

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: P887082

Luminaire Tested: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887082  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-45)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM  
Light Source: (1) D2W LED 90CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 518.6 lumens  
Efficiency: N/A  
Efficacy: 55.2 lumens/watt  
Spacing Criteria (0/90/45): 1.16 / 0.81 / 1.01  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct

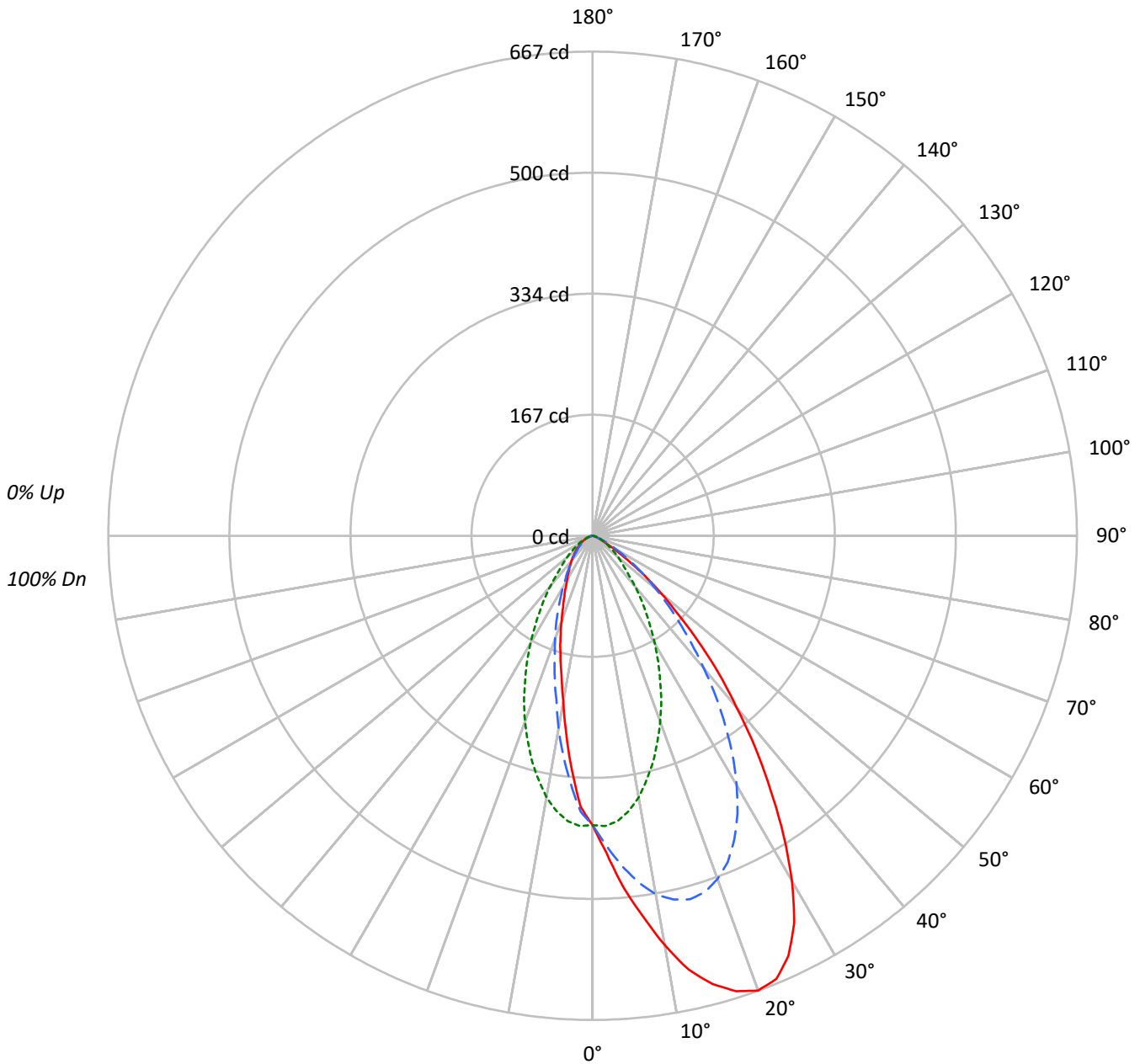
Input Watts (W): 9.4  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P887082

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K

### Luminous Intensity Polar Plot





TEST NUMBER: P887082

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K

**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	103	110	107	104	102	103	101	99	99	97	96	96	94	93	91					91			
2	105	100	95	91	103	98	93	90	94	91	88	91	88	86	89	86	84	82					82			
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74					74			
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67					67			
5	87	77	70	65	85	76	69	65	74	68	64	72	67	63	70	66	63	61					61			
6	81	71	64	59	80	70	63	59	69	63	58	67	62	58	66	61	57	56					56			
7	77	66	59	54	75	65	58	54	64	58	53	62	57	53	61	56	53	51					51			
8	72	61	54	49	71	61	54	49	59	53	49	58	53	49	57	52	49	47					47			
9	68	57	50	46	67	57	50	46	56	50	45	55	49	45	54	49	45	44					44			
10	65	53	47	42	63	53	47	42	52	46	42	51	46	42	50	45	42	40					40			

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

	0°	45°	90°	135°	180°
0°	87405	87405	87405	87405	87405
5°	107000	100308	86837	75633	71560
10°	127586	111721	81428	60119	51769
15°	145154	117708	73099	45766	38888
20°	155554	117389	63496	35166	29053
25°	154436	111756	53132	27123	22284
30°	138958	100471	43247	20459	17724
35°	114278	85166	33863	15981	15018
40°	88194	68171	25906	12509	12967
45°	63976	52160	19134	10048	11164
50°	41926	38515	15454	8256	9654
55°	23397	26647	12004	7264	8258
60°	10613	16358	9692	6535	7236
65°	5344	8691	7731	5604	5863
70°	3270	4937	5578	4616	4296
75°	2203	2838	4321	3050	2203
80°	631	1263	1894	1894	1894
85°	0	1258	2516	2516	2516

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 63976 cd/sqm



TEST NUMBER: P887082

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	37.7	7.3
10°-20°	101.6	19.6
20°-30°	132.4	25.5
30°-40°	116.5	22.5
40°-50°	74.6	14.4
50°-60°	37.1	7.1
60°-70°	13.9	2.7
70°-80°	4.1	0.8
80°-90°	0.7	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°	271.7	52.4
0°-40°	388.2	74.9
0°-60°	499.9	96.4
0°-90°	518.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	518.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	399	399	399	399	399	
5°	486	456	394	344	325	49
15°	639	518	322	202	171	181
25°	638	462	220	112	92	289
35°	427	318	126	60	56	266
45°	206	168	62	32	36	160
55°	61	70	31	19	22	58
65°	10	17	15	11	11	12
75°	3	3	5	4	3	3
85°	0	0	1	1	1	0
90°	0	0	0	0	0	



TEST NUMBER: P887082

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K

**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	398.6	398.6	398.6	398.6	398.6	398.6	398.6	398.6	398.6	398.6	398.6
2.5°	437.2	438.2	434.6	431.0	429.0	424.4	418.7	410.5	406.4	400.2	388.9
5°	486.1	486.1	482.5	471.7	462.4	449.0	437.7	422.8	408.4	394.5	367.8
7.5°	528.3	528.3	521.1	510.8	491.7	470.7	449.6	425.4	403.3	382.2	341.5
10°	573.0	570.4	560.7	541.6	515.4	488.1	455.2	422.8	394.0	365.7	311.7
12.5°	612.6	605.9	590.5	565.8	531.9	494.3	455.7	415.1	378.1	344.1	280.8
15°	639.4	633.7	613.1	581.8	541.1	495.9	449.6	402.2	359.5	322.0	252.0
17.5°	657.9	652.2	625.5	587.9	540.6	488.7	436.7	385.3	338.5	296.8	222.2
20°	666.6	658.9	631.1	586.4	531.3	474.8	417.7	362.6	314.8	272.1	195.5
22.5°	661.0	651.7	619.8	575.1	517.5	455.2	396.1	340.5	288.6	246.9	169.7
25°	638.3	632.2	598.7	550.4	493.8	430.0	368.3	312.2	261.8	219.6	147.1
27.5°	601.3	590.5	560.7	520.0	462.9	400.7	338.5	284.4	236.6	195.5	126.5
30°	548.8	539.6	516.4	477.9	427.4	366.2	308.1	253.6	209.4	170.8	108.5
32.5°	489.7	486.1	465.0	433.6	387.3	330.2	278.8	225.8	184.1	147.6	92.6
35°	426.9	421.8	407.4	377.0	341.0	295.3	243.8	197.0	160.5	126.5	77.7
37.5°	367.8	360.6	348.7	327.7	297.8	259.2	210.9	168.7	135.3	108.0	65.8
40°	308.1	304.5	293.7	277.8	255.6	220.7	180.5	144.5	116.2	90.5	55.0
42.5°	256.7	250.5	243.3	233.0	216.0	187.7	153.3	121.4	94.1	74.1	45.8
45°	206.3	201.6	199.6	192.4	179.5	156.9	128.1	98.2	77.7	61.7	38.1
47.5°	158.4	159.5	159.5	156.9	149.2	130.1	104.4	81.3	65.8	53.5	32.9
50°	122.9	121.9	124.5	126.5	119.8	106.0	83.3	67.9	56.1	45.3	28.3
52.5°	90.0	90.0	95.7	100.3	95.7	84.9	67.9	55.6	45.8	38.6	24.7
55°	61.2	63.8	68.4	77.2	74.6	64.8	55.0	44.2	37.5	31.4	20.6
57.5°	39.1	41.7	46.8	56.1	54.0	49.4	41.1	35.5	29.3	25.2	17.5
60°	24.2	25.7	30.3	38.1	39.1	35.5	30.3	26.2	24.7	22.1	15.9
62.5°	15.4	16.5	21.1	25.2	26.2	23.7	22.1	21.1	20.6	18.5	13.9
65°	10.3	10.8	13.4	17.0	17.0	16.5	15.4	16.5	16.5	14.9	11.3
67.5°	6.7	7.2	9.3	11.3	11.3	11.3	12.3	12.9	12.9	11.3	8.7
70°	5.1	5.1	6.2	7.2	7.7	7.7	8.2	9.8	9.8	8.7	7.2
72.5°	3.6	3.6	4.1	4.6	5.1	5.1	6.2	6.7	7.2	6.7	5.7
75°	2.6	2.6	2.6	3.1	3.1	3.6	4.1	4.6	5.1	5.1	4.1
77.5°	1.5	1.5	1.5	2.1	2.1	2.1	2.6	2.6	3.1	3.1	2.6
80°	0.5	0.5	1.0	1.0	1.0	1.0	1.5	1.5	1.5	1.5	1.5
82.5°	0.0	0.0	0.5	0.5	0.5	0.5	0.5	1.0	1.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.0	1.0	1.0
87.5°	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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: P887082

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4RWMW-600LM-2700K

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	398.6	398.6	398.6
2.5°	380.6	373.4	373.9
5°	343.6	327.7	325.1
7.5°	306.6	282.9	276.2
10°	270.0	242.3	232.5
12.5°	231.0	207.3	198.0
15°	201.6	179.0	171.3
17.5°	173.3	154.3	147.1
20°	150.7	133.2	124.5
22.5°	131.2	113.2	106.5
25°	112.1	96.2	92.1
27.5°	95.2	82.3	80.2
30°	80.8	71.5	70.0
32.5°	68.9	62.8	63.3
35°	59.7	55.6	56.1
37.5°	51.4	48.4	50.4
40°	43.7	43.2	45.3
42.5°	38.1	38.6	40.6
45°	32.4	34.5	36.0
47.5°	27.8	31.4	31.9
50°	24.2	27.8	28.3
52.5°	21.6	24.7	24.7
55°	19.0	21.6	21.6
57.5°	17.0	18.5	19.0
60°	14.9	15.4	16.5
62.5°	12.9	13.4	13.9
65°	10.8	11.3	11.3
67.5°	8.7	9.3	9.3
70°	7.2	7.2	6.7
72.5°	4.6	5.1	4.1
75°	3.6	3.1	2.6
77.5°	2.1	2.1	1.5
80°	1.5	1.5	1.5
82.5°	1.5	1.5	1.0
85°	1.0	1.0	1.0
87.5°	0.5	0.5	0.5
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)