

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: P886966

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3000K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886966
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-3000K
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: -

Summary

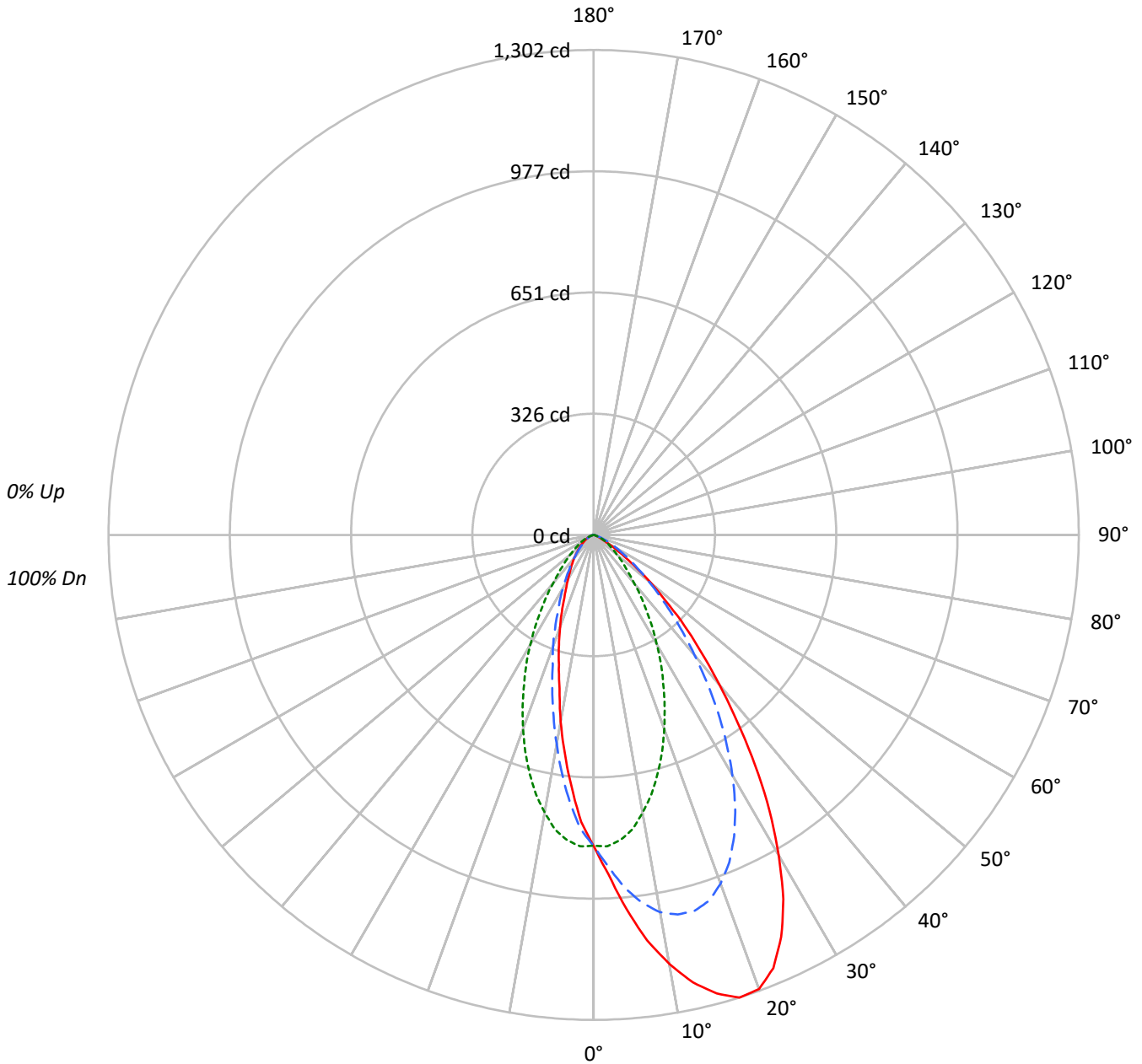
Lumens per Lamp: N/A
Luminaire Lumens: 981.4 lumens
Efficiency: N/A
Efficacy: 55.8 lumens/watt
Spacing Criteria (0/90/45): 1.08 / 0.79 / 0.96
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
CIE Type: Direct

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



TEST NUMBER: P886966
CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3000K

Luminous Intensity Polar Plot





TEST NUMBER: P886966

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3000K

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	79	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°	80852	80852	80852	80852	80852
5°	97994	92383	79955	70240	66030
10°	115044	101203	74397	56150	50070
15°	127833	104786	66554	42986	36166
20°	133732	102665	57041	32825	27196
25°	127317	95325	47245	24232	19828
30°	111113	83276	37921	18323	15448
35°	89442	68729	28998	13648	12429
40°	66329	53228	21499	10294	10294
45°	47293	39881	16098	7768	8330
50°	30127	28658	12117	6059	6993
55°	16704	20099	9391	5050	5574
60°	7789	13882	7595	3991	4398
65°	4241	9100	5203	3553	3553
70°	2323	4957	3512	2917	2323
75°	1160	2321	1535	1535	374
80°	0	558	558	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 47293 cd/sqm



TEST NUMBER: P886966

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	78.6	8.0
10°-20°	207.2	21.1
20°-30°	257.7	26.3
30°-40°	214.7	21.9
40°-50°	130.6	13.3
50°-60°	62.9	6.4
60°-70°	24.3	2.5
70°-80°	5.3	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°	543.5	55.4
0°-40°	758.3	77.3
0°-60°	951.7	97.0
0°-90°	981.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	981.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	835	835	835	835	835	
5°	1008	950	822	722	679	101
15°	1275	1045	664	429	361	359
25°	1191	892	442	227	186	539
35°	756	581	245	115	105	470
45°	345	291	118	57	61	267
55°	99	119	56	30	33	94
65°	18	40	23	16	16	20
75°	3	6	4	4	1	4
85°	0	0	0	0	0	0
90°	0	0	0	0	0	



TEST NUMBER: P886966

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3000K

CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	834.6	834.6	834.6	834.6	834.6	834.6	834.6	834.6	834.6	834.6	834.6
2.5°	911.9	912.9	912.9	902.6	896.4	885.1	873.8	862.4	847.0	836.7	811.9
5°	1007.7	1001.5	996.4	981.9	962.4	937.6	908.8	878.9	850.1	822.2	763.5
7.5°	1097.3	1089.1	1077.8	1047.9	1015.9	975.8	930.4	883.0	836.7	797.5	715.1
10°	1169.5	1161.2	1139.6	1104.6	1056.1	1001.5	937.6	876.8	817.1	756.3	654.3
12.5°	1230.3	1217.9	1192.1	1144.7	1078.8	1008.7	932.5	857.3	781.0	714.0	588.3
15°	1274.6	1259.1	1226.1	1164.3	1087.0	1002.6	911.9	825.3	739.8	663.6	527.6
17.5°	1302.4	1283.8	1238.5	1168.4	1078.8	980.9	879.9	781.0	695.5	610.0	468.8
20°	1297.2	1274.6	1228.2	1149.9	1048.9	942.8	835.6	735.7	637.8	553.3	409.1
22.5°	1259.1	1240.6	1190.1	1110.7	1007.7	894.4	785.1	681.1	585.3	497.7	354.4
25°	1191.1	1174.6	1127.2	1048.9	949.0	834.6	720.2	619.3	525.5	442.0	305.0
27.5°	1102.5	1089.1	1039.6	968.6	875.8	769.7	657.4	560.5	468.8	391.5	260.7
30°	993.3	980.9	936.6	877.9	793.4	695.5	593.5	500.8	413.2	339.0	219.5
32.5°	878.9	864.5	836.7	774.8	708.9	617.2	528.6	437.9	355.5	291.6	185.5
35°	756.3	742.9	721.3	673.9	619.3	543.0	460.6	378.1	305.0	245.2	154.6
37.5°	633.7	630.6	612.0	579.1	530.6	467.8	391.5	323.5	257.6	207.1	127.8
40°	524.5	525.5	509.0	485.3	447.2	394.6	336.9	271.0	214.3	170.0	105.1
42.5°	427.6	427.6	416.3	400.8	375.1	330.7	281.3	226.7	176.2	139.1	85.5
45°	345.2	333.8	335.9	325.6	308.1	274.1	227.7	179.3	146.3	117.5	71.1
47.5°	260.7	264.8	267.9	266.9	251.4	222.6	184.4	149.4	124.7	98.9	60.8
50°	199.9	199.9	206.1	210.2	202.0	178.3	148.4	124.7	101.0	80.4	50.5
52.5°	141.2	147.3	156.6	168.0	159.7	143.2	123.6	99.9	84.5	67.0	42.2
55°	98.9	102.0	115.4	127.8	124.7	113.3	96.9	81.4	67.0	55.6	35.0
57.5°	62.9	64.9	82.4	95.8	96.9	89.6	77.3	64.9	54.6	47.4	29.9
60°	40.2	44.3	54.6	70.1	73.2	70.1	60.8	51.5	46.4	39.2	25.8
62.5°	26.8	29.9	38.1	47.4	54.6	54.6	45.3	42.2	36.1	30.9	22.7
65°	18.5	20.6	25.8	33.0	40.2	39.2	36.1	31.9	27.8	22.7	17.5
67.5°	12.4	14.4	17.5	22.7	26.8	27.8	25.8	22.7	19.6	17.5	13.4
70°	8.2	9.3	11.3	15.5	17.5	17.5	17.5	15.5	13.4	12.4	9.3
72.5°	5.2	6.2	7.2	9.3	10.3	11.3	10.3	10.3	9.3	8.2	6.2
75°	3.1	4.1	4.1	5.2	6.2	6.2	6.2	5.2	5.2	4.1	4.1
77.5°	2.1	2.1	2.1	2.1	2.1	3.1	3.1	2.1	2.1	1.0	2.1
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



TEST NUMBER: P886966

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-3000K

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	834.6	834.6	834.6
2.5°	791.3	780.0	770.7
5°	722.3	693.4	679.0
7.5°	648.1	606.9	592.5
10°	570.8	519.3	509.0
12.5°	497.7	445.1	422.5
15°	428.6	376.1	360.6
17.5°	365.8	323.5	310.1
20°	318.4	278.2	263.8
22.5°	270.0	232.9	222.6
25°	226.7	196.8	185.5
27.5°	194.7	165.9	159.7
30°	163.8	141.2	138.1
32.5°	138.1	121.6	118.5
35°	115.4	104.1	105.1
37.5°	97.9	89.6	91.7
40°	81.4	78.3	81.4
42.5°	68.0	69.0	71.1
45°	56.7	60.8	60.8
47.5°	47.4	52.5	53.6
50°	40.2	45.3	46.4
52.5°	35.0	39.2	39.2
55°	29.9	33.0	33.0
57.5°	25.8	27.8	27.8
60°	20.6	22.7	22.7
62.5°	17.5	18.5	18.5
65°	15.5	15.5	15.5
67.5°	12.4	12.4	11.3
70°	10.3	9.3	8.2
72.5°	7.2	6.2	4.1
75°	4.1	3.1	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



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)