.3	365.7	300.1	194.3
32.5°	778.0	765.2	740.6	685.9	627.5	546.3	467.9	387.6	314.7	258.1	164.2
35°	669.5	657.6	638.4	596.5	548.2	480.7	407.7	334.7	270.0	217.1	136.8
37.5°	560.9	558.2	541.8	512.6	469.7	414.1	346.6	286.4	228.0	183.3	113.1
40°	464.2	465.2	450.6	429.6	395.8	349.3	298.2	239.9	189.7	150.5	93.0
42.5°	378.5	378.5	368.5	354.8	332.0	292.8	249.0	200.7	156.0	123.1	75.7
45°	305.5	295.5	297.3	288.2	272.7	242.6	201.6	158.7	129.5	104.0	62.9
47.5°	230.8	234.4	237.1	236.2	222.5	197.0	163.3	132.3	110.4	87.6	53.8
50°	176.9	176.9	182.4	186.1	178.8	157.8	131.3	110.4	89.4	71.1	44.7
52.5°	125.0	130.4	138.6	148.7	141.4	126.8	109.4	88.5	74.8	59.3	37.4
55°	87.6	90.3	102.2	113.1	110.4	100.3	85.7	72.1	59.3	49.3	31.0
57.5°	55.6	57.5	73.0	84.8	85.7	79.4	68.4	57.5	48.3	42.0	26.5
60°	35.6	39.2	48.3	62.0	64.8	62.0	53.8	45.6	41.0	34.7	22.8
62.5°	23.7	26.5	33.7	42.0	48.3	48.3	40.1	37.4	31.9	27.4	20.1
65°	16.4	18.2	22.8	29.2	35.6	34.7	31.9	28.3	24.6	20.1	15.5
67.5°	10.9	12.8	15.5	20.1	23.7	24.6	22.8	20.1	17.3	15.5	11.9
70°	7.3	8.2	10.0	13.7	15.5	15.5	15.5	13.7	11.9	10.9	8.2
72.5°	4.6	5.5	6.4	8.2	9.1	10.0	9.1	9.1	8.2	7.3	5.5
75°	2.7	3.6	3.6	4.6	5.5	5.5	5.5	4.6	4.6	3.6	3.6
77.5°	1.8	1.8	1.8	1.8	1.8	2.7	2.7	1.8	1.8	0.9	1.8
80°	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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°	738.8	738.8	738.8
2.5°	700.5	690.4	682.2
5°	639.4	613.8	601.1
7.5°	573.7	537.2	524.4
10°	505.3	459.7	450.6
12.5°	440.5	394.0	373.9
15°	379.4	332.9	319.2
17.5°	323.8	286.4	274.5
20°	281.8	246.3	233.5
22.5°	239.0	206.1	197.0
25°	200.7	174.2	164.2
27.5°	172.4	146.8	141.4
30°	145.0	125.0	122.2
32.5°	122.2	107.6	104.9
35°	102.2	92.1	93.0
37.5°	86.6	79.4	81.2
40°	72.1	69.3	72.1
42.5°	60.2	61.1	62.9
45°	50.2	53.8	53.8
47.5°	42.0	46.5	47.4
50°	35.6	40.1	41.0
52.5°	31.0	34.7	34.7
55°	26.5	29.2	29.2
57.5°	22.8	24.6	24.6
60°	18.2	20.1	20.1
62.5°	15.5	16.4	16.4
65°	13.7	13.7	13.7
67.5°	10.9	10.9	10.0
70°	9.1	8.2	7.3
72.5°	6.4	5.5	3.6
75°	3.6	2.7	0.9
77.5°	0.9	0.9	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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Scaled Data Report





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

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