

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: P886968

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWMB-1200LM-4000K

Issue Date: 7/10/2024

Test Information

Test Method: LM-79-2019
Report Number: P886968
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-4000K
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1053.8 lumens
Efficiency: N/A
Efficacy: 59.9 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

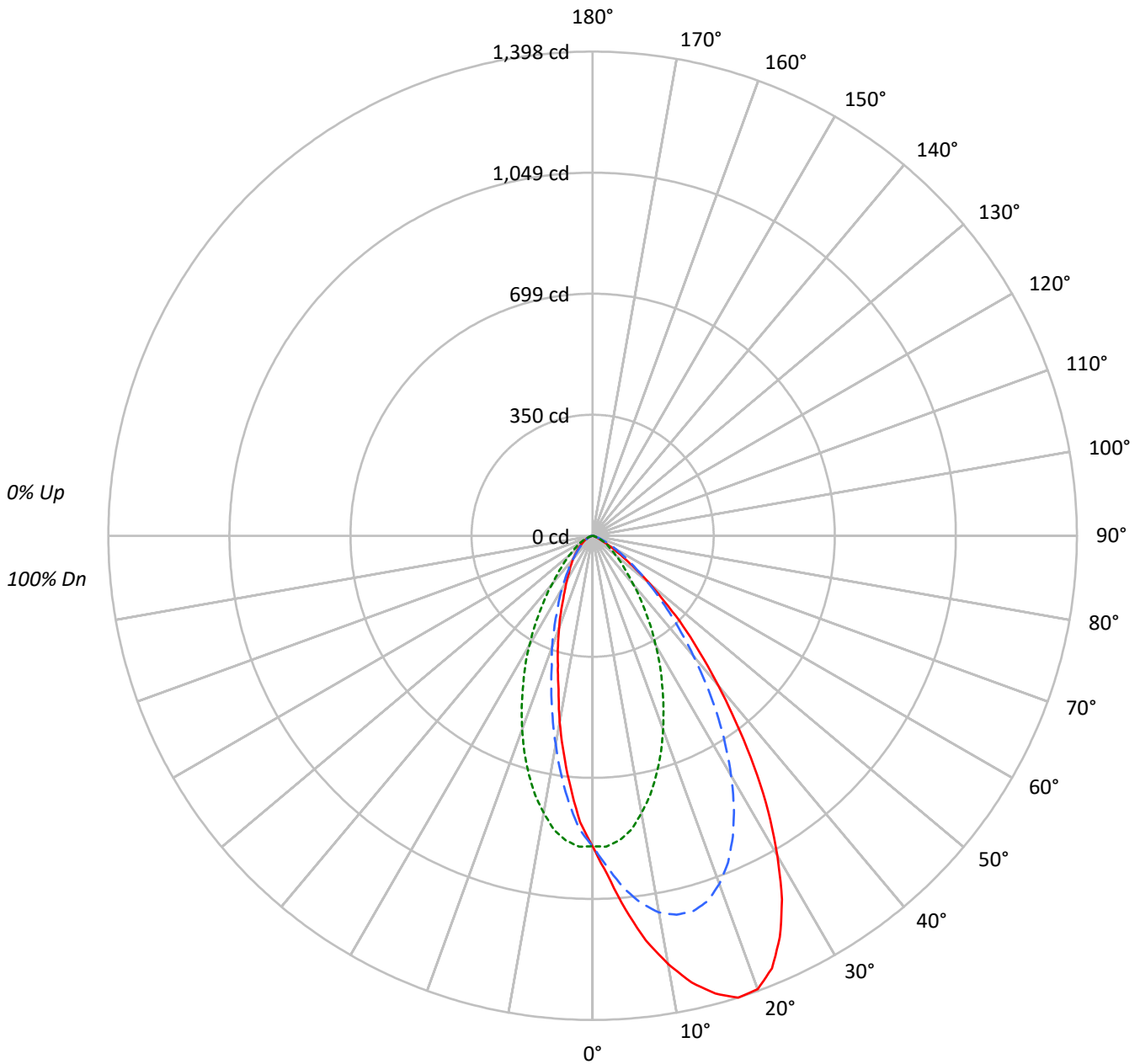
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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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	100	100	100	100	100		
	1	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92	92	92	92	92	92		
	2	106	100	95	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83	83	83	83	83	83		
	3	99	92	86	82	97	90	85	81	88	83	80	85	81	78	83	80	77	75	75	75	75	75	75		
	4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68	68	68	68	68	68		
	5	88	78	71	66	86	77	71	66	75	70	65	73	69	65	72	68	64	63	63	63	63	63	63		
	6	82	72	65	60	81	71	65	60	70	64	60	68	63	59	67	62	59	57	57	57	57	57	57		
	7	78	67	60	56	76	66	60	55	65	59	55	64	59	55	63	58	54	53	53	53	53	53	53		
	8	73	63	56	51	72	62	56	51	61	55	51	60	54	51	59	54	50	49	49	49	49	49	49		
	9	69	59	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45	45	45	45	45	45		
	10	66	55	48	44	65	54	48	44	54	48	44	53	48	44	52	47	44	42	42	42	42	42	42		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	86820	86820	86820	86820	86820
5°	105220	99195	85858	75424	70902
10°	123523	108669	79886	60291	53759
15°	137261	112514	71459	46155	38833
20°	143598	110237	61247	35247	29196
25°	136713	102358	50730	26017	21282
30°	119301	89417	40718	19677	16589
35°	96041	73796	31139	14653	13340
40°	71211	57154	23079	11053	11053
45°	50773	42820	17276	8330	8946
50°	32343	30760	13006	6496	7505
55°	17937	21585	10083	5422	5979
60°	8351	14899	8138	4282	4708
65°	4562	9754	5570	3805	3805
70°	2521	5325	3767	3144	2521
75°	1235	2470	1647	1647	412
80°	0	614	614	0	0
85°	0	0	0	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 50773 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	84.4	8.0
10°-20°	222.5	21.1
20°-30°	276.7	26.3
30°-40°	230.5	21.9
40°-50°	140.2	13.3
50°-60°	67.5	6.4
60°-70°	26.1	2.5
70°-80°	5.6	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°	583.6	55.4
0°-40°	814.2	77.3
0°-60°	1021.9	97.0
0°-90°	1053.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1053.8	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	896	896	896	896	896	
5°	1082	1020	883	776	729	109
15°	1369	1122	712	460	387	386
25°	1279	958	475	243	199	579
35°	812	624	263	124	113	504
45°	371	313	126	61	65	286
55°	106	128	60	32	35	100
65°	20	43	24	17	17	22
75°	3	7	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°	896.2	896.2	896.2	896.2	896.2	896.2	896.2	896.2	896.2	896.2	896.2
2.5°	979.1	980.2	980.2	969.2	962.5	950.4	938.2	926.0	909.4	898.4	871.8
5°	1082.0	1075.4	1069.9	1054.4	1033.3	1006.8	975.8	943.7	912.7	882.9	819.8
7.5°	1178.3	1169.4	1157.3	1125.2	1090.9	1047.7	999.0	948.2	898.4	856.3	767.8
10°	1255.7	1246.9	1223.6	1186.0	1134.0	1075.4	1006.8	941.5	877.3	812.1	702.5
12.5°	1321.0	1307.7	1280.1	1229.2	1158.4	1083.1	1001.3	920.5	838.6	766.7	631.7
15°	1368.6	1352.0	1316.6	1250.2	1167.2	1076.5	979.1	886.2	794.4	712.5	566.5
17.5°	1398.4	1378.5	1329.8	1254.6	1158.4	1053.3	944.8	838.6	746.8	655.0	503.4
20°	1392.9	1368.6	1318.8	1234.7	1126.3	1012.3	897.3	789.9	684.8	594.1	439.2
22.5°	1352.0	1332.1	1277.8	1192.7	1082.0	960.3	843.0	731.3	628.4	534.4	380.6
25°	1279.0	1261.3	1210.4	1126.3	1019.0	896.2	773.3	664.9	564.2	474.6	327.5
27.5°	1183.8	1169.4	1116.3	1040.0	940.4	826.5	705.9	601.9	503.4	420.4	279.9
30°	1066.5	1053.3	1005.7	942.6	851.9	746.8	637.3	537.7	443.7	364.0	235.7
32.5°	943.7	928.2	898.4	832.0	761.2	662.7	567.6	470.2	381.7	313.1	199.1
35°	812.1	797.7	774.5	723.6	664.9	583.1	494.5	406.0	327.5	263.3	166.0
37.5°	680.4	677.1	657.2	621.8	569.8	502.3	420.4	347.4	276.6	222.4	137.2
40°	563.1	564.2	546.5	521.1	480.2	423.7	361.8	291.0	230.1	182.5	112.8
42.5°	459.1	459.1	447.0	430.4	402.7	355.1	302.0	243.4	189.2	149.4	91.8
45°	370.6	358.5	360.7	349.6	330.8	294.3	244.5	192.5	157.1	126.1	76.3
47.5°	279.9	284.3	287.7	286.5	270.0	239.0	198.0	160.4	133.9	106.2	65.3
50°	214.6	214.6	221.3	225.7	216.8	191.4	159.3	133.9	108.4	86.3	54.2
52.5°	151.6	158.2	168.2	180.3	171.5	153.8	132.8	107.3	90.7	71.9	45.4
55°	106.2	109.5	123.9	137.2	133.9	121.7	104.0	87.4	71.9	59.7	37.6
57.5°	67.5	69.7	88.5	102.9	104.0	96.3	83.0	69.7	58.6	50.9	32.1
60°	43.1	47.6	58.6	75.2	78.6	75.2	65.3	55.3	49.8	42.0	27.7
62.5°	28.8	32.1	40.9	50.9	58.6	58.6	48.7	45.4	38.7	33.2	24.3
65°	19.9	22.1	27.7	35.4	43.1	42.0	38.7	34.3	29.9	24.3	18.8
67.5°	13.3	15.5	18.8	24.3	28.8	29.9	27.7	24.3	21.0	18.8	14.4
70°	8.9	10.0	12.2	16.6	18.8	18.8	18.8	16.6	14.4	13.3	10.0
72.5°	5.5	6.6	7.7	10.0	11.1	12.2	11.1	11.1	10.0	8.9	6.6
75°	3.3	4.4	4.4	5.5	6.6	6.6	6.6	5.5	5.5	4.4	4.4
77.5°	2.2	2.2	2.2	2.2	2.2	3.3	3.3	2.2	2.2	1.1	2.2
80°	0.0	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	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°	896.2	896.2	896.2
2.5°	849.7	837.5	827.6
5°	775.6	744.6	729.1
7.5°	695.9	651.6	636.2
10°	612.9	557.6	546.5
12.5°	534.4	477.9	453.6
15°	460.2	403.8	387.2
17.5°	392.8	347.4	333.0
20°	341.9	298.7	283.2
22.5°	289.9	250.0	239.0
25°	243.4	211.3	199.1
27.5°	209.1	178.1	171.5
30°	175.9	151.6	148.3
32.5°	148.3	130.6	127.2
35°	123.9	111.7	112.8
37.5°	105.1	96.3	98.5
40°	87.4	84.1	87.4
42.5°	73.0	74.1	76.3
45°	60.8	65.3	65.3
47.5°	50.9	56.4	57.5
50°	43.1	48.7	49.8
52.5°	37.6	42.0	42.0
55°	32.1	35.4	35.4
57.5°	27.7	29.9	29.9
60°	22.1	24.3	24.3
62.5°	18.8	19.9	19.9
65°	16.6	16.6	16.6
67.5°	13.3	13.3	12.2
70°	11.1	10.0	8.9
72.5°	7.7	6.6	4.4
75°	4.4	3.3	1.1
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



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Peachtree City, GA 30269

Scaled Data Report





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

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