

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: P887089

Luminaire Tested: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMW-600LM-3000K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887089  
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: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMW-600LM-3000K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 3500K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 556.4 lumens  
Efficiency: N/A  
Efficacy: 59.2 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

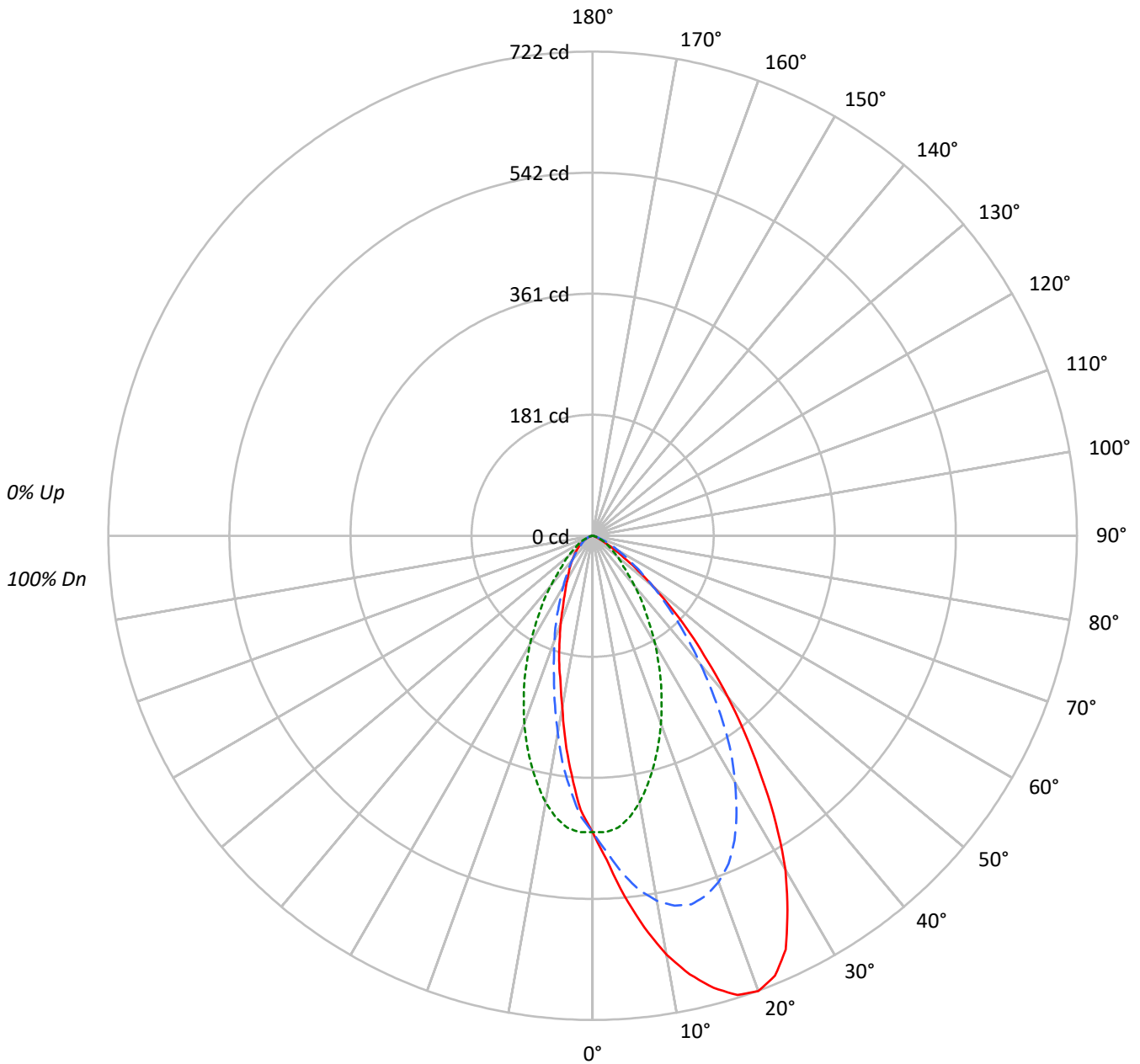
Input Watts (W): 9.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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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	67	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°	42800	42800	42800	42800	42800
5°	52308	49090	42487	36953	34804
10°	62367	54384	39712	29334	25537
15°	70014	57082	35454	22265	19326
20°	74474	56624	30691	17082	14289
25°	72792	53541	25739	12987	10625
30°	64310	47536	20885	9821	8401
35°	51929	39973	16131	7510	7048
40°	39671	31634	12229	5868	5931
45°	28154	24140	8933	4617	5069
50°	17814	17686	7159	3662	4250
55°	9695	12405	5692	3260	3631
60°	4495	8564	4592	3003	3100
65°	2407	5639	3553	2521	2407
70°	1558	3201	2663	2351	1728
75°	1048	1759	1871	1460	823
80°	335	948	614	948	614
85°	0	667	667	667	667

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 28154 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	41.7	7.5
10°-20°	111.7	20.1
20°-30°	143.0	25.7
30°-40°	123.4	22.2
40°-50°	77.4	13.9
50°-60°	38.3	6.9
60°-70°	15.6	2.8
70°-80°	4.7	0.8
80°-90°	0.6	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°	296.4	53.3
0°-40°	419.8	75.4
0°-60°	535.5	96.3
0°-90°	556.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	556.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	442	442	442	442	442	
5°	538	505	437	380	358	54
15°	698	569	354	222	193	197
25°	681	501	241	122	99	307
35°	439	338	136	64	60	274
45°	206	176	65	34	37	159
55°	57	73	34	19	22	55
65°	10	25	16	11	10	12
75°	3	5	5	4	2	3
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°	441.8	441.8	441.8	441.8	441.8	441.8	441.8	441.8	441.8	441.8	441.8
2.5°	483.8	486.6	479.4	479.4	473.9	468.9	463.9	456.2	449.6	442.4	428.6
5°	537.9	535.7	529.1	523.6	512.5	497.1	484.4	468.3	451.2	436.9	404.8
7.5°	588.7	586.0	574.4	562.8	544.6	520.8	497.1	471.1	445.1	423.1	376.1
10°	634.0	629.6	615.8	594.3	568.9	536.8	503.1	466.7	433.5	403.7	344.6
12.5°	669.9	663.8	647.8	619.7	585.4	544.6	502.6	457.8	416.4	379.4	310.9
15°	698.1	692.6	669.9	636.8	593.2	545.1	493.7	444.0	395.4	353.5	278.4
17.5°	718.0	710.2	682.1	641.8	590.4	534.6	478.8	423.1	371.7	325.8	247.4
20°	722.4	712.4	682.1	637.3	579.9	518.6	459.0	398.2	344.6	297.7	216.5
22.5°	710.2	699.7	668.8	620.8	562.8	496.0	432.4	369.5	315.4	268.4	187.8
25°	681.0	669.4	640.1	593.7	534.6	467.2	400.4	343.0	288.8	240.8	160.7
27.5°	629.1	623.5	597.0	553.4	497.1	431.9	366.2	310.4	256.3	212.1	138.1
30°	574.9	569.4	546.8	508.7	455.6	394.3	334.1	277.8	227.0	186.7	117.6
32.5°	509.2	502.6	486.6	453.4	410.9	357.3	297.1	245.2	199.4	159.6	101.1
35°	439.1	439.1	425.3	399.3	362.3	313.7	261.8	213.7	171.8	136.4	83.9
37.5°	374.5	376.1	364.5	340.8	310.9	272.8	225.3	182.3	145.8	117.1	70.7
40°	313.7	309.8	303.8	290.0	265.6	234.7	192.7	155.7	123.2	96.7	59.1
42.5°	253.5	256.3	249.1	241.3	224.2	198.3	164.6	131.4	101.1	79.0	48.6
45°	205.5	204.3	202.1	196.6	187.8	164.6	136.4	106.0	82.8	65.2	40.3
47.5°	158.0	159.6	159.1	159.1	153.0	136.4	111.6	85.6	69.6	56.9	34.8
50°	118.2	122.6	125.4	127.6	123.7	111.0	86.7	70.7	59.1	47.5	29.8
52.5°	85.1	87.3	95.0	103.8	100.0	87.3	71.2	59.1	48.6	39.8	25.4
55°	57.4	61.9	70.1	79.0	78.4	68.5	58.0	48.0	40.9	33.7	21.5
57.5°	36.5	38.7	48.6	59.1	59.1	54.1	46.4	40.3	32.0	27.1	18.2
60°	23.2	24.9	32.0	42.0	45.3	43.1	37.6	30.4	27.1	23.7	16.6
62.5°	15.5	16.0	21.5	28.7	33.1	33.1	28.2	24.9	22.1	19.3	14.4
65°	10.5	11.0	14.4	19.3	24.3	24.9	21.5	19.3	17.7	15.5	12.2
67.5°	7.2	7.7	9.9	13.3	16.0	17.1	16.6	15.5	13.8	11.6	9.4
70°	5.5	5.5	6.6	8.8	11.0	11.6	11.6	11.6	10.5	9.4	7.7
72.5°	3.9	4.4	4.4	6.1	7.2	7.7	8.3	8.3	7.7	7.2	6.1
75°	2.8	2.8	3.3	3.9	4.4	5.0	5.5	5.5	5.5	5.0	4.4
77.5°	1.7	1.7	2.2	2.2	2.8	3.3	3.3	3.3	2.8	2.8	2.8
80°	0.6	0.6	1.1	1.1	1.7	1.7	1.7	1.7	1.1	1.1	1.7
82.5°	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.1
85°	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6	0.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.6	0.6	0.6
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°	441.8	441.8	441.8
2.5°	418.1	410.3	409.2
5°	380.0	367.3	357.9
7.5°	342.4	317.6	309.8
10°	298.2	271.7	259.6
12.5°	259.0	230.9	221.5
15°	222.0	197.7	192.7
17.5°	192.2	170.1	162.9
20°	165.7	144.7	138.6
22.5°	143.6	122.6	116.0
25°	121.5	104.4	99.4
27.5°	103.3	88.9	86.2
30°	87.8	76.2	75.1
32.5°	75.1	66.3	66.8
35°	63.5	58.0	59.6
37.5°	55.2	51.4	53.0
40°	46.4	45.3	46.9
42.5°	39.8	40.3	42.0
45°	33.7	35.9	37.0
47.5°	28.7	32.0	32.6
50°	24.3	28.2	28.2
52.5°	21.5	24.9	24.9
55°	19.3	21.5	21.5
57.5°	17.7	18.8	18.8
60°	15.5	15.5	16.0
62.5°	12.7	13.3	13.3
65°	11.0	11.0	10.5
67.5°	9.4	9.4	8.3
70°	8.3	7.7	6.1
72.5°	6.1	5.5	3.9
75°	3.9	3.3	2.2
77.5°	2.2	1.7	1.1
80°	1.7	1.1	1.1
82.5°	1.1	1.1	0.6
85°	0.6	0.6	0.6
87.5°	0.6	0.6	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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Scaled Data Report





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

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