

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: P887085

Luminaire Tested: ML412LSFLD2W1E-TIR4D25AWW-TL4RWSL-600LM-3000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887085  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-46)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFLD2W1E-TIR4D25AWW-TL4RWSL-600LM-3000K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM  
Light Source: (1) D2W LED 90CRI / 3000K CCT  
Ballast/Driver: -

**Summary**

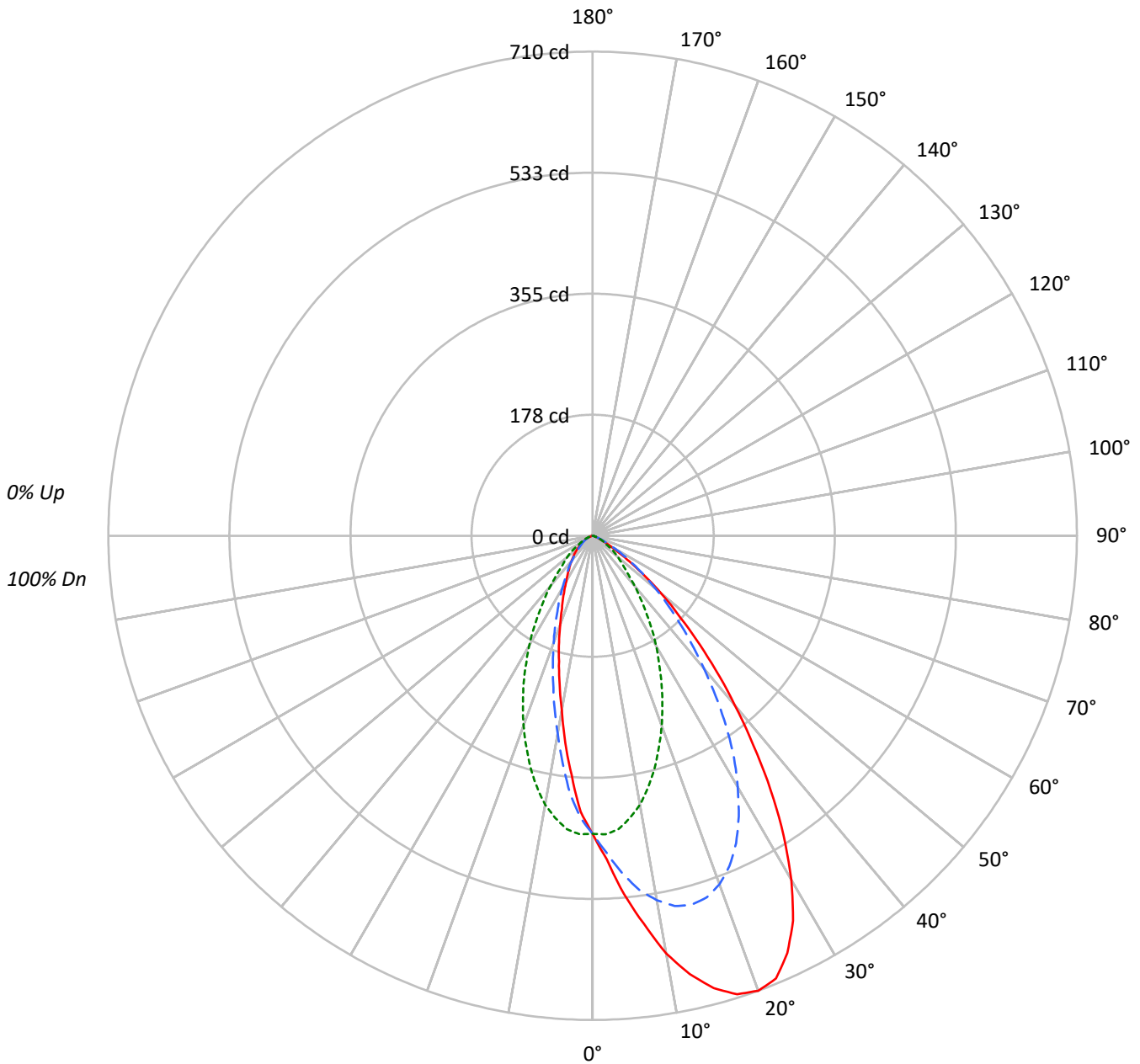
Lumens per Lamp: N/A  
Luminaire Lumens: 552.0 lumens  
Efficiency: N/A  
Efficacy: 58.7 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 0.8 / 1  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct

Input Watts (W): 9.4  
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	98	96	96	94	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83					83			
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75					75			
4	93	84	77	72	91	83	77	72	81	75	71	78	74	70	76	73	69	68					68			
5	87	77	71	65	85	76	70	65	74	69	65	73	68	64	71	67	63	62					62			
6	82	72	65	60	80	71	64	59	69	63	59	68	62	58	66	62	58	56					56			
7	77	66	59	54	76	66	59	54	64	58	54	63	58	54	62	57	53	52					52			
8	73	62	55	50	71	61	55	50	60	54	50	59	53	50	58	53	49	48					48			
9	69	58	51	46	67	57	51	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	43	41					41			

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

	0°	45°	90°	135°	180°
0°	95826	95826	95826	95826	95826
5°	116134	109322	95091	83535	77592
10°	138519	120862	89177	65686	57826
15°	155892	127186	79887	50670	43269
20°	165658	126921	69096	38923	32366
25°	163340	120370	57874	29542	24872
30°	147592	107713	47146	22383	19573
35°	121854	91323	36379	17159	16115
40°	92831	72507	27366	13282	13597
45°	66301	55587	20219	10451	11660
50°	44860	40988	16409	8119	9620
55°	25117	27774	12234	6958	7799
60°	12367	16468	8947	5833	6315
65°	6330	8898	6901	4566	4877
70°	3526	4424	4616	3526	3206
75°	1864	2372	2796	1440	932
80°	758	758	758	0	0
85°	0	0	1510	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 66984 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	41.2	7.5
10°-20°	110.4	20.0
20°-30°	142.5	25.8
30°-40°	124.7	22.6
40°-50°	78.8	14.3
50°-60°	38.2	6.9
60°-70°	13.2	2.4
70°-80°	2.9	0.5
80°-90°	0.2	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°	294.1	53.3
0°-40°	418.8	75.9
0°-60°	535.8	97.1
0°-90°	552.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	552.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	437	437	437	437	437	
5°	528	497	432	380	352	53
15°	687	560	352	223	191	194
25°	675	498	239	122	103	306
35°	455	341	136	64	60	282
45°	214	179	65	34	38	168
55°	66	73	32	18	20	63
65°	12	17	13	9	9	14
75°	2	3	3	2	1	3
85°	0	0	1	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°	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0	437.0
2.5°	475.1	473.5	476.8	471.8	467.4	463.0	459.1	449.7	444.7	438.1	426.0
5°	527.6	527.1	522.6	513.2	503.3	490.0	477.3	460.2	447.0	432.0	402.2
7.5°	573.5	574.0	566.3	551.4	535.3	512.1	490.0	465.7	440.9	417.7	372.4
10°	622.1	615.5	604.4	585.6	558.0	527.6	495.6	461.9	429.3	400.5	341.4
12.5°	658.5	650.8	636.4	609.4	575.7	536.5	495.0	453.6	413.3	377.3	309.4
15°	686.7	680.6	660.8	626.0	584.0	536.5	487.3	439.8	392.8	351.9	274.0
17.5°	705.0	697.8	671.8	632.0	582.9	529.3	473.5	418.2	368.5	323.7	244.7
20°	709.9	701.6	674.0	628.7	574.0	513.8	453.0	395.6	341.4	296.1	212.7
22.5°	702.7	691.7	663.0	617.1	556.9	491.7	429.3	367.9	312.7	266.8	185.1
25°	675.1	667.4	637.6	587.8	529.8	465.2	397.2	339.2	284.0	239.2	161.3
27.5°	636.4	624.3	598.9	553.6	497.8	430.4	365.7	307.2	254.1	211.0	137.0
30°	582.9	572.9	547.5	508.3	456.3	394.5	332.6	276.8	226.0	186.2	117.7
32.5°	521.0	516.6	492.3	459.7	413.8	357.5	297.8	245.3	198.9	160.8	100.6
35°	455.2	448.1	430.4	406.1	365.7	316.6	263.5	213.3	169.6	135.9	84.0
37.5°	387.3	384.5	370.7	348.6	317.7	275.1	228.2	182.3	145.9	114.9	70.2
40°	324.3	326.0	312.7	297.2	270.7	235.9	196.1	155.2	121.0	95.6	58.6
42.5°	266.8	264.6	257.5	248.1	230.4	198.9	163.0	129.3	100.0	77.9	48.1
45°	213.8	216.0	212.1	204.4	191.7	166.8	135.4	104.4	81.8	65.2	39.2
47.5°	167.4	166.8	170.7	168.0	158.0	137.0	110.5	85.6	68.0	55.8	33.7
50°	131.5	129.8	132.0	133.7	129.8	110.5	88.9	71.3	58.0	48.1	30.4
52.5°	94.5	96.1	100.6	105.5	103.3	87.8	71.8	58.0	48.6	40.3	24.9
55°	65.7	69.1	73.5	81.2	77.9	67.4	55.8	47.0	37.6	32.0	21.0
57.5°	43.6	45.3	51.4	59.7	57.5	50.3	42.5	35.4	28.7	24.3	17.1
60°	28.2	29.3	34.8	40.9	39.2	35.9	30.9	26.0	22.7	20.4	14.4
62.5°	18.2	19.3	23.2	27.1	27.1	24.3	21.0	19.9	18.2	16.6	12.2
65°	12.2	13.3	16.0	18.8	17.7	16.6	14.9	14.9	14.4	13.3	9.9
67.5°	8.3	8.8	11.0	12.2	11.6	10.5	10.5	11.6	11.0	9.9	7.2
70°	5.5	6.1	7.2	7.7	7.2	6.6	7.2	8.3	7.7	7.2	5.5
72.5°	3.9	3.9	4.4	4.4	4.4	4.4	5.0	5.5	5.5	5.0	3.9
75°	2.2	2.2	2.2	2.8	2.8	2.8	3.3	3.3	3.3	3.3	2.2
77.5°	1.1	1.1	1.1	1.1	1.7	1.7	1.7	1.7	1.7	1.7	1.1
80°	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	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°	437.0	437.0	437.0
2.5°	413.3	406.6	405.0
5°	379.5	359.7	352.5
7.5°	335.9	312.7	306.6
10°	295.0	269.1	259.7
12.5°	258.0	230.4	223.2
15°	223.2	197.2	190.6
17.5°	193.4	170.2	163.5
20°	166.8	145.9	138.7
22.5°	143.6	124.3	118.2
25°	122.1	105.5	102.8
27.5°	104.4	91.2	88.9
30°	88.4	78.5	77.3
32.5°	75.1	68.0	68.5
35°	64.1	59.7	60.2
37.5°	55.8	51.9	54.1
40°	46.4	45.3	47.5
42.5°	39.8	39.8	42.0
45°	33.7	35.4	37.6
47.5°	28.2	30.9	32.6
50°	23.8	27.1	28.2
52.5°	20.4	23.8	24.3
55°	18.2	20.4	20.4
57.5°	16.0	17.1	17.1
60°	13.3	14.4	14.4
62.5°	11.0	11.6	11.6
65°	8.8	9.4	9.4
67.5°	7.2	7.2	7.2
70°	5.5	5.0	5.0
72.5°	3.3	3.3	2.8
75°	1.7	1.1	1.1
77.5°	0.6	0.6	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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Signify Classified - Internal  
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Scaled Data Report





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

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Scaled Data Report



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