

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: P886961

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWSL-1200LM-3000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886961
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: ML412LSFL9FS1E-TIR4D25AWW-TL4RWSL-1200LM-3000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

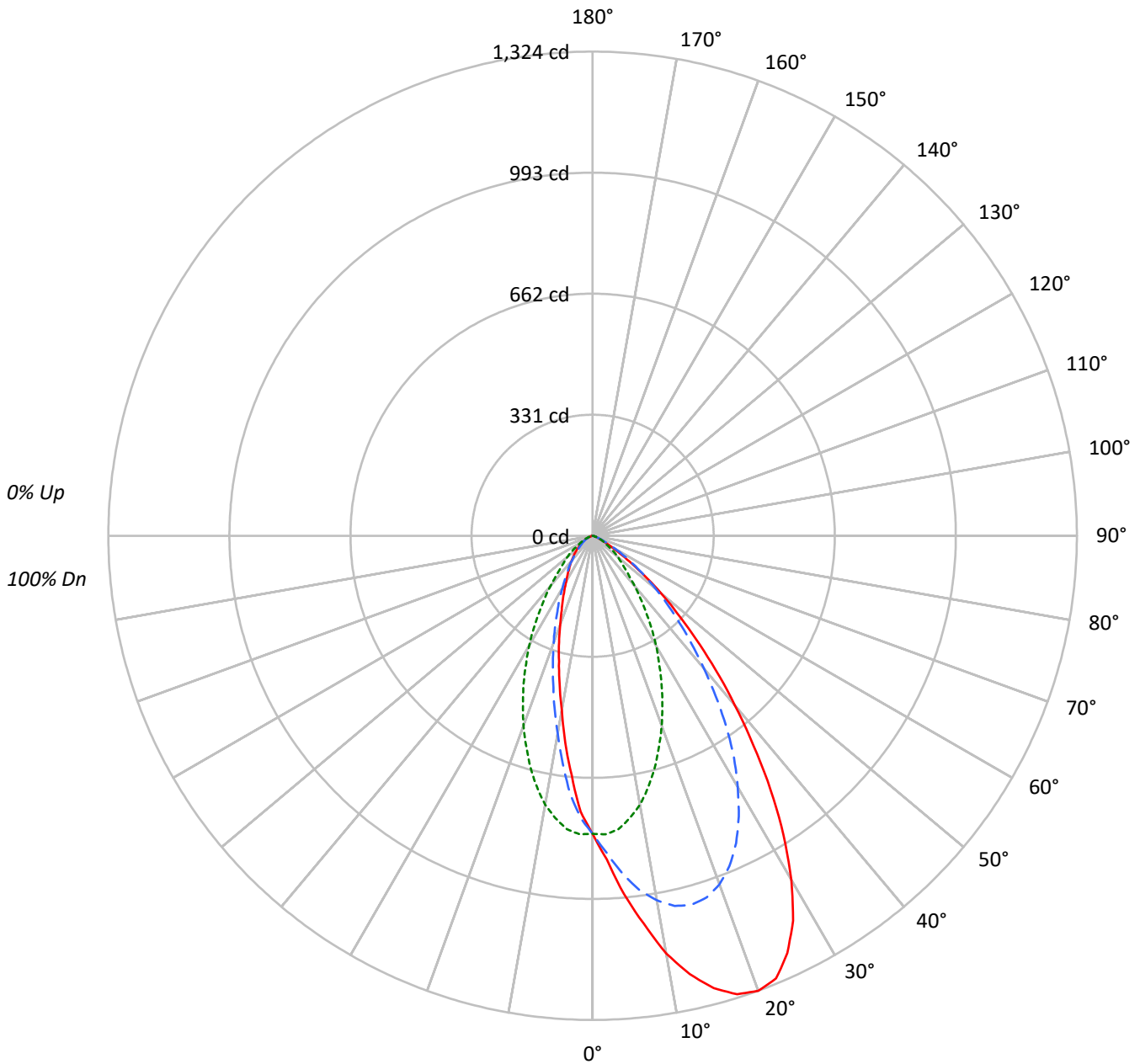
Lumens per Lamp: N/A
Luminaire Lumens: 1029.4 lumens
Efficiency: N/A
Efficacy: 58.5 lumens/watt
Spacing Criteria (0/90/45): 1.14 / 0.8 / 1
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

Input Watts (W): 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	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	104	110	107	104	102	103	101	99	99	98	96	96	94	93	91								
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83								
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75								
4	93	84	77	73	91	83	77	72	81	75	71	78	74	70	76	73	69	68								
5	87	77	71	65	85	76	70	65	74	69	65	73	68	64	71	67	63	62								
6	82	72	65	60	80	71	64	59	69	63	59	68	62	58	66	62	58	56								
7	77	66	59	54	76	66	59	54	64	58	54	63	58	54	62	57	53	52								
8	73	62	55	50	71	61	55	50	60	54	50	59	53	50	58	53	49	48								
9	69	58	51	46	67	57	51	46	56	50	46	55	50	46	54	49	46	44								
10	65	54	47	43	64	53	47	43	53	47	43	52	46	43	51	46	43	41								

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	178692	178692	178692	178692	178692
5°	216574	203885	177349	155800	144684
10°	258312	225391	166307	122509	107814
15°	290717	237164	148991	94484	80682
20°	308937	236702	128858	72596	60345
25°	304614	224469	107934	55092	46358
30°	275207	200866	87912	41728	36512
35°	227244	170292	67833	31989	30062
40°	173124	135210	51010	24761	25362
45°	123641	103670	37709	19475	21739
50°	83648	76450	30566	15113	17910
55°	46870	51802	22862	12998	14566
60°	23024	30721	16709	10832	11753
65°	11778	16578	12816	8561	9080
70°	6604	8271	8591	6604	5963
75°	3474	4406	5253	2626	1779
80°	1263	1263	1263	0	0
85°	0	0	2516	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 124912 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	76.8	7.5
10°-20°	205.9	20.0
20°-30°	265.7	25.8
30°-40°	232.5	22.6
40°-50°	146.9	14.3
50°-60°	71.3	6.9
60°-70°	24.6	2.4
70°-80°	5.3	0.5
80°-90°	0.3	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°	548.4	53.3
0°-40°	781.0	75.9
0°-60°	999.1	97.1
0°-90°	1029.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1029.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	815	815	815	815	815	
5°	984	926	806	708	657	99
15°	1281	1045	656	416	355	361
25°	1259	928	446	228	192	571
35°	849	636	253	120	112	526
45°	399	334	122	63	70	312
55°	123	136	60	34	38	117
65°	23	32	25	16	18	25
75°	4	5	6	3	2	5
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°	814.9	814.9	814.9	814.9	814.9	814.9	814.9	814.9	814.9	814.9	814.9
2.5°	886.0	882.9	889.1	879.9	871.6	863.4	856.2	838.6	829.4	817.0	794.3
5°	983.9	982.9	974.6	957.1	938.6	913.9	890.2	858.2	833.5	805.7	750.0
7.5°	1069.4	1070.5	1056.0	1028.2	998.3	955.1	913.9	868.5	822.2	778.9	694.4
10°	1160.1	1147.7	1127.1	1092.1	1040.6	983.9	924.2	861.3	800.5	746.9	636.7
12.5°	1228.1	1213.7	1186.9	1136.4	1073.5	1000.4	923.1	845.9	770.6	703.7	577.0
15°	1280.6	1269.3	1232.2	1167.3	1089.0	1000.4	908.7	820.1	732.5	656.3	511.0
17.5°	1314.6	1301.2	1252.8	1178.6	1086.9	987.0	882.9	779.9	687.2	603.7	456.4
20°	1323.9	1308.4	1256.9	1172.4	1070.5	958.2	844.8	737.7	636.7	552.2	396.7
22.5°	1310.5	1289.9	1236.3	1150.8	1038.5	916.9	800.5	686.2	583.1	497.6	345.1
25°	1259.0	1244.6	1188.9	1096.2	988.0	867.5	740.8	632.6	529.6	446.1	300.8
27.5°	1186.9	1164.2	1116.8	1032.3	928.3	802.6	682.0	572.8	473.9	393.6	255.5
30°	1086.9	1068.4	1021.0	947.8	851.0	735.6	620.2	516.2	421.4	347.2	219.4
32.5°	971.5	963.3	918.0	857.2	771.7	666.6	555.3	457.4	370.9	299.8	187.5
35°	848.9	835.5	802.6	757.2	682.0	590.3	491.4	397.7	316.3	253.4	156.6
37.5°	722.2	717.1	691.3	650.1	592.4	513.1	425.5	340.0	272.0	214.3	130.8
40°	604.8	607.9	583.1	554.3	504.8	439.9	365.7	289.5	225.6	178.2	109.2
42.5°	497.6	493.5	480.1	462.6	429.6	370.9	303.9	241.1	186.5	145.3	89.6
45°	398.7	402.8	395.6	381.2	357.5	311.1	252.4	194.7	152.5	121.6	73.1
47.5°	312.2	311.1	318.4	313.2	294.7	255.5	206.1	159.7	126.7	104.1	62.8
50°	245.2	242.1	246.2	249.3	242.1	206.1	165.9	132.9	108.2	89.6	56.7
52.5°	176.2	179.3	187.5	196.8	192.7	163.8	133.9	108.2	90.7	75.2	46.4
55°	122.6	128.8	137.0	151.4	145.3	125.7	104.1	87.6	70.1	59.8	39.2
57.5°	81.4	84.5	95.8	111.3	107.1	93.8	79.3	65.9	53.6	45.3	31.9
60°	52.5	54.6	64.9	76.2	73.1	67.0	57.7	48.4	42.2	38.1	26.8
62.5°	34.0	36.1	43.3	50.5	50.5	45.3	39.2	37.1	34.0	30.9	22.7
65°	22.7	24.7	29.9	35.0	33.0	30.9	27.8	27.8	26.8	24.7	18.5
67.5°	15.5	16.5	20.6	22.7	21.6	19.6	19.6	21.6	20.6	18.5	13.4
70°	10.3	11.3	13.4	14.4	13.4	12.4	13.4	15.5	14.4	13.4	10.3
72.5°	7.2	7.2	8.2	8.2	8.2	8.2	9.3	10.3	10.3	9.3	7.2
75°	4.1	4.1	4.1	5.2	5.2	5.2	6.2	6.2	6.2	6.2	4.1
77.5°	2.1	2.1	2.1	2.1	3.1	3.1	3.1	3.1	3.1	3.1	2.1
80°	1.0	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	1.0	1.0	1.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	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°	814.9	814.9	814.9
2.5°	770.6	758.3	755.2
5°	707.8	670.7	657.3
7.5°	626.4	583.1	571.8
10°	550.2	501.7	484.2
12.5°	481.1	429.6	416.2
15°	416.2	367.8	355.4
17.5°	360.6	317.3	305.0
20°	311.1	272.0	258.6
22.5°	267.9	231.8	220.5
25°	227.7	196.8	191.6
27.5°	194.7	170.0	165.9
30°	164.8	146.3	144.2
32.5°	140.1	126.7	127.8
35°	119.5	111.3	112.3
37.5°	104.1	96.8	101.0
40°	86.5	84.5	88.6
42.5°	74.2	74.2	78.3
45°	62.8	65.9	70.1
47.5°	52.5	57.7	60.8
50°	44.3	50.5	52.5
52.5°	38.1	44.3	45.3
55°	34.0	38.1	38.1
57.5°	29.9	31.9	31.9
60°	24.7	26.8	26.8
62.5°	20.6	21.6	21.6
65°	16.5	17.5	17.5
67.5°	13.4	13.4	13.4
70°	10.3	9.3	9.3
72.5°	6.2	6.2	5.2
75°	3.1	2.1	2.1
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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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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