

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: P886952

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886952
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-47)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/9/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1012.2 lumens
Efficiency: N/A
Efficacy: 57.5 lumens/watt
Spacing Criteria (0/90/45): 1.15 / 0.8 / 0.99
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

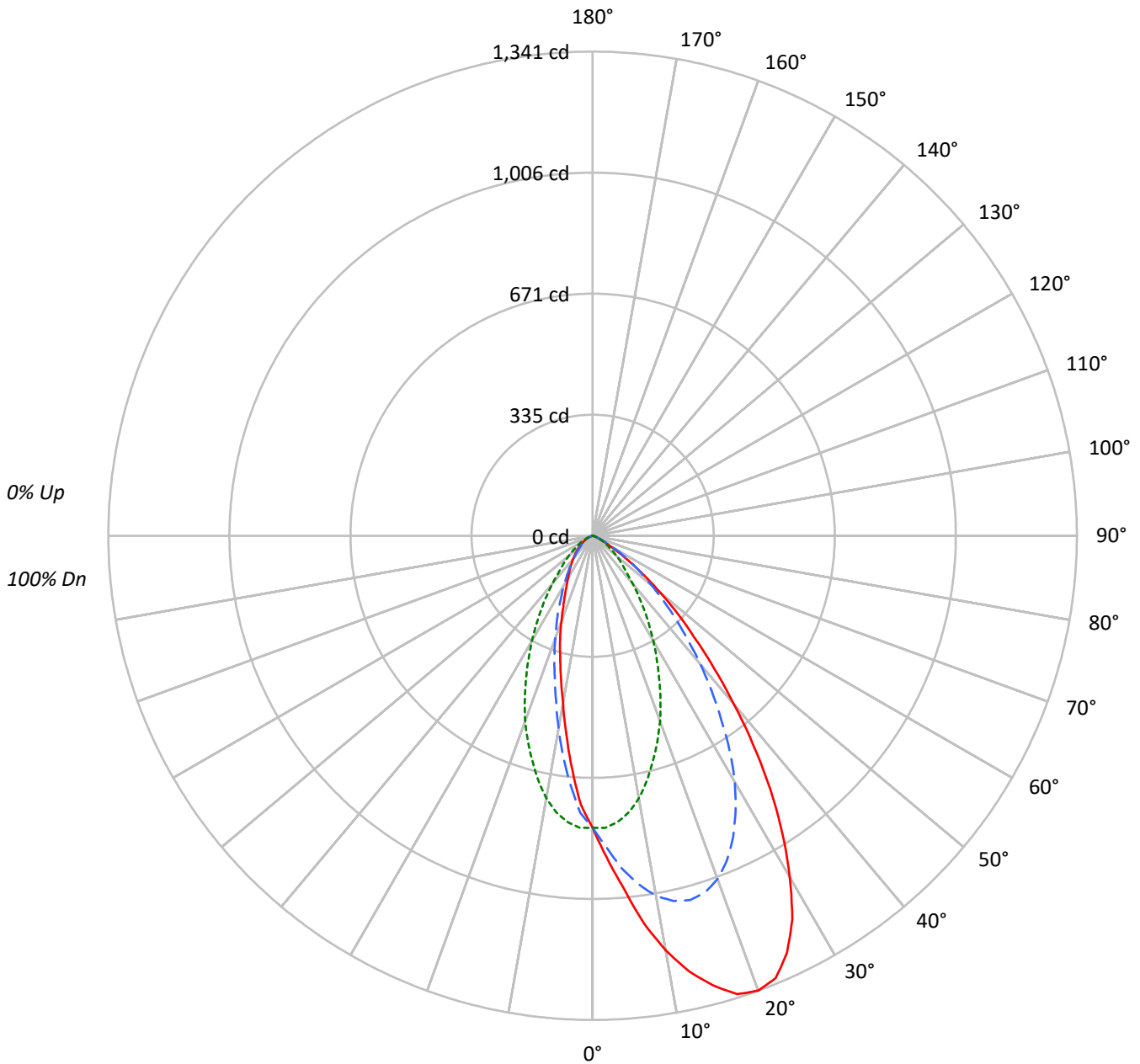
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P886952

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K

Luminous Intensity Polar Plot





TEST NUMBER: P886952

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K

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	106	104	110	107	105	102	103	101	99	99	98	96	96	95	93	91					91			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83					83			
3	99	92	86	81	97	90	85	81	87	83	79	85	81	78	83	79	77	75					75			
4	93	84	78	73	91	83	77	72	81	76	71	79	74	71	77	73	70	68					68			
5	87	78	71	66	86	77	70	65	75	69	65	73	68	64	71	67	64	62					62			
6	82	72	65	60	80	71	64	60	69	64	59	68	63	59	66	62	58	57					57			
7	77	67	60	55	76	66	59	55	64	59	54	63	58	54	62	57	54	52					52			
8	73	62	55	50	72	61	55	50	60	54	50	59	54	50	58	53	50	48					48			
9	69	58	51	47	68	57	51	47	56	50	46	55	50	46	54	50	46	44					44			
10	65	54	48	43	64	54	47	43	53	47	43	52	47	43	51	46	43	41					41			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	177288	177288	177288	177288	177288
5°	215518	203433	175148	152828	142967
10°	259581	225491	164348	120639	104964
15°	292737	237039	146493	91760	78684
20°	312857	236072	127434	70193	58735
25°	308123	222702	105538	53422	43865
30°	276549	199309	85076	39981	34309
35°	229546	166023	65959	30544	28563
40°	174012	132649	49149	23215	23816
45°	123703	100553	37368	17862	20188
50°	82215	72219	28758	14191	16750
55°	48132	50158	21600	11813	13457
60°	21972	29471	17323	9824	10745
65°	11052	15488	11623	7731	8302
70°	6155	7501	7501	5450	4809
75°	2711	2711	3643	1779	932
80°	0	695	1389	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 125346 cd/sqm



TEST NUMBER: P886952

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	76.2	7.5
10°-20°	204.7	20.2
20°-30°	263.6	26.0
30°-40°	228.4	22.6
40°-50°	143.4	14.2
50°-60°	68.7	6.8
60°-70°	23.1	2.3
70°-80°	3.9	0.4
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°	544.5	53.8
0°-40°	772.9	76.4
0°-60°	985.1	97.3
0°-90°	1012.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1012.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	808	808	808	808	808	
5°	979	924	796	694	650	99
15°	1290	1044	645	404	347	365
25°	1274	920	436	221	181	577
35°	858	620	246	114	107	531
45°	399	324	120	58	65	314
55°	126	131	56	31	35	117
65°	21	30	22	15	16	24
75°	3	3	4	2	1	4
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



TEST NUMBER: P886952

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K

CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5	808.5
2.5°	891.7	881.0	883.1	877.8	869.3	856.5	847.9	835.1	823.4	809.5	785.0
5°	979.1	980.2	968.4	955.6	940.7	907.7	883.1	854.3	824.5	795.7	739.1
7.5°	1081.5	1075.1	1060.2	1028.2	995.1	951.4	907.7	861.8	817.0	772.2	686.9
10°	1165.8	1156.2	1132.7	1091.1	1045.2	980.2	920.5	854.3	793.5	738.1	629.3
12.5°	1236.2	1227.6	1195.6	1140.2	1075.1	997.2	917.3	837.3	762.6	694.3	565.3
15°	1289.5	1277.8	1236.2	1172.2	1091.1	997.2	905.5	809.5	724.2	645.3	504.5
17.5°	1331.1	1312.9	1259.6	1185.0	1087.9	983.4	876.7	775.4	680.5	596.2	444.8
20°	1340.7	1324.7	1263.9	1177.5	1071.9	951.4	839.4	727.4	632.5	546.1	390.4
22.5°	1325.7	1301.2	1245.8	1151.9	1035.6	909.8	791.4	681.5	578.1	490.6	337.0
25°	1273.5	1256.4	1196.7	1099.6	983.4	857.5	734.9	618.6	525.8	436.2	292.2
27.5°	1197.8	1177.5	1118.8	1034.6	922.6	792.5	674.1	564.2	469.3	384.0	250.6
30°	1092.2	1078.3	1028.2	942.8	849.0	725.3	611.1	505.6	413.8	336.0	214.4
32.5°	979.1	959.9	919.4	850.1	761.5	651.7	544.0	443.7	358.4	289.0	180.3
35°	857.5	846.9	806.3	742.3	666.6	573.8	477.8	385.0	308.2	246.4	151.5
37.5°	731.7	718.9	693.3	642.1	582.3	499.2	410.6	330.6	262.4	208.0	125.9
40°	607.9	599.4	580.2	544.0	497.0	429.8	347.7	277.3	217.6	171.7	104.5
42.5°	498.1	496.0	484.2	457.6	419.2	358.4	296.5	230.4	180.3	140.8	84.3
45°	398.9	404.2	392.5	376.5	347.7	300.8	244.2	189.8	150.4	120.5	71.5
47.5°	318.9	314.6	313.6	307.2	282.6	244.2	196.2	156.8	130.1	102.4	61.9
50°	241.0	240.0	245.3	246.4	226.1	197.3	160.0	132.3	105.6	84.3	51.2
52.5°	177.1	179.2	187.7	194.1	181.3	155.7	132.3	105.6	87.5	70.4	43.7
55°	125.9	125.9	138.7	146.1	139.7	122.7	101.3	83.2	68.3	56.5	35.2
57.5°	78.9	82.1	94.9	104.5	102.4	91.7	75.7	62.9	54.4	46.9	30.9
60°	50.1	52.3	62.9	70.4	70.4	64.0	55.5	48.0	44.8	39.5	26.7
62.5°	32.0	35.2	41.6	48.0	49.1	42.7	37.3	37.3	35.2	30.9	22.4
65°	21.3	22.4	27.7	30.9	30.9	28.8	27.7	27.7	26.7	22.4	16.0
67.5°	13.9	14.9	18.1	20.3	19.2	17.1	19.2	20.3	19.2	17.1	12.8
70°	9.6	9.6	10.7	12.8	11.7	11.7	12.8	12.8	12.8	11.7	8.5
72.5°	6.4	6.4	6.4	6.4	6.4	6.4	7.5	8.5	8.5	8.5	5.3
75°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	4.3	4.3	4.3	2.1
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80°	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	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	1.1	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: P886952

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMB-1200LM-3500K

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	808.5	808.5	808.5
2.5°	769.0	759.4	745.5
5°	694.3	664.5	649.5
7.5°	619.7	573.8	555.7
10°	541.8	490.6	471.4
12.5°	468.2	420.2	403.2
15°	404.2	360.5	346.6
17.5°	353.0	311.4	299.7
20°	300.8	263.4	251.7
22.5°	260.2	225.0	212.2
25°	220.8	188.8	181.3
27.5°	186.6	161.1	155.7
30°	157.9	139.7	135.5
32.5°	134.4	121.6	120.5
35°	114.1	105.6	106.7
37.5°	97.1	91.7	94.9
40°	81.1	81.1	83.2
42.5°	69.3	71.5	74.7
45°	57.6	62.9	65.1
47.5°	48.0	54.4	56.5
50°	41.6	46.9	49.1
52.5°	36.3	40.5	41.6
55°	30.9	35.2	35.2
57.5°	26.7	28.8	29.9
60°	22.4	24.5	24.5
62.5°	18.1	20.3	20.3
65°	14.9	16.0	16.0
67.5°	11.7	11.7	11.7
70°	8.5	8.5	7.5
72.5°	4.3	4.3	4.3
75°	2.1	1.1	1.1
77.5°	0.0	0.0	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



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)