

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: P886965

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-2700K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886965
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: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-2700K
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 2700K CCT
Ballast/Driver: -

Summary

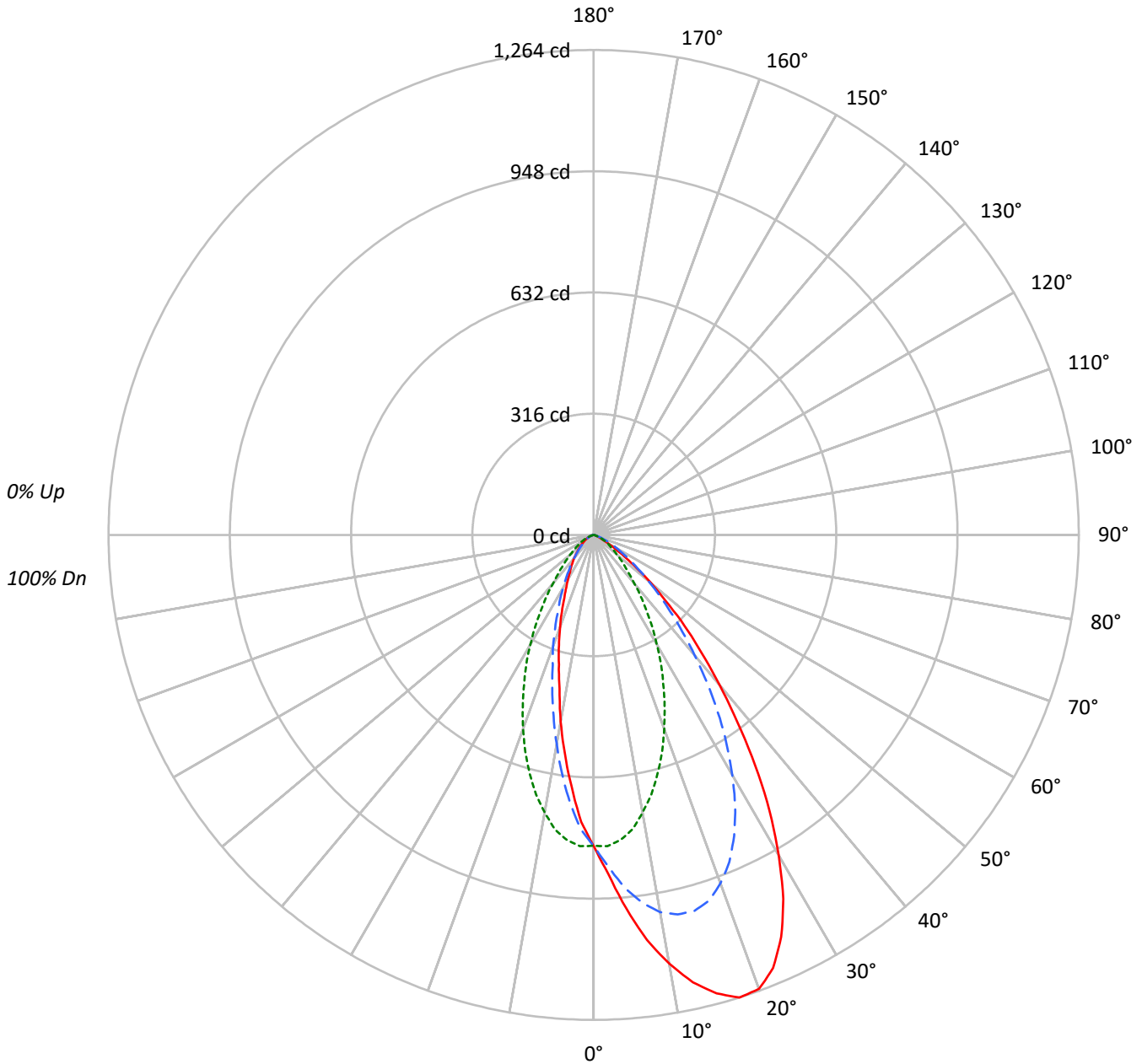
Lumens per Lamp: N/A
Luminaire Lumens: 952.6 lumens
Efficiency: N/A
Efficacy: 54.1 lumens/watt
Spacing Criteria (0/90/45): 1.08 / 0.79 / 0.96
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

Input Watts (W): 17.6
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										
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	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92								
2	106	100	95	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83								
3	99	92	86	82	97	90	85	81	88	83	80	85	81	78	83	80	77	75								
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68								
5	88	78	71	66	86	77	71	66	75	70	65	73	69	65	72	68	64	63								
6	82	72	65	60	81	71	65	60	70	64	60	68	63	59	67	62	59	57								
7	78	67	60	56	76	66	60	55	65	59	55	64	59	55	63	58	54	53								
8	73	63	56	51	72	62	56	51	61	55	51	60	54	51	59	54	50	49								
9	69	59	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45								
10	66	55	48	44	65	54	48	44	54	48	44	53	48	44	52	47	44	42								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	78479	78479	78479	78479	78479
5°	95116	89670	77612	68179	64094
10°	111669	98232	72213	54507	48605
15°	124082	101707	64599	41732	35102
20°	129814	99649	55371	31856	26392
25°	123586	92524	45867	23516	19240
30°	107846	80832	36803	17786	14990
35°	86817	66712	28147	13245	12063
40°	64382	51672	20866	9990	9990
45°	45896	38703	15618	7535	8083
50°	29238	27806	11755	5878	6782
55°	16214	19508	9120	4898	5405
60°	7556	13466	7363	3875	4263
65°	4126	8825	5043	3438	3438
70°	2266	4815	3399	2832	2266
75°	1123	2246	1497	1497	374
80°	0	558	558	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 45896 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	76.3	8.0
10°-20°	201.2	21.1
20°-30°	250.2	26.3
30°-40°	208.4	21.9
40°-50°	126.7	13.3
50°-60°	61.1	6.4
60°-70°	23.6	2.5
70°-80°	5.1	0.5
80°-90°	0.1	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°	527.6	55.4
0°-40°	736.0	77.3
0°-60°	923.8	97.0
0°-90°	952.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	952.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	810	810	810	810	810	
5°	978	922	798	701	659	98
15°	1237	1014	644	416	350	349
25°	1156	866	429	220	180	524
35°	734	564	238	112	102	456
45°	335	282	114	55	59	259
55°	96	116	54	29	32	91
65°	18	38	22	15	15	20
75°	3	6	4	4	1	4
85°	0	0	0	0	0	0
90°	0	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°	810.1	810.1	810.1	810.1	810.1	810.1	810.1	810.1	810.1	810.1	810.1
2.5°	885.1	886.1	886.1	876.1	870.1	859.1	848.1	837.1	822.1	812.1	788.1
5°	978.1	972.1	967.1	953.1	934.1	910.1	882.1	853.1	825.1	798.1	741.1
7.5°	1065.1	1057.1	1046.1	1017.1	986.1	947.1	903.1	857.1	812.1	774.1	694.1
10°	1135.2	1127.2	1106.2	1072.1	1025.1	972.1	910.1	851.1	793.1	734.1	635.1
12.5°	1194.2	1182.2	1157.2	1111.2	1047.1	979.1	905.1	832.1	758.1	693.1	571.1
15°	1237.2	1222.2	1190.2	1130.2	1055.1	973.1	885.1	801.1	718.1	644.1	512.1
17.5°	1264.2	1246.2	1202.2	1134.2	1047.1	952.1	854.1	758.1	675.1	592.1	455.1
20°	1259.2	1237.2	1192.2	1116.2	1018.1	915.1	811.1	714.1	619.1	537.1	397.1
22.5°	1222.2	1204.2	1155.2	1078.2	978.1	868.1	762.1	661.1	568.1	483.1	344.0
25°	1156.2	1140.2	1094.2	1018.1	921.1	810.1	699.1	601.1	510.1	429.1	296.0
27.5°	1070.1	1057.1	1009.1	940.1	850.1	747.1	638.1	544.1	455.1	380.1	253.0
30°	964.1	952.1	909.1	852.1	770.1	675.1	576.1	486.1	401.1	329.0	213.0
32.5°	853.1	839.1	812.1	752.1	688.1	599.1	513.1	425.1	345.0	283.0	180.0
35°	734.1	721.1	700.1	654.1	601.1	527.1	447.1	367.1	296.0	238.0	150.0
37.5°	615.1	612.1	594.1	562.1	515.1	454.1	380.1	314.0	250.0	201.0	124.0
40°	509.1	510.1	494.1	471.1	434.1	383.1	327.0	263.0	208.0	165.0	102.0
42.5°	415.1	415.1	404.1	389.1	364.1	321.0	273.0	220.0	171.0	135.0	83.0
45°	335.0	324.0	326.0	316.0	299.0	266.0	221.0	174.0	142.0	114.0	69.0
47.5°	253.0	257.0	260.0	259.0	244.0	216.0	179.0	145.0	121.0	96.0	59.0
50°	194.0	194.0	200.0	204.0	196.0	173.0	144.0	121.0	98.0	78.0	49.0
52.5°	137.0	143.0	152.0	163.0	155.0	139.0	120.0	97.0	82.0	65.0	41.0
55°	96.0	99.0	112.0	124.0	121.0	110.0	94.0	79.0	65.0	54.0	34.0
57.5°	61.0	63.0	80.0	93.0	94.0	87.0	75.0	63.0	53.0	46.0	29.0
60°	39.0	43.0	53.0	68.0	71.0	68.0	59.0	50.0	45.0	38.0	25.0
62.5°	26.0	29.0	37.0	46.0	53.0	53.0	44.0	41.0	35.0	30.0	22.0
65°	18.0	20.0	25.0	32.0	39.0	38.0	35.0	31.0	27.0	22.0	17.0
67.5°	12.0	14.0	17.0	22.0	26.0	27.0	25.0	22.0	19.0	17.0	13.0
70°	8.0	9.0	11.0	15.0	17.0	17.0	17.0	15.0	13.0	12.0	9.0
72.5°	5.0	6.0	7.0	9.0	10.0	11.0	10.0	10.0	9.0	8.0	6.0
75°	3.0	4.0	4.0	5.0	6.0	6.0	6.0	5.0	5.0	4.0	4.0
77.5°	2.0	2.0	2.0	2.0	2.0	3.0	3.0	2.0	2.0	1.0	2.0
80°	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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



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CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	810.1	810.1	810.1
2.5°	768.1	757.1	748.1
5°	701.1	673.1	659.1
7.5°	629.1	589.1	575.1
10°	554.1	504.1	494.1
12.5°	483.1	432.1	410.1
15°	416.1	365.1	350.0
17.5°	355.0	314.0	301.0
20°	309.0	270.0	256.0
22.5°	262.0	226.0	216.0
25°	220.0	191.0	180.0
27.5°	189.0	161.0	155.0
30°	159.0	137.0	134.0
32.5°	134.0	118.0	115.0
35°	112.0	101.0	102.0
37.5°	95.0	87.0	89.0
40°	79.0	76.0	79.0
42.5°	66.0	67.0	69.0
45°	55.0	59.0	59.0
47.5°	46.0	51.0	52.0
50°	39.0	44.0	45.0
52.5°	34.0	38.0	38.0
55°	29.0	32.0	32.0
57.5°	25.0	27.0	27.0
60°	20.0	22.0	22.0
62.5°	17.0	18.0	18.0
65°	15.0	15.0	15.0
67.5°	12.0	12.0	11.0
70°	10.0	9.0	8.0
72.5°	7.0	6.0	4.0
75°	4.0	3.0	1.0
77.5°	1.0	1.0	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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Peachtree City, GA 30269

Scaled Data Report





— 0°-180° - - 45°-225° - - - 90°-270°

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