

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: P886963

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWSL-1200LM-4000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886963
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-4000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

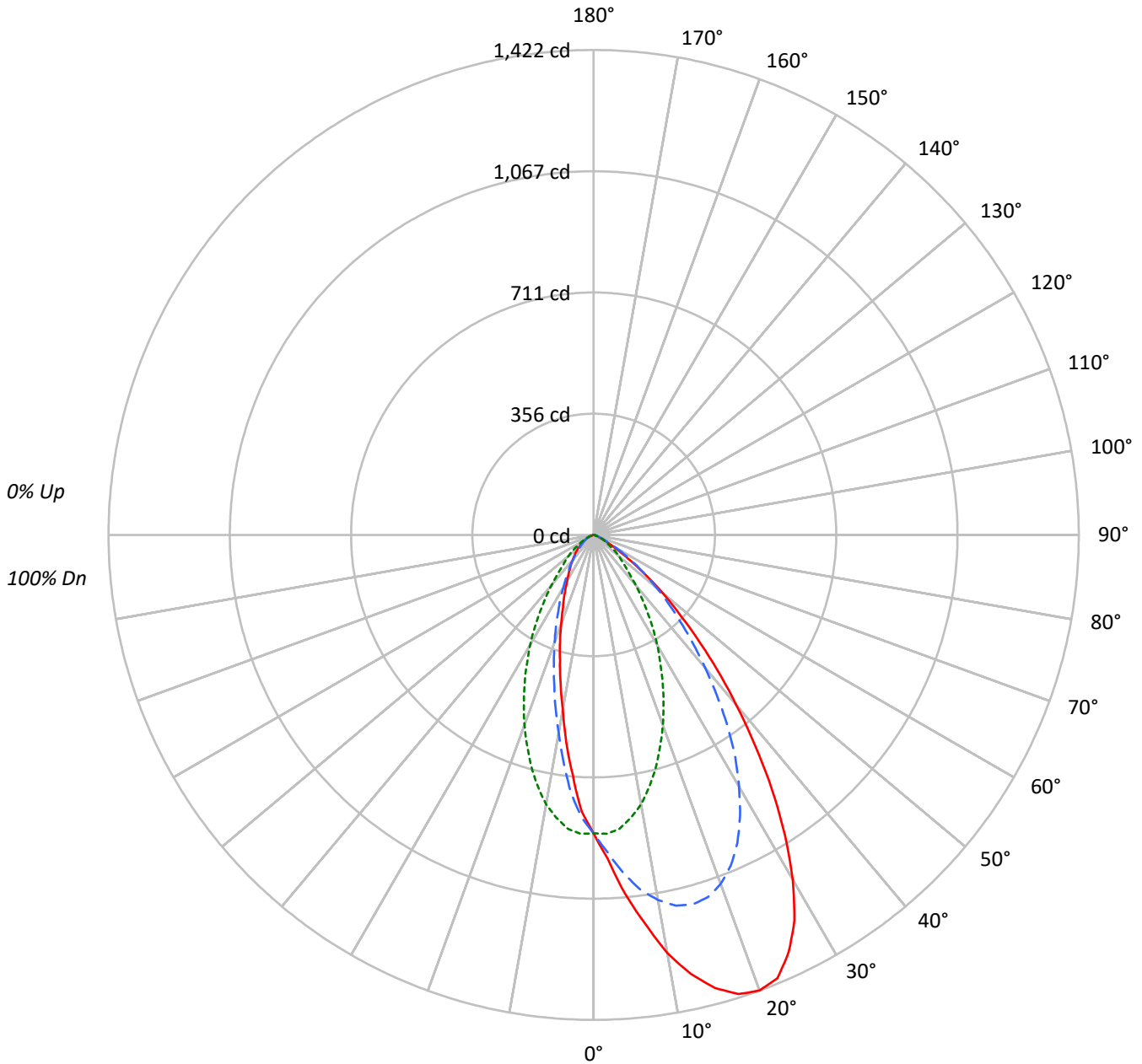
Lumens per Lamp: N/A
Luminaire Lumens: 1105.3 lumens
Efficiency: N/A
Efficacy: 62.8 lumens/watt
Spacing Criteria (0/90/45): 1.14 / 0.8 / 1
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

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

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	191871	191871	191871	191871	191871
5°	232555	218908	190424	167290	155359
10°	277350	242013	178576	131527	115763
15°	312170	254655	159978	101453	86652
20°	331712	254145	138379	77963	64802
25°	327067	241030	115894	59157	49793
30°	295514	215691	94394	44817	39221
35°	244028	182861	72839	34345	32284
40°	185891	145201	54788	26593	27222
45°	132758	111329	40469	20932	23320
50°	89822	82095	32818	16238	19240
55°	50311	55625	24544	13954	15636
60°	24735	32980	17937	11666	12631
65°	12608	17797	13802	9184	9755
70°	7117	8880	9232	7117	6411
75°	3728	4660	5592	2796	1864
80°	1389	1389	1389	0	0
85°	0	0	2768	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 134122 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	82.4	7.5
10°-20°	221.1	20.0
20°-30°	285.3	25.8
30°-40°	249.7	22.6
40°-50°	157.7	14.3
50°-60°	76.5	6.9
60°-70°	26.5	2.4
70°-80°	5.7	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°	588.9	53.3
0°-40°	838.6	75.9
0°-60°	1072.9	97.1
0°-90°	1105.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1105.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	875	875	875	875	875	
5°	1056	994	865	760	706	106
15°	1375	1122	705	447	382	388
25°	1352	996	479	244	206	613
35°	912	683	272	128	121	565
45°	428	359	130	68	75	335
55°	132	146	64	36	41	126
65°	24	34	27	18	19	27
75°	4	6	7	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°	875.0	875.0	875.0	875.0	875.0	875.0	875.0	875.0	875.0	875.0	875.0
2.5°	951.4	948.1	954.7	944.7	935.9	927.0	919.3	900.5	890.5	877.3	852.9
5°	1056.5	1055.4	1046.5	1027.7	1007.8	981.2	955.8	921.5	895.0	865.1	805.4
7.5°	1148.3	1149.4	1133.9	1104.0	1072.0	1025.5	981.2	932.6	882.8	836.3	745.6
10°	1245.6	1232.4	1210.2	1172.6	1117.3	1056.5	992.3	924.8	859.6	802.0	683.7
12.5°	1318.7	1303.2	1274.4	1220.2	1152.7	1074.2	991.2	908.2	827.5	755.6	619.5
15°	1375.1	1362.9	1323.1	1253.4	1169.3	1074.2	975.7	880.6	786.5	704.7	548.7
17.5°	1411.6	1397.2	1345.2	1265.6	1167.1	1059.8	948.1	837.4	737.9	648.3	490.1
20°	1421.5	1404.9	1349.6	1258.9	1149.4	1028.8	907.1	792.1	683.7	593.0	425.9
22.5°	1407.2	1385.0	1327.5	1235.7	1115.1	984.6	859.6	736.8	626.1	534.3	370.6
25°	1351.8	1336.4	1276.6	1177.1	1060.9	931.5	795.4	679.2	568.6	479.0	323.0
27.5°	1274.4	1250.1	1199.2	1108.5	996.7	861.8	732.3	615.1	508.9	422.6	274.4
30°	1167.1	1147.2	1096.3	1017.8	913.8	789.9	666.0	554.2	452.5	372.8	235.6
32.5°	1043.2	1034.3	985.7	920.4	828.6	715.7	596.3	491.2	398.3	321.9	201.3
35°	911.6	897.2	861.8	813.1	732.3	633.9	527.7	427.0	339.6	272.1	168.2
37.5°	775.5	770.0	742.3	698.0	636.1	550.9	456.9	365.1	292.1	230.1	140.5
40°	649.4	652.7	626.1	595.2	542.1	472.4	392.7	310.9	242.3	191.4	117.3
42.5°	534.3	529.9	515.5	496.7	461.3	398.3	326.3	258.9	200.2	156.0	96.2
45°	428.1	432.5	424.8	409.3	383.9	334.1	271.0	209.1	163.7	130.5	78.5
47.5°	335.2	334.1	341.8	336.3	316.4	274.4	221.3	171.5	136.1	111.7	67.5
50°	263.3	260.0	264.4	267.7	260.0	221.3	178.1	142.7	116.2	96.2	60.8
52.5°	189.2	192.5	201.3	211.3	206.9	175.9	143.8	116.2	97.4	80.8	49.8
55°	131.6	138.3	147.1	162.6	156.0	135.0	111.7	94.0	75.2	64.2	42.0
57.5°	87.4	90.7	102.9	119.5	115.1	100.7	85.2	70.8	57.5	48.7	34.3
60°	56.4	58.6	69.7	81.9	78.5	71.9	62.0	52.0	45.4	40.9	28.8
62.5°	36.5	38.7	46.5	54.2	54.2	48.7	42.0	39.8	36.5	33.2	24.3
65°	24.3	26.6	32.1	37.6	35.4	33.2	29.9	29.9	28.8	26.6	19.9
67.5°	16.6	17.7	22.1	24.3	23.2	21.0	21.0	23.2	22.1	19.9	14.4
70°	11.1	12.2	14.4	15.5	14.4	13.3	14.4	16.6	15.5	14.4	11.1
72.5°	7.7	7.7	8.9	8.9	8.9	8.9	10.0	11.1	11.1	10.0	7.7
75°	4.4	4.4	4.4	5.5	5.5	5.5	6.6	6.6	6.6	6.6	4.4
77.5°	2.2	2.2	2.2	2.2	3.3	3.3	3.3	3.3	3.3	3.3	2.2
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	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°	875.0	875.0	875.0
2.5°	827.5	814.2	810.9
5°	760.0	720.2	705.8
7.5°	672.6	626.1	614.0
10°	590.7	538.7	519.9
12.5°	516.6	461.3	446.9
15°	446.9	394.9	381.7
17.5°	387.2	340.7	327.5
20°	334.1	292.1	277.7
22.5°	287.6	248.9	236.7
25°	244.5	211.3	205.8
27.5°	209.1	182.5	178.1
30°	177.0	157.1	154.9
32.5°	150.5	136.1	137.2
35°	128.3	119.5	120.6
37.5°	111.7	104.0	108.4
40°	92.9	90.7	95.1
42.5°	79.7	79.7	84.1
45°	67.5	70.8	75.2
47.5°	56.4	62.0	65.3
50°	47.6	54.2	56.4
52.5°	40.9	47.6	48.7
55°	36.5	40.9	40.9
57.5°	32.1	34.3	34.3
60°	26.6	28.8	28.8
62.5°	22.1	23.2	23.2
65°	17.7	18.8	18.8
67.5°	14.4	14.4	14.4
70°	11.1	10.0	10.0
72.5°	6.6	6.6	5.5
75°	3.3	2.2	2.2
77.5°	1.1	1.1	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

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Peachtree City, GA 30269

Scaled Data Report





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

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