

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: P886836

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-3000K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886836  
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-3000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 768.2 lumens  
Efficiency: N/A  
Efficacy: 43.6 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

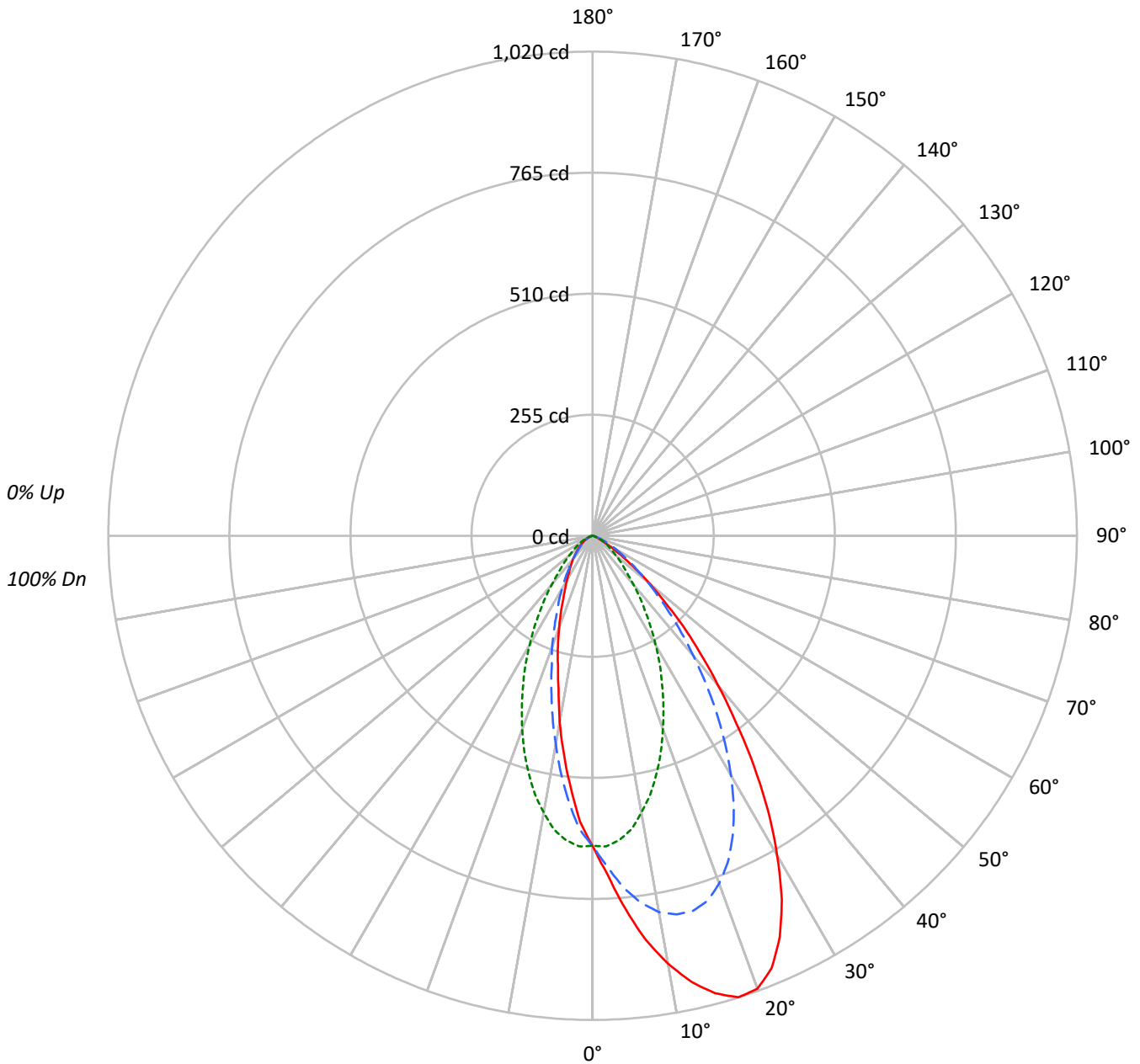
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P886836

CATALOG NUMBER: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-3000K

### Luminous Intensity Polar Plot





TEST NUMBER: P886836

CATALOG NUMBER: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-3000K

**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	80	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°	63289	63289	63289	63289	63289
5°	76707	72312	62587	54983	51686
10°	90048	79222	58235	43952	39191
15°	100062	82024	52092	33648	28313
20°	104680	80366	44649	25691	21289
25°	99664	74615	36984	18962	15520
30°	86973	65182	29688	14341	12092
35°	70012	53792	22707	10679	9733
40°	51913	41663	16832	8056	8056
45°	37018	31216	12591	6083	6521
50°	23586	22426	9480	4747	5471
55°	13073	15733	7364	3952	4358
60°	6103	10860	5929	3119	3429
65°	3324	7117	4057	2774	2774
70°	1841	3880	2747	2294	1841
75°	898	1797	1198	1198	299
80°	0	446	446	0	0
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 37018 cd/sqm



TEST NUMBER: P886836

CATALOG NUMBER: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-3000K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	61.5	8.0
10°-20°	162.2	21.1
20°-30°	201.7	26.3
30°-40°	168.1	21.9
40°-50°	102.2	13.3
50°-60°	49.2	6.4
60°-70°	19.0	2.5
70°-80°	4.1	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°	425.5	55.4
0°-40°	593.5	77.3
0°-60°	745.0	97.0
0°-90°	768.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	768.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	653	653	653	653	653	
5°	789	744	644	565	532	79
15°	998	818	519	336	282	281
25°	932	698	346	177	145	422
35°	592	455	192	90	82	368
45°	270	228	92	44	48	209
55°	77	93	44	23	26	73
65°	14	31	18	12	12	16
75°	2	5	3	3	1	3
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0



TEST NUMBER: P886836

CATALOG NUMBER: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-3000K

**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	653.3	653.3	653.3	653.3	653.3	653.3	653.3	653.3	653.3	653.3	653.3
2.5°	713.8	714.6	714.6	706.5	701.7	692.8	683.9	675.1	663.0	654.9	635.6
5°	788.8	784.0	779.9	768.6	753.3	733.9	711.4	688.0	665.4	643.6	597.6
7.5°	859.0	852.5	843.6	820.2	795.2	763.8	728.3	691.2	654.9	624.3	559.7
10°	915.4	909.0	892.0	864.6	826.7	784.0	733.9	686.4	639.6	592.0	512.2
12.5°	963.0	953.3	933.2	896.1	844.4	789.6	729.9	671.0	611.4	558.9	460.5
15°	997.7	985.6	959.8	911.4	850.9	784.8	713.8	646.0	579.1	519.4	412.9
17.5°	1019.5	1004.9	969.5	914.6	844.4	767.8	688.8	611.4	544.4	477.5	367.0
20°	1015.4	997.7	961.4	900.1	821.1	738.0	654.1	575.9	499.2	433.1	320.2
22.5°	985.6	971.1	931.5	869.4	788.8	700.1	614.6	533.1	458.1	389.6	277.4
25°	932.4	919.5	882.4	821.1	742.8	653.3	563.8	484.7	411.3	346.0	238.7
27.5°	863.0	852.5	813.8	758.1	685.6	602.5	514.6	438.8	367.0	306.5	204.1
30°	777.5	767.8	733.1	687.2	621.0	544.4	464.6	392.0	323.4	265.4	171.8
32.5°	688.0	676.7	654.9	606.5	554.9	483.1	413.8	342.8	278.3	228.2	145.2
35°	592.0	581.5	564.6	527.5	484.7	425.0	360.5	296.0	238.7	192.0	121.0
37.5°	496.0	493.6	479.1	453.3	415.4	366.2	306.5	253.3	201.6	162.1	100.0
40°	410.5	411.3	398.4	379.9	350.0	308.9	263.7	212.1	167.8	133.1	82.3
42.5°	334.7	334.7	325.8	313.7	293.6	258.9	220.2	177.4	137.9	108.9	66.9
45°	270.2	261.3	262.9	254.9	241.2	214.5	178.2	140.3	114.5	91.9	55.7
47.5°	204.1	207.3	209.7	208.9	196.8	174.2	144.4	116.9	97.6	77.4	47.6
50°	156.5	156.5	161.3	164.5	158.1	139.5	116.1	97.6	79.0	62.9	39.5
52.5°	110.5	115.3	122.6	131.5	125.0	112.1	96.8	78.2	66.1	52.4	33.1
55°	77.4	79.8	90.3	100.0	97.6	88.7	75.8	63.7	52.4	43.6	27.4
57.5°	49.2	50.8	64.5	75.0	75.8	70.2	60.5	50.8	42.7	37.1	23.4
60°	31.5	34.7	42.7	54.8	57.3	54.8	47.6	40.3	36.3	30.6	20.2
62.5°	21.0	23.4	29.8	37.1	42.7	42.7	35.5	33.1	28.2	24.2	17.7
65°	14.5	16.1	20.2	25.8	31.5	30.6	28.2	25.0	21.8	17.7	13.7
67.5°	9.7	11.3	13.7	17.7	21.0	21.8	20.2	17.7	15.3	13.7	10.5
70°	6.5	7.3	8.9	12.1	13.7	13.7	13.7	12.1	10.5	9.7	7.3
72.5°	4.0	4.8	5.6	7.3	8.1	8.9	8.1	8.1	7.3	6.5	4.8
75°	2.4	3.2	3.2	4.0	4.8	4.8	4.8	4.0	4.0	3.2	3.2
77.5°	1.6	1.6	1.6	1.6	1.6	2.4	2.4	1.6	1.6	0.8	1.6
80°	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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



TEST NUMBER: P886836

CATALOG NUMBER: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-3000K

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	653.3	653.3	653.3
2.5°	619.4	610.5	603.3
5°	565.4	542.8	531.5
7.5°	507.3	475.0	463.8
10°	446.8	406.5	398.4
12.5°	389.6	348.4	330.7
15°	335.5	294.4	282.3
17.5°	286.3	253.3	242.8
20°	249.2	217.8	206.5
22.5°	211.3	182.3	174.2
25°	177.4	154.0	145.2
27.5°	152.4	129.9	125.0
30°	128.2	110.5	108.1
32.5°	108.1	95.2	92.8
35°	90.3	81.5	82.3
37.5°	76.6	70.2	71.8
40°	63.7	61.3	63.7
42.5°	53.2	54.0	55.7
45°	44.4	47.6	47.6
47.5°	37.1	41.1	41.9
50°	31.5	35.5	36.3
52.5°	27.4	30.6	30.6
55°	23.4	25.8	25.8
57.5°	20.2	21.8	21.8
60°	16.1	17.7	17.7
62.5°	13.7	14.5	14.5
65°	12.1	12.1	12.1
67.5°	9.7	9.7	8.9
70°	8.1	7.3	6.5
72.5°	5.6	4.8	3.2
75°	3.2	2.4	0.8
77.5°	0.8	0.8	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°

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269

Scaled Data Report



(END OF REPORT)