

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: P886835

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-2700K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886835  
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: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMB-1020LM-2700K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE BLACK TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 745.6 lumens  
Efficiency: N/A  
Efficacy: 42.4 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

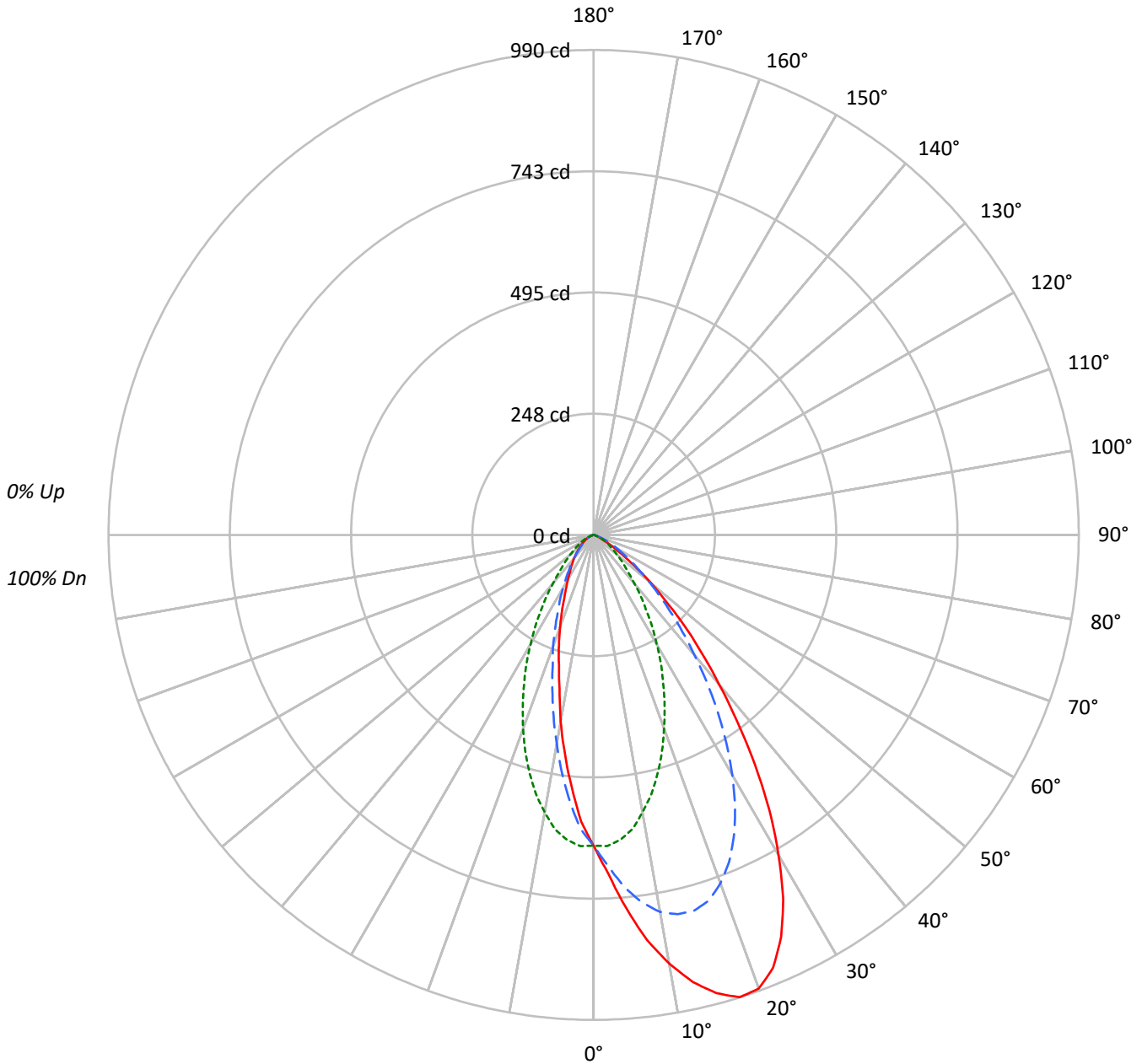
Input Watts (W): 17.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					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	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92					92			
2	106	100	95	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83					83			
3	99	92	86	82	97	90	85	81	88	83	80	85	81	78	83	80	77	75					75			
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68					68			
5	88	78	71	66	86	77	71	66	75	70	65	73	69	65	72	68	64	63					63			
6	82	72	65	60	81	71	65	60	70	64	60	68	63	59	67	62	59	57					57			
7	78	67	60	56	76	66	60	55	65	59	55	64	59	55	63	58	54	53					53			
8	73	63	56	51	72	62	56	51	61	55	51	60	54	51	59	54	50	49					49			
9	69	59	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45					45			
10	66	55	48	44	65	54	48	44	54	48	44	53	48	44	52	47	44	42					42			

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

	0°	45°	90°	135°	180°
0°	61429	61429	61429	61429	61429
5°	74451	70192	60749	53368	50169
10°	87411	76896	56523	42663	38040
15°	97124	79612	50568	32665	27480
20°	101608	78005	43340	24938	20660
25°	96736	72423	35904	18406	15061
30°	84422	63269	28816	13927	11734
35°	67954	52219	22032	10372	9449
40°	50395	40443	16339	7815	7815
45°	35936	30298	12221	5905	6330
50°	22893	21763	9208	4597	5305
55°	12701	15268	7144	3834	4239
60°	5909	10540	5754	3042	3333
65°	3232	6900	3943	2682	2682
70°	1784	3767	2663	2209	1784
75°	861	1759	1160	1160	299
80°	0	446	446	0	0
85°	0	0	0	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 35936 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.7	8.0
10°-20°	157.5	21.1
20°-30°	195.8	26.3
30°-40°	163.1	21.9
40°-50°	99.2	13.3
50°-60°	47.8	6.4
60°-70°	18.5	2.5
70°-80°	4.0	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°	413.0	55.4
0°-40°	576.1	77.3
0°-60°	723.1	97.0
0°-90°	745.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	745.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	634	634	634	634	634	
5°	766	722	625	549	516	77
15°	968	794	504	326	274	273
25°	905	678	336	172	141	410
35°	575	442	186	88	80	357
45°	262	221	89	43	46	203
55°	75	90	42	23	25	71
65°	14	30	17	12	12	15
75°	2	5	3	3	1	3
85°	0	0	0	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°	634.1	634.1	634.1	634.1	634.1	634.1	634.1	634.1	634.1	634.1	634.1
2.5°	692.8	693.6	693.6	685.8	681.1	672.5	663.9	655.3	643.5	635.7	616.9
5°	765.6	761.0	757.0	746.1	731.2	712.4	690.5	667.8	645.9	624.7	580.1
7.5°	833.8	827.5	818.9	796.2	771.9	741.4	706.9	670.9	635.7	605.9	543.3
10°	888.6	882.3	865.9	839.2	802.4	761.0	712.4	666.2	620.8	574.6	497.1
12.5°	934.7	925.4	905.8	869.8	819.7	766.4	708.5	651.3	593.4	542.5	447.0
15°	968.4	956.7	931.6	884.6	825.9	761.7	692.8	627.1	562.1	504.2	400.8
17.5°	989.5	975.5	941.0	887.8	819.7	745.3	668.6	593.4	528.4	463.5	356.2
20°	985.6	968.4	933.2	873.7	797.0	716.3	634.9	559.0	484.6	420.4	310.8
22.5°	956.7	942.6	904.2	843.9	765.6	679.5	596.5	517.5	444.7	378.1	269.3
25°	905.0	892.5	856.5	797.0	721.0	634.1	547.2	470.5	399.3	335.9	231.7
27.5°	837.7	827.5	789.9	735.9	665.4	584.8	499.5	425.9	356.2	297.5	198.1
30°	754.7	745.3	711.6	667.0	602.8	528.4	450.9	380.5	313.9	257.6	166.8
32.5°	667.8	656.8	635.7	588.7	538.6	468.9	401.6	332.7	270.1	221.6	140.9
35°	574.6	564.4	548.0	512.0	470.5	412.6	349.9	287.3	231.7	186.3	117.4
37.5°	481.5	479.1	465.0	440.0	403.2	355.4	297.5	245.8	195.7	157.4	97.1
40°	398.5	399.3	386.7	368.7	339.8	299.8	256.0	205.9	162.8	129.2	79.9
42.5°	324.9	324.9	316.3	304.5	285.0	251.3	213.7	172.2	133.9	105.7	65.0
45°	262.3	253.7	255.2	247.4	234.1	208.2	173.0	136.2	111.2	89.2	54.0
47.5°	198.1	201.2	203.5	202.8	191.0	169.1	140.1	113.5	94.7	75.2	46.2
50°	151.9	151.9	156.6	159.7	153.4	135.4	112.7	94.7	76.7	61.1	38.4
52.5°	107.3	112.0	119.0	127.6	121.3	108.8	93.9	75.9	64.2	50.9	32.1
55°	75.2	77.5	87.7	97.1	94.7	86.1	73.6	61.8	50.9	42.3	26.6
57.5°	47.8	49.3	62.6	72.8	73.6	68.1	58.7	49.3	41.5	36.0	22.7
60°	30.5	33.7	41.5	53.2	55.6	53.2	46.2	39.1	35.2	29.7	19.6
62.5°	20.4	22.7	29.0	36.0	41.5	41.5	34.4	32.1	27.4	23.5	17.2
65°	14.1	15.7	19.6	25.1	30.5	29.7	27.4	24.3	21.1	17.2	13.3
67.5°	9.4	11.0	13.3	17.2	20.4	21.1	19.6	17.2	14.9	13.3	10.2
70°	6.3	7.0	8.6	11.7	13.3	13.3	13.3	11.7	10.2	9.4	7.0
72.5°	3.9	4.7	5.5	7.0	7.8	8.6	7.8	7.8	7.0	6.3	4.7
75°	2.3	3.1	3.1	3.9	4.7	4.7	4.7	3.9	3.9	3.1	3.1
77.5°	1.6	1.6	1.6	1.6	1.6	2.3	2.3	1.6	1.6	0.8	1.6
80°	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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°	634.1	634.1	634.1
2.5°	601.2	592.6	585.6
5°	548.8	526.9	515.9
7.5°	492.4	461.1	450.2
10°	433.7	394.6	386.7
12.5°	378.1	338.2	321.0
15°	325.7	285.7	274.0
17.5°	277.9	245.8	235.6
20°	241.9	211.4	200.4
22.5°	205.1	176.9	169.1
25°	172.2	149.5	140.9
27.5°	148.0	126.0	121.3
30°	124.5	107.3	104.9
32.5°	104.9	92.4	90.0
35°	87.7	79.1	79.9
37.5°	74.4	68.1	69.7
40°	61.8	59.5	61.8
42.5°	51.7	52.5	54.0
45°	43.1	46.2	46.2
47.5°	36.0	39.9	40.7
50°	30.5	34.4	35.2
52.5°	26.6	29.7	29.7
55°	22.7	25.1	25.1
57.5°	19.6	21.1	21.1
60°	15.7	17.2	17.2
62.5°	13.3	14.1	14.1
65°	11.7	11.7	11.7
67.5°	9.4	9.4	8.6
70°	7.8	7.0	6.3
72.5°	5.5	4.7	3.1
75°	3.1	2.3	0.8
77.5°	0.8	0.8	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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Scaled Data Report





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

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