

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: P886840

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMW-1020LM-2700K

Issue Date: 7/10/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886840  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-57)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/10/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL95FS1E-TIR4D25AWW-TL4SWMW-1020LM-2700K  
Description: 4IN SQUARE ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 2700K CCT  
Ballast/Driver: -

**Summary**

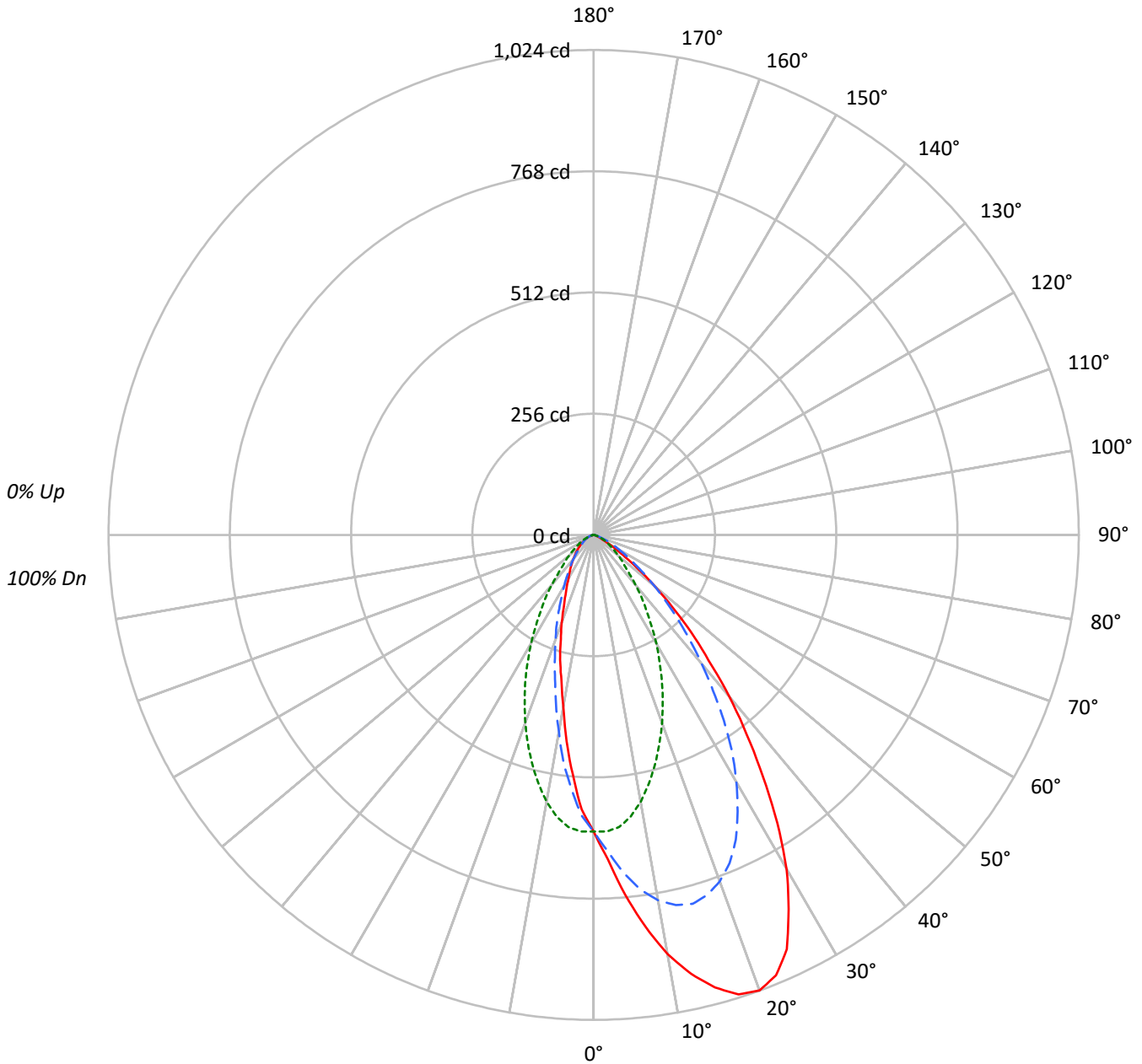
Lumens per Lamp: N/A  
Luminaire Lumens: 788.2 lumens  
Efficiency: N/A  
Efficacy: 44.8 lumens/watt  
Spacing Criteria (0/90/45): 1.12 / 0.8 / 0.99  
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
CIE Type: Direct

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	112	109	106	104	110	107	104	102	103	101	99	99	97	96	96	94	93	91	91	91	91	91	91		
	2	105	100	95	91	103	98	93	90	95	91	88	91	88	86	89	86	84	82	82	82	82	82	82		
	3	99	91	85	81	97	90	84	80	87	82	79	84	81	77	82	79	76	74	74	74	74	74	74		
	4	93	84	77	72	91	82	76	72	80	75	71	78	74	70	76	72	69	67	67	67	67	67	67		
	5	87	77	70	65	85	76	70	65	74	69	64	72	68	64	71	66	63	61	61	61	61	61	61		
	6	82	71	64	59	80	70	64	59	69	63	59	67	62	58	66	61	58	56	56	56	56	56	56		
	7	77	66	59	54	75	65	59	54	64	58	54	63	57	53	62	57	53	52	52	52	52	52	52		
	8	73	62	55	50	71	61	54	50	60	54	50	59	53	49	58	53	49	48	48	48	48	48	48		
	9	69	57	51	46	67	57	50	46	56	50	46	55	50	46	54	49	46	44	44	44	44	44	44		
	10	65	54	47	43	64	53	47	43	53	47	43	52	46	43	51	46	42	41	41	41	41	41	41		

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

	0°	45°	90°	135°	180°
0°	60644	60644	60644	60644	60644
5°	74121	69555	60195	52357	49313
10°	88366	77053	56268	41571	36180
15°	99200	80876	50227	31552	27390
20°	105515	80232	43484	24206	20247
25°	103138	75865	36471	18406	15061
30°	91123	67358	29588	13916	11902
35°	73571	56636	22860	10644	9993
40°	56212	44831	17313	8309	8410
45°	39881	34203	12645	6535	7179
50°	25244	25063	10143	5184	6013
55°	13748	17574	8056	4628	5151
60°	6374	12129	6510	4243	4398
65°	3415	7977	5020	3599	3415
70°	2209	4546	3767	3314	2436
75°	1460	2489	2620	2059	1160
80°	446	1283	893	1283	893
85°	0	889	889	889	889

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 39881 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.1	7.5
10°-20°	158.2	20.1
20°-30°	202.6	25.7
30°-40°	174.8	22.2
40°-50°	109.7	13.9
50°-60°	54.3	6.9
60°-70°	22.0	2.8
70°-80°	6.6	0.8
80°-90°	0.9	0.1
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°	419.9	53.3
0°-40°	594.8	75.5
0°-60°	758.8	96.3
0°-90°	788.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	788.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	626	626	626	626	626	
5°	762	715	619	538	507	77
15°	989	806	501	315	273	279
25°	965	710	341	172	141	435
35°	622	479	193	90	84	389
45°	291	250	92	48	52	226
55°	81	104	48	27	30	78
65°	15	35	22	16	15	17
75°	4	7	7	6	3	4
85°	0	1	1	1	1	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°	626.0	626.0	626.0	626.0	626.0	626.0	626.0	626.0	626.0	626.0	626.0
2.5°	685.5	689.4	679.2	679.2	671.4	664.4	657.3	646.4	637.0	626.8	607.2
5°	762.2	759.1	749.7	741.8	726.2	704.3	686.3	663.6	639.3	619.0	573.6
7.5°	834.2	830.3	813.8	797.4	771.6	737.9	704.3	667.5	630.7	599.4	532.9
10°	898.3	892.1	872.5	842.0	806.0	760.6	712.9	661.2	614.3	572.0	488.3
12.5°	949.2	940.6	917.9	878.0	829.5	771.6	712.1	648.7	590.0	537.6	440.6
15°	989.1	981.3	949.2	902.3	840.4	772.4	699.6	629.2	560.3	500.8	394.4
17.5°	1017.3	1006.3	966.4	909.3	836.5	757.5	678.5	599.4	526.6	461.7	350.6
20°	1023.5	1009.5	966.4	903.0	821.7	734.8	650.3	564.2	488.3	421.8	306.8
22.5°	1006.3	991.5	947.6	879.6	797.4	702.7	612.7	523.5	446.8	380.3	266.1
25°	964.9	948.4	907.0	841.2	757.5	662.0	567.3	486.0	409.3	341.2	227.7
27.5°	891.3	883.5	845.9	784.1	704.3	611.9	518.8	439.8	363.1	300.5	195.6
30°	814.6	806.8	774.7	720.7	645.6	558.7	473.4	393.6	321.6	264.5	166.7
32.5°	721.5	712.1	689.4	642.5	582.2	506.3	421.0	347.4	282.5	226.2	143.2
35°	622.1	622.1	602.5	565.8	513.3	444.5	370.9	302.8	243.4	193.3	118.9
37.5°	530.6	532.9	516.5	482.8	440.6	386.6	319.3	258.2	206.6	165.9	100.2
40°	444.5	439.0	430.4	410.8	376.4	332.6	273.1	220.7	174.5	136.9	83.7
42.5°	359.2	363.1	352.9	342.0	317.7	280.9	233.2	186.2	143.2	111.9	68.9
45°	291.1	289.5	286.4	278.6	266.1	233.2	193.3	150.2	117.4	92.3	57.1
47.5°	223.8	226.2	225.4	225.4	216.8	193.3	158.1	121.3	98.6	80.6	49.3
50°	167.5	173.7	177.6	180.8	175.3	157.3	122.9	100.2	83.7	67.3	42.3
52.5°	120.5	123.6	134.6	147.1	141.6	123.6	100.9	83.7	68.9	56.3	36.0
55°	81.4	87.6	99.4	111.9	111.1	97.0	82.2	68.1	57.9	47.7	30.5
57.5°	51.6	54.8	68.9	83.7	83.7	76.7	65.7	57.1	45.4	38.3	25.8
60°	32.9	35.2	45.4	59.5	64.2	61.0	53.2	43.0	38.3	33.6	23.5
62.5°	21.9	22.7	30.5	40.7	47.0	47.0	39.9	35.2	31.3	27.4	20.3
65°	14.9	15.7	20.3	27.4	34.4	35.2	30.5	27.4	25.0	21.9	17.2
67.5°	10.2	11.0	14.1	18.8	22.7	24.3	23.5	21.9	19.6	16.4	13.3
70°	7.8	7.8	9.4	12.5	15.7	16.4	16.4	16.4	14.9	13.3	11.0
72.5°	5.5	6.3	6.3	8.6	10.2	11.0	11.7	11.7	11.0	10.2	8.6
75°	3.9	3.9	4.7	5.5	6.3	7.0	7.8	7.8	7.8	7.0	6.3
77.5°	2.3	2.3	3.1	3.1	3.9	4.7	4.7	4.7	3.9	3.9	3.9
80°	0.8	0.8	1.6	1.6	2.3	2.3	2.3	2.3	1.6	1.6	2.3
82.5°	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
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°	626.0	626.0	626.0
2.5°	592.4	581.4	579.9
5°	538.4	520.4	507.1
7.5°	485.2	450.0	439.0
10°	422.6	385.0	367.8
12.5°	367.0	327.1	313.8
15°	314.6	280.1	273.1
17.5°	272.3	241.0	230.8
20°	234.8	205.0	196.4
22.5°	203.5	173.7	164.3
25°	172.2	147.9	140.9
27.5°	146.3	126.0	122.1
30°	124.4	108.0	106.4
32.5°	106.4	93.9	94.7
35°	90.0	82.2	84.5
37.5°	78.3	72.8	75.1
40°	65.7	64.2	66.5
42.5°	56.3	57.1	59.5
45°	47.7	50.9	52.4
47.5°	40.7	45.4	46.2
50°	34.4	39.9	39.9
52.5°	30.5	35.2	35.2
55°	27.4	30.5	30.5
57.5°	25.0	26.6	26.6
60°	21.9	21.9	22.7
62.5°	18.0	18.8	18.8
65°	15.7	15.7	14.9
67.5°	13.3	13.3	11.7
70°	11.7	11.0	8.6
72.5°	8.6	7.8	5.5
75°	5.5	4.7	3.1
77.5°	3.1	2.3	1.6
80°	2.3	1.6	1.6
82.5°	1.6	1.6	0.8
85°	0.8	0.8	0.8
87.5°	0.8	0.8	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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