

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: P886976

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-3000K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886976  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-58)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-3000K  
Description: 4IN SQUARE 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: 1025.9 lumens  
Efficiency: N/A  
Efficacy: 58.3 lumens/watt  
Spacing Criteria (0/90/45): 1.08 / 0.8 / 0.97  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

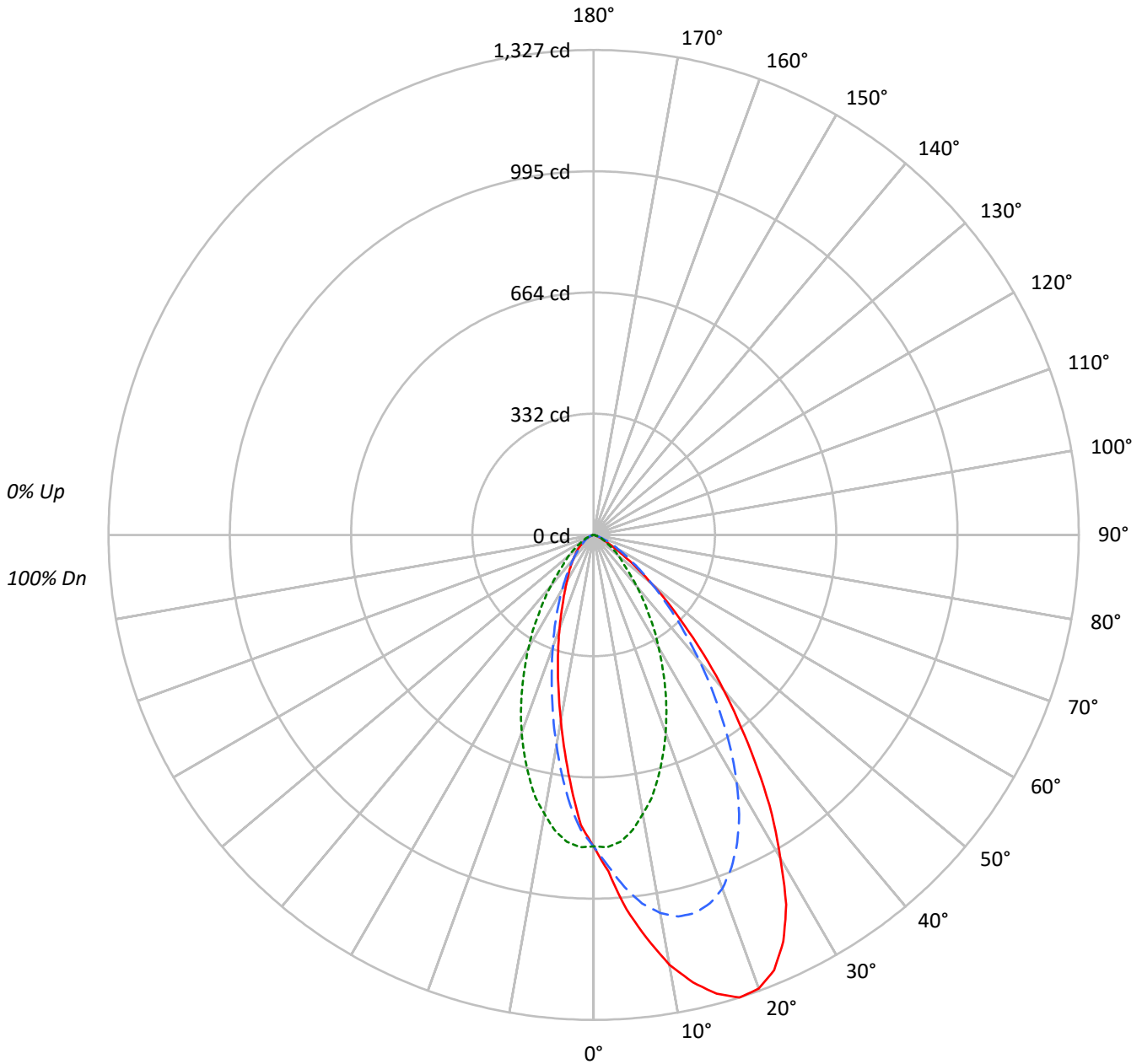
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P886976

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-3000K

### Luminous Intensity Polar Plot





TEST NUMBER: P886976  
 CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-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	0					
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100								
1	113	109	106	104	110	107	105	102	103	101	99	99	98	96	96	95	93	91								
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83								
3	99	92	86	81	97	90	85	81	88	83	79	85	81	78	83	79	77	75								
4	93	84	78	73	91	83	77	72	81	76	72	79	74	71	77	73	70	68								
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	62								
6	82	72	65	60	81	71	65	60	70	64	59	68	63	59	67	62	59	57								
7	77	67	60	55	76	66	60	55	65	59	55	63	58	54	62	58	54	52								
8	73	62	55	51	72	62	55	51	60	55	50	59	54	50	58	54	50	48								
9	69	58	52	47	68	58	51	47	57	51	47	56	50	47	55	50	46	45								
10	65	55	48	44	64	54	48	44	53	47	44	52	47	43	52	47	43	42								

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°	135°	180°
0°	82548	82548	82548	82548	82548
5°	99998	94041	81958	72039	67537
10°	117473	103333	76217	57468	50779
15°	130310	107474	68620	44129	37820
20°	136175	106170	59381	33567	28144
25°	131176	99344	49447	25547	20929
30°	114222	87538	39767	19251	16254
35°	92494	72324	30713	14381	13399
40°	69845	57003	23067	11078	10952
45°	48280	42909	16660	8467	9179
50°	30745	31137	13353	6526	7460
55°	17582	21585	9914	5574	6097
60°	8777	14870	7382	4786	4786
65°	4951	9799	5914	4011	3782
70°	2917	5396	3795	3201	2634
75°	1946	2695	2321	1946	786
80°	558	1172	558	0	0
85°	0	0	1112	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 48704 cd/sqm



TEST NUMBER: P886976

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-3000K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	80.3	7.8
10°-20°	212.9	20.8
20°-30°	267.6	26.1
30°-40°	226.0	22.0
40°-50°	138.6	13.5
50°-60°	67.4	6.6
60°-70°	26.3	2.6
70°-80°	6.4	0.6
80°-90°	0.2	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°	560.9	54.7
0°-40°	786.9	76.7
0°-60°	993.0	96.8
0°-90°	1025.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1025.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	852	852	852	852	852	
5°	1028	967	843	741	694	103
15°	1299	1072	684	440	377	366
25°	1227	929	463	239	196	555
35°	782	612	260	122	113	487
45°	352	313	122	62	67	278
55°	104	128	59	33	36	99
65°	22	43	26	18	16	23
75°	5	7	6	5	2	6
85°	0	0	1	0	0	0
90°	0	0	0	0	0	



TEST NUMBER: P886976

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-3000K

**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	112.5°
0°	852.1	852.1	852.1	852.1	852.1	852.1	852.1	852.1	852.1	852.1	852.1
2.5°	921.2	929.4	923.2	923.2	910.8	902.6	890.2	879.9	868.6	855.2	829.4
5°	1028.3	1022.1	1010.8	999.5	978.9	955.2	929.4	898.5	871.7	842.8	784.1
7.5°	1112.8	1108.7	1096.3	1071.6	1038.6	996.4	952.1	905.7	860.4	815.0	732.6
10°	1194.2	1182.9	1164.3	1126.2	1078.8	1022.1	960.3	899.5	836.7	774.8	672.8
12.5°	1254.0	1241.6	1214.8	1166.4	1106.6	1032.4	956.2	881.0	801.6	735.7	608.9
15°	1299.3	1290.0	1251.9	1193.2	1115.9	1027.3	938.7	850.1	763.5	684.2	544.0
17.5°	1327.1	1312.7	1268.4	1196.3	1106.6	1007.7	907.8	810.9	719.2	630.6	482.2
20°	1320.9	1307.5	1261.2	1180.8	1082.9	976.8	867.6	760.4	663.6	576.0	423.5
22.5°	1289.0	1278.7	1227.2	1141.7	1040.7	928.4	816.1	705.8	606.9	519.3	367.8
25°	1227.2	1210.7	1161.2	1086.0	987.1	871.7	753.2	649.1	548.2	462.6	314.3
27.5°	1140.6	1120.0	1076.7	1009.8	915.0	808.8	690.3	585.3	491.5	407.0	270.0
30°	1021.1	1014.9	971.6	920.1	831.5	733.6	627.5	520.3	432.8	355.5	229.8
32.5°	907.8	895.4	865.5	813.0	743.9	654.3	555.4	463.7	382.3	309.1	194.7
35°	782.1	776.9	747.0	713.0	651.2	571.9	488.4	406.0	325.6	259.7	164.9
37.5°	660.5	659.4	634.7	615.1	559.5	498.7	419.4	342.1	277.2	220.5	136.0
40°	552.3	546.1	531.7	510.0	476.0	425.5	355.5	287.5	230.8	182.4	112.3
42.5°	447.2	444.1	436.9	423.5	396.7	355.5	299.8	240.1	188.6	149.4	91.7
45°	352.4	355.5	355.5	347.2	329.7	296.7	247.3	195.8	153.5	121.6	75.2
47.5°	277.2	275.1	279.2	277.2	270.0	242.1	199.9	156.6	128.8	104.1	63.9
50°	204.0	211.2	215.3	223.6	217.4	195.8	158.7	129.8	108.2	88.6	54.6
52.5°	150.4	153.5	163.8	179.3	175.2	154.6	127.8	109.2	89.6	73.2	46.4
55°	104.1	107.2	122.6	137.0	135.0	120.6	104.1	88.6	72.1	58.7	38.1
57.5°	68.0	71.1	84.5	105.1	105.1	95.8	84.5	70.1	56.7	46.4	31.9
60°	45.3	47.4	58.7	74.2	77.3	76.2	67.0	52.5	44.3	38.1	26.8
62.5°	29.9	31.9	41.2	52.5	58.7	58.7	49.5	40.2	36.1	31.9	22.7
65°	21.6	22.7	28.9	35.0	42.2	43.3	36.1	31.9	28.9	25.8	19.6
67.5°	15.5	15.5	20.6	24.7	29.9	28.9	26.8	23.7	21.6	18.5	15.5
70°	10.3	11.3	13.4	16.5	19.6	18.5	18.5	17.5	15.5	13.4	11.3
72.5°	7.2	8.2	9.3	11.3	12.4	12.4	12.4	11.3	10.3	9.3	8.2
75°	5.2	5.2	5.2	6.2	7.2	7.2	8.2	7.2	6.2	6.2	5.2
77.5°	3.1	3.1	3.1	3.1	4.1	4.1	4.1	3.1	3.1	2.1	3.1
80°	1.0	1.0	1.0	2.1	2.1	2.1	2.1	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	1.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	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: P886976

CATALOG NUMBER: ML412LSFL9FS1E-TIR4D25AWW-TL4SWSL-1200LM-3000K

**CANDELA DISTRIBUTION (continued):**

	135°	157.5°	180°
0°	852.1	852.1	852.1
2.5°	807.8	795.4	794.4
5°	740.8	711.0	694.5
7.5°	662.5	620.3	600.7
10°	584.2	533.7	516.2
12.5°	511.1	457.5	441.0
15°	440.0	388.5	377.1
17.5°	380.2	332.8	321.5
20°	325.6	285.4	273.0
22.5°	280.3	242.1	229.8
25°	239.0	206.1	195.8
27.5°	204.0	175.2	169.0
30°	172.1	149.4	145.3
32.5°	144.3	128.8	127.8
35°	121.6	110.2	113.3
37.5°	105.1	95.8	98.9
40°	87.6	83.5	86.6
42.5°	74.2	72.1	76.2
45°	61.8	63.9	67.0
47.5°	52.5	56.7	58.7
50°	43.3	49.5	49.5
52.5°	37.1	43.3	42.2
55°	33.0	37.1	36.1
57.5°	28.9	30.9	29.9
60°	24.7	25.8	24.7
62.5°	20.6	21.6	20.6
65°	17.5	17.5	16.5
67.5°	14.4	13.4	13.4
70°	11.3	10.3	9.3
72.5°	8.2	7.2	5.2
75°	5.2	4.1	2.1
77.5°	2.1	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)