

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: P886828

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4RWMW-1020LM-4000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886828
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: ML412LSFL95FS1E-TIR4D25AWW-TL4RWMW-1020LM-4000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 4000K CCT
Ballast/Driver: -

Summary

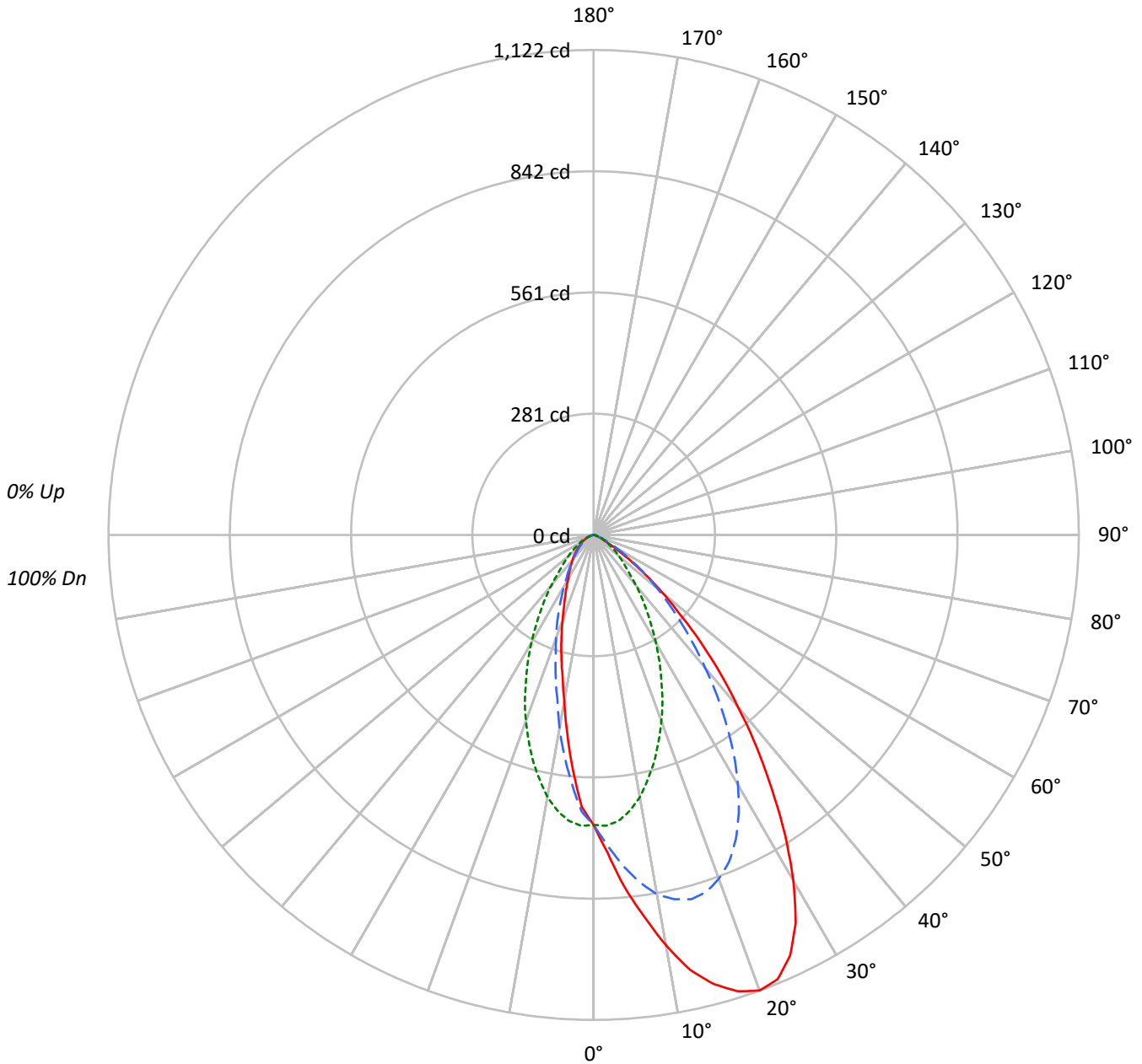
Lumens per Lamp: N/A
Luminaire Lumens: 872.8 lumens
Efficiency: N/A
Efficacy: 49.6 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 0.81 / 1.01
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (A_{in}): 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										
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	112	109	106	103	110	107	104	102	103	101	99	99	97	96	96	94	93	91								
2	105	100	95	91	103	98	93	90	94	91	88	91	88	86	89	86	84	82								
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74								
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67								
5	87	77	70	65	85	76	69	65	74	68	64	72	67	63	70	66	63	61								
6	81	71	64	59	80	70	63	59	69	63	58	67	62	58	66	61	57	56								
7	77	66	59	54	75	65	58	54	64	58	53	62	57	53	61	56	53	51								
8	72	61	54	49	71	61	54	49	59	53	49	58	53	49	57	52	49	47								
9	68	57	50	46	67	57	50	46	56	50	45	55	49	45	54	49	45	44								
10	65	53	47	42	63	53	47	42	52	46	42	51	46	42	50	45	42	40								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	147115	147115	147115	147115	147115
5°	180057	168820	146137	127272	120427
10°	214714	188017	137049	101178	87128
15°	244269	198083	123020	77027	65426
20°	261776	197557	106853	59178	48888
25°	259902	188079	89425	45656	37478
30°	233859	169089	72771	34410	29802
35°	192337	143322	56992	26876	25270
40°	148421	114715	43596	21068	21812
45°	107639	87777	32220	16901	18793
50°	70582	64817	25995	13884	16238
55°	39377	44844	20186	12234	13916
60°	17849	27520	16314	11008	12148
65°	8976	14606	13023	9443	9858
70°	5578	8335	9425	7758	7245
75°	3643	4787	7371	5168	3643
80°	1137	2147	3283	3283	3283
85°	0	2264	4277	4277	4277

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 107639 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	63.5	7.3
10°-20°	171.0	19.6
20°-30°	222.8	25.5
30°-40°	196.1	22.5
40°-50°	125.6	14.4
50°-60°	62.4	7.1
60°-70°	23.5	2.7
70°-80°	6.9	0.8
80°-90°	1.3	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°	457.2	52.4
0°-40°	653.3	74.8
0°-60°	841.2	96.4
0°-90°	872.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	872.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	671	671	671	671	671	
5°	818	767	664	578	547	82
15°	1076	873	542	339	288	304
25°	1074	777	370	189	155	486
35°	718	535	213	100	94	448
45°	347	283	104	54	61	269
55°	103	117	53	32	36	98
65°	17	28	25	18	19	19
75°	4	6	9	6	4	5
85°	0	1	2	2	2	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°	670.9	670.9	670.9	670.9	670.9	670.9	670.9	670.9	670.9	670.9	670.9
2.5°	735.8	737.5	731.4	725.4	721.9	714.1	704.6	690.8	683.8	673.4	654.4
5°	818.0	818.0	811.9	793.8	778.2	755.7	736.6	711.5	687.3	663.9	618.9
7.5°	889.0	889.0	876.9	859.6	827.5	792.0	756.5	715.9	678.6	643.2	574.8
10°	964.3	960.0	943.5	911.5	867.3	821.5	766.1	711.5	663.1	615.5	524.6
12.5°	1030.9	1019.7	993.7	952.2	895.0	831.9	766.9	698.6	636.2	579.1	472.6
15°	1076.0	1066.4	1031.8	979.0	910.6	834.5	756.5	676.9	605.1	541.9	424.2
17.5°	1107.1	1097.6	1052.6	989.4	909.8	822.3	734.9	648.3	569.6	499.5	373.9
20°	1121.8	1108.9	1062.1	986.8	894.2	799.0	702.9	610.3	529.8	457.9	328.9
22.5°	1112.3	1096.7	1043.1	967.8	870.8	766.1	666.5	573.0	485.6	415.5	285.7
25°	1074.2	1063.8	1007.6	926.2	831.0	723.7	619.8	525.4	440.6	369.6	247.6
27.5°	1011.9	993.7	943.5	875.1	779.1	674.3	569.6	478.7	398.2	328.9	212.9
30°	923.6	908.0	869.1	804.2	719.3	616.3	518.5	426.7	352.3	287.4	182.6
32.5°	824.1	818.0	782.5	729.7	651.8	555.7	469.2	380.0	309.9	248.4	155.8
35°	718.5	709.8	685.6	634.5	573.9	496.9	410.3	331.5	270.1	212.9	130.7
37.5°	618.9	606.8	586.9	551.4	501.2	436.3	354.9	283.9	227.7	181.8	110.8
40°	518.5	512.4	494.3	467.4	430.2	371.3	303.8	243.2	195.6	152.3	92.6
42.5°	431.9	421.6	409.4	392.1	363.6	315.9	258.0	204.3	158.4	124.6	77.0
45°	347.1	339.3	335.9	323.7	302.1	264.0	215.5	165.3	130.7	103.9	64.1
47.5°	266.6	268.3	268.3	264.0	251.0	219.0	175.7	136.8	110.8	90.0	55.4
50°	206.9	205.2	209.5	212.9	201.7	178.3	140.2	114.3	94.4	76.2	47.6
52.5°	151.5	151.5	161.0	168.8	161.0	142.8	114.3	93.5	77.0	64.9	41.5
55°	103.0	107.3	115.1	129.8	125.5	109.1	92.6	74.4	63.2	52.8	34.6
57.5°	65.8	70.1	78.8	94.4	90.9	83.1	69.2	59.7	49.3	42.4	29.4
60°	40.7	43.3	51.1	64.1	65.8	59.7	51.1	44.1	41.5	37.2	26.8
62.5°	26.0	27.7	35.5	42.4	44.1	39.8	37.2	35.5	34.6	31.2	23.4
65°	17.3	18.2	22.5	28.6	28.6	27.7	26.0	27.7	27.7	25.1	19.0
67.5°	11.3	12.1	15.6	19.0	19.0	19.0	20.8	21.6	21.6	19.0	14.7
70°	8.7	8.7	10.4	12.1	13.0	13.0	13.8	16.4	16.4	14.7	12.1
72.5°	6.1	6.1	6.9	7.8	8.7	8.7	10.4	11.3	12.1	11.3	9.5
75°	4.3	4.3	4.3	5.2	5.2	6.1	6.9	7.8	8.7	8.7	6.9
77.5°	2.6	2.6	2.6	3.5	3.5	3.5	4.3	4.3	5.2	5.2	4.3
80°	0.9	0.9	1.7	1.7	1.7	1.7	2.6	2.6	2.6	2.6	2.6
82.5°	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7	1.7
85°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	1.7	1.7	1.7
87.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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°	670.9	670.9	670.9
2.5°	640.6	628.4	629.3
5°	578.2	551.4	547.1
7.5°	515.9	476.1	464.8
10°	454.4	407.7	391.3
12.5°	388.7	348.8	333.3
15°	339.3	301.2	288.2
17.5°	291.7	259.7	247.6
20°	253.6	224.2	209.5
22.5°	220.7	190.4	179.2
25°	188.7	161.9	154.9
27.5°	160.1	138.5	135.0
30°	135.9	120.3	117.7
32.5°	116.0	105.6	106.5
35°	100.4	93.5	94.4
37.5°	86.6	81.4	84.8
40°	73.6	72.7	76.2
42.5°	64.1	64.9	68.4
45°	54.5	58.0	60.6
47.5°	46.7	52.8	53.7
50°	40.7	46.7	47.6
52.5°	36.4	41.5	41.5
55°	32.0	36.4	36.4
57.5°	28.6	31.2	32.0
60°	25.1	26.0	27.7
62.5°	21.6	22.5	23.4
65°	18.2	19.0	19.0
67.5°	14.7	15.6	15.6
70°	12.1	12.1	11.3
72.5°	7.8	8.7	6.9
75°	6.1	5.2	4.3
77.5°	3.5	3.5	2.6
80°	2.6	2.6	2.6
82.5°	2.6	2.6	1.7
85°	1.7	1.7	1.7
87.5°	0.9	0.9	0.9
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
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report





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

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Scaled Data Report



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