

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: P887086

Luminaire Tested: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-600LM-2700K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P887086  
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: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-600LM-2700K  
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: 490.2 lumens  
Efficiency: N/A  
Efficacy: 52.1 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

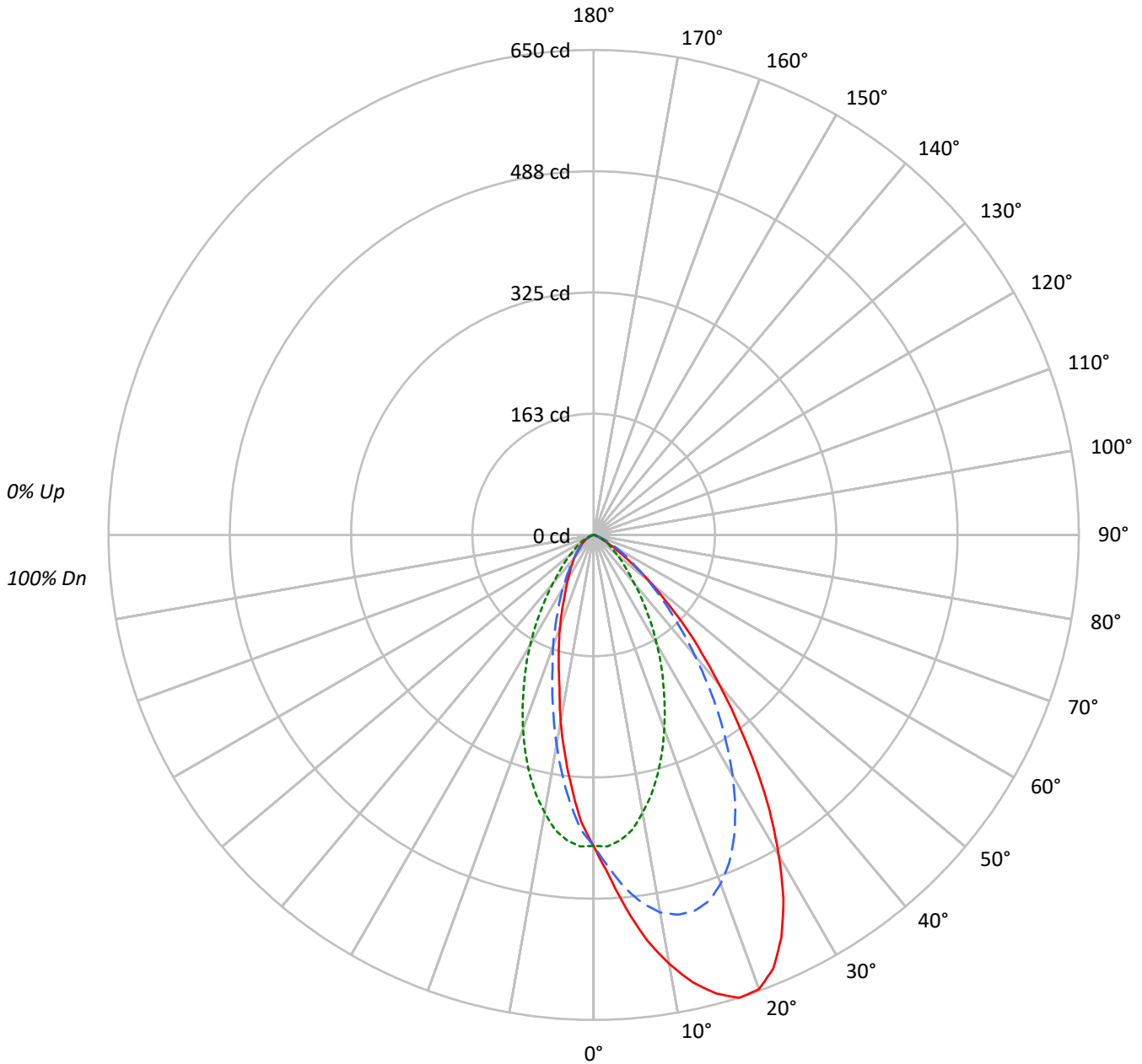
Input Watts (W): 9.4  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P887086

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-600LM-2700K

### Luminous Intensity Polar Plot





TEST NUMBER: P887086

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-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	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°	40378	40378	40378	40378	40378
5°	48944	46138	39939	35076	32976
10°	57458	50547	37154	28045	25006
15°	63846	52333	33237	21473	18063
20°	66794	51278	28485	16392	13577
25°	63589	47609	23601	12100	9898
30°	55495	41596	18938	9150	7718
35°	44668	34326	14487	6812	6209
40°	33120	26582	10737	5147	5147
45°	23619	19920	8042	3877	4165
50°	15041	14310	6044	3029	3497
55°	8344	10041	4695	2517	2787
60°	3894	6927	3798	1996	2189
65°	2132	4550	2590	1765	1765
70°	1161	2464	1756	1445	1161
75°	561	1160	786	786	187
80°	0	279	279	0	0
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 23619 cd/sqm



TEST NUMBER: P887086

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-600LM-2700K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	39.3	8.0
10°-20°	103.5	21.1
20°-30°	128.7	26.3
30°-40°	107.2	21.9
40°-50°	65.2	13.3
50°-60°	31.4	6.4
60°-70°	12.1	2.5
70°-80°	2.6	0.5
80°-90°	0.0	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°	271.5	55.4
0°-40°	378.7	77.3
0°-60°	475.3	97.0
0°-90°	490.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	490.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	417	417	417	417	417	
5°	503	474	411	361	339	50
15°	637	522	331	214	180	179
25°	595	445	221	113	93	269
35°	378	290	122	58	52	235
45°	172	145	59	28	30	133
55°	49	59	28	15	16	47
65°	9	20	11	8	8	10
75°	2	3	2	2	0	2
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



TEST NUMBER: P887086

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-600LM-2700K

**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	416.8	416.8	416.8	416.8	416.8	416.8	416.8	416.8	416.8	416.8	416.8
2.5°	455.4	455.9	455.9	450.8	447.7	442.1	436.4	430.7	423.0	417.9	405.5
5°	503.3	500.2	497.6	490.4	480.6	468.3	453.9	439.0	424.6	410.7	381.3
7.5°	548.1	543.9	538.3	523.4	507.4	487.3	464.7	441.0	417.9	398.3	357.1
10°	584.1	580.0	569.2	551.7	527.5	500.2	468.3	437.9	408.1	377.7	326.8
12.5°	614.4	608.3	595.4	571.7	538.8	503.8	465.7	428.2	390.1	356.6	293.8
15°	636.6	628.9	612.4	581.5	542.9	500.7	455.4	412.2	369.5	331.4	263.5
17.5°	650.5	641.2	618.6	583.6	538.8	489.9	439.5	390.1	347.4	304.7	234.1
20°	647.9	636.6	613.4	574.3	523.9	470.9	417.4	367.4	318.5	276.3	204.3
22.5°	628.9	619.6	594.4	554.8	503.3	446.7	392.1	340.2	292.3	248.6	177.0
25°	594.9	586.7	563.0	523.9	474.0	416.8	359.7	309.3	262.5	220.8	152.3
27.5°	550.6	543.9	519.2	483.7	437.4	384.4	328.3	280.0	234.1	195.6	130.2
30°	496.1	489.9	467.8	438.5	396.3	347.4	296.4	250.1	206.4	169.3	109.6
32.5°	439.0	431.8	417.9	387.0	354.1	308.3	264.0	218.7	177.5	145.6	92.6
35°	377.7	371.0	360.2	336.6	309.3	271.2	230.0	188.9	152.3	122.5	77.2
37.5°	316.5	314.9	305.7	289.2	265.0	233.6	195.6	161.6	128.7	103.4	63.8
40°	261.9	262.5	254.2	242.4	223.3	197.1	168.3	135.3	107.0	84.9	52.5
42.5°	213.6	213.6	207.9	200.2	187.3	165.2	140.5	113.2	88.0	69.5	42.7
45°	172.4	166.7	167.8	162.6	153.9	136.9	113.7	89.5	73.1	58.7	35.5
47.5°	130.2	132.3	133.8	133.3	125.6	111.2	92.1	74.6	62.3	49.4	30.4
50°	99.8	99.8	102.9	105.0	100.9	89.0	74.1	62.3	50.4	40.1	25.2
52.5°	70.5	73.6	78.2	83.9	79.8	71.5	61.8	49.9	42.2	33.4	21.1
55°	49.4	50.9	57.6	63.8	62.3	56.6	48.4	40.7	33.4	27.8	17.5
57.5°	31.4	32.4	41.2	47.9	48.4	44.8	38.6	32.4	27.3	23.7	14.9
60°	20.1	22.1	27.3	35.0	36.5	35.0	30.4	25.7	23.2	19.6	12.9
62.5°	13.4	14.9	19.0	23.7	27.3	27.3	22.6	21.1	18.0	15.4	11.3
65°	9.3	10.3	12.9	16.5	20.1	19.6	18.0	16.0	13.9	11.3	8.7
67.5°	6.2	7.2	8.7	11.3	13.4	13.9	12.9	11.3	9.8	8.7	6.7
70°	4.1	4.6	5.7	7.7	8.7	8.7	8.7	7.7	6.7	6.2	4.6
72.5°	2.6	3.1	3.6	4.6	5.1	5.7	5.1	5.1	4.6	4.1	3.1
75°	1.5	2.1	2.1	2.6	3.1	3.1	3.1	2.6	2.6	2.1	2.1
77.5°	1.0	1.0	1.0	1.0	1.0	1.5	1.5	1.0	1.0	0.5	1.0
80°	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
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: P887086

CATALOG NUMBER: ML412LSFLD2W1E-TIR4D25AWW-TL4SWMB-600LM-2700K

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	416.8	416.8	416.8
2.5°	395.2	389.6	384.9
5°	360.7	346.3	339.1
7.5°	323.7	303.1	295.9
10°	285.1	259.4	254.2
12.5°	248.6	222.3	211.0
15°	214.1	187.8	180.1
17.5°	182.7	161.6	154.9
20°	159.0	138.9	131.7
22.5°	134.8	116.3	111.2
25°	113.2	98.3	92.6
27.5°	97.3	82.9	79.8
30°	81.8	70.5	69.0
32.5°	69.0	60.7	59.2
35°	57.6	52.0	52.5
37.5°	48.9	44.8	45.8
40°	40.7	39.1	40.7
42.5°	34.0	34.5	35.5
45°	28.3	30.4	30.4
47.5°	23.7	26.2	26.8
50°	20.1	22.6	23.2
52.5°	17.5	19.6	19.6
55°	14.9	16.5	16.5
57.5°	12.9	13.9	13.9
60°	10.3	11.3	11.3
62.5°	8.7	9.3	9.3
65°	7.7	7.7	7.7
67.5°	6.2	6.2	5.7
70°	5.1	4.6	4.1
72.5°	3.6	3.1	2.1
75°	2.1	1.5	0.5
77.5°	0.5	0.5	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)