

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: P886834

Luminaire Tested: ML412LSFL95FS1E-TIR4D25AWW-TL4RWSL-1020LM-5000K

Issue Date: 7/9/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P886834  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-46)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 7/9/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: HALO  
Catalog Number: ML412LSFL95FS1E-TIR4D25AWW-TL4RWSL-1020LM-5000K  
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM  
Light Source: (1) HCL SELECTABLE LUMEN LED 95CRI / 5000K CCT  
Ballast/Driver: -

**Summary**

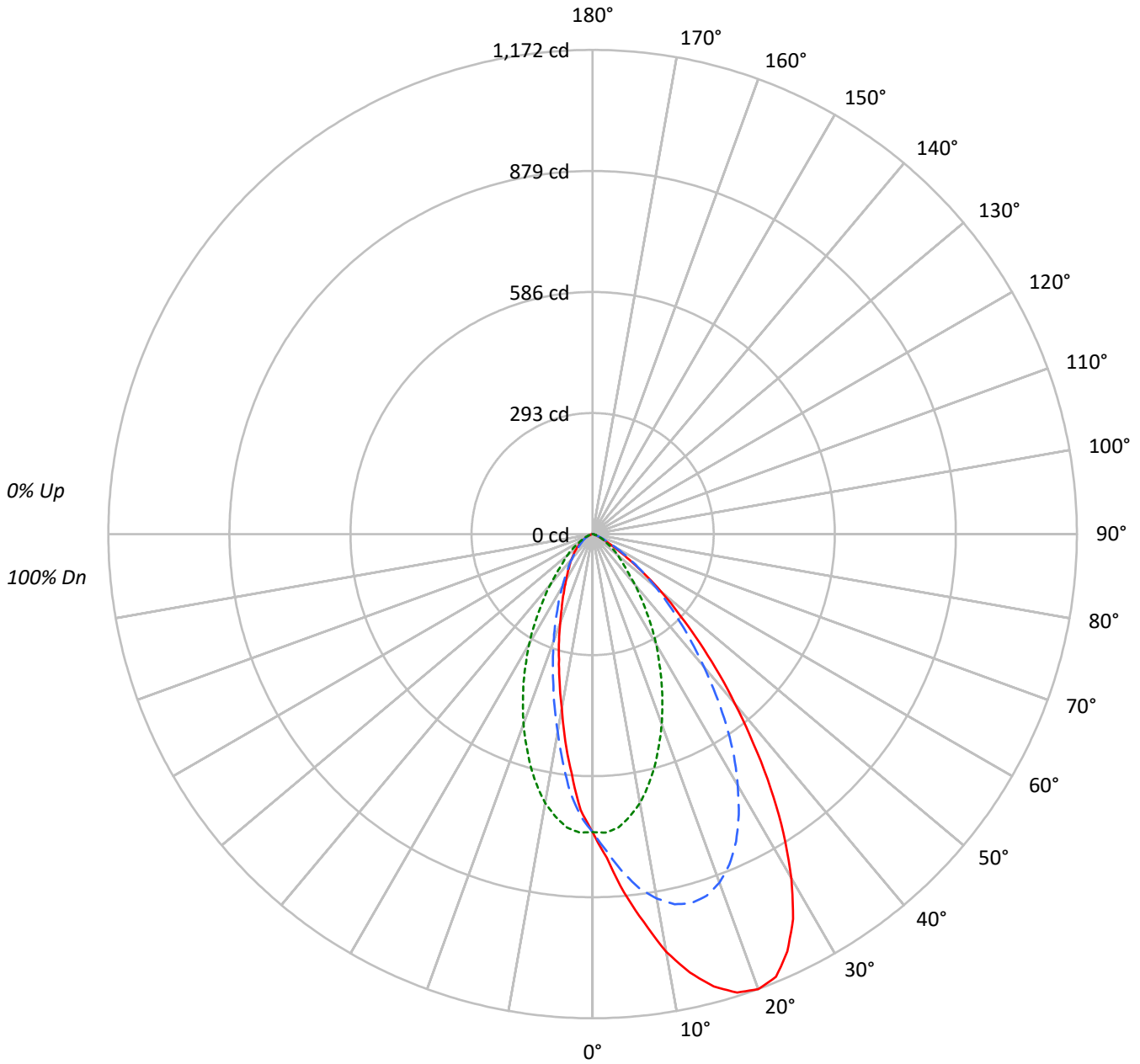
Lumens per Lamp: N/A  
Luminaire Lumens: 911.2 lumens  
Efficiency: N/A  
Efficacy: 51.8 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 0.8 / 1  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct

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	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				
1	112	109	106	104	110	107	104	102	103	101	99	99	98	96	96	94	93	91				
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	84	83				
3	99	91	86	81	97	90	85	80	87	83	79	85	81	78	82	79	76	75				
4	93	84	77	73	91	83	77	72	81	75	71	78	74	70	76	73	69	68				
5	87	77	71	65	85	76	70	65	74	69	65	73	68	64	71	67	63	62				
6	82	72	65	60	80	71	64	59	69	63	59	68	62	58	66	62	58	56				
7	77	66	59	54	76	66	59	54	64	58	54	63	58	54	62	57	53	52				
8	73	62	55	50	71	61	55	50	60	54	50	59	53	50	58	53	49	48				
9	69	58	51	46	67	57	51	46	56	50	46	55	50	46	54	49	46	44				
10	65	54	47	43	64	53	47	43	53	47	43	52	46	43	51	46	43	41				

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

	0°	45°	90°	135°	180°
0°	158189	158189	158189	158189	158189
5°	191701	180464	156988	137904	128065
10°	228653	199506	147225	108437	95434
15°	257345	209933	131874	83633	71419
20°	273467	209505	114063	64266	53415
25°	269628	198701	95546	48753	41035
30°	243607	177812	77809	36942	32334
35°	201171	150751	60043	28322	26609
40°	153230	119696	45170	21927	22442
45°	109438	91777	33368	17242	19227
50°	74062	67665	27052	13373	15863
55°	41480	45857	20224	11507	12884
60°	20393	27213	14780	9604	10394
65°	10429	14684	11363	7575	8042
70°	5834	7309	7629	5834	5257
75°	3050	3897	4660	2288	1525
80°	1137	1137	1137	0	0
85°	0	0	2264	0	0

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 10°  
 Vertical Angle: 45°  
 Luminance: 110585 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	68.0	7.5
10°-20°	182.3	20.0
20°-30°	235.2	25.8
30°-40°	205.8	22.6
40°-50°	130.0	14.3
50°-60°	63.1	6.9
60°-70°	21.8	2.4
70°-80°	4.7	0.5
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°	485.5	53.3
0°-40°	691.3	75.9
0°-60°	884.4	97.1
0°-90°	911.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	911.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	721	721	721	721	721	
5°	871	820	713	626	582	88
15°	1134	925	581	368	315	320
25°	1114	821	395	202	170	505
35°	752	563	224	106	99	466
45°	353	296	108	56	62	277
55°	108	120	53	30	34	104
65°	20	28	22	15	16	23
75°	4	5	6	3	2	4
85°	0	0	1	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°	721.4	721.4	721.4	721.4	721.4	721.4	721.4	721.4	721.4	721.4	721.4
2.5°	784.3	781.6	787.0	778.8	771.5	764.2	757.9	742.4	734.1	723.2	703.1
5°	870.9	870.0	862.7	847.2	830.8	808.9	788.0	759.7	737.8	713.2	663.9
7.5°	946.6	947.5	934.8	910.2	883.7	845.4	808.9	768.8	727.8	689.5	614.7
10°	1026.9	1015.9	997.7	966.7	921.1	870.9	818.0	762.4	708.6	661.2	563.6
12.5°	1087.1	1074.3	1050.6	1005.9	950.3	885.5	817.1	748.7	682.2	622.9	510.7
15°	1133.6	1123.6	1090.7	1033.3	964.0	885.5	804.4	725.9	648.4	580.9	452.3
17.5°	1163.7	1151.8	1109.0	1043.3	962.1	873.7	781.6	690.4	608.3	534.4	404.0
20°	1171.9	1158.2	1112.6	1037.8	947.5	848.1	747.8	653.0	563.6	488.8	351.1
22.5°	1160.0	1141.8	1094.4	1018.7	919.3	811.7	708.6	607.4	516.2	440.5	305.5
25°	1114.4	1101.7	1052.4	970.3	874.6	767.9	655.7	560.0	468.8	394.9	266.3
27.5°	1050.6	1030.5	988.6	913.8	821.7	710.4	603.7	507.1	419.5	348.4	226.2
30°	962.1	945.7	903.8	839.0	753.3	651.2	549.0	456.9	373.0	307.3	194.3
32.5°	860.0	852.7	812.6	758.8	683.1	590.1	491.6	404.9	328.3	265.4	166.0
35°	751.5	739.6	710.4	670.3	603.7	522.6	435.0	352.0	280.0	224.3	138.6
37.5°	639.3	634.7	611.9	575.5	524.4	454.2	376.6	301.0	240.8	189.7	115.8
40°	535.3	538.1	516.2	490.6	446.9	389.4	323.8	256.3	199.7	157.8	96.7
42.5°	440.5	436.8	425.0	409.5	380.3	328.3	269.0	213.4	165.1	128.6	79.3
45°	352.9	356.6	350.2	337.4	316.5	275.4	223.4	172.4	135.0	107.6	64.8
47.5°	276.3	275.4	281.8	277.2	260.8	226.2	182.4	141.4	112.2	92.1	55.6
50°	217.1	214.3	218.0	220.7	214.3	182.4	146.8	117.6	95.8	79.3	50.2
52.5°	155.9	158.7	166.0	174.2	170.5	145.0	118.6	95.8	80.3	66.6	41.0
55°	108.5	114.0	121.3	134.1	128.6	111.3	92.1	77.5	62.0	52.9	34.7
57.5°	72.0	74.8	84.8	98.5	94.8	83.0	70.2	58.4	47.4	40.1	28.3
60°	46.5	48.3	57.5	67.5	64.8	59.3	51.1	42.9	37.4	33.7	23.7
62.5°	30.1	31.9	38.3	44.7	44.7	40.1	34.7	32.8	30.1	27.4	20.1
65°	20.1	21.9	26.4	31.0	29.2	27.4	24.6	24.6	23.7	21.9	16.4
67.5°	13.7	14.6	18.2	20.1	19.2	17.3	17.3	19.2	18.2	16.4	11.9
70°	9.1	10.0	11.9	12.8	11.9	10.9	11.9	13.7	12.8	11.9	9.1
72.5°	6.4	6.4	7.3	7.3	7.3	7.3	8.2	9.1	9.1	8.2	6.4
75°	3.6	3.6	3.6	4.6	4.6	4.6	5.5	5.5	5.5	5.5	3.6
77.5°	1.8	1.8	1.8	1.8	2.7	2.7	2.7	2.7	2.7	2.7	1.8
80°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.9	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°	721.4	721.4	721.4
2.5°	682.2	671.2	668.5
5°	626.5	593.7	581.8
7.5°	554.5	516.2	506.1
10°	487.0	444.1	428.6
12.5°	425.9	380.3	368.4
15°	368.4	325.6	314.6
17.5°	319.2	280.9	269.9
20°	275.4	240.8	228.9
22.5°	237.1	205.2	195.2
25°	201.5	174.2	169.6
27.5°	172.4	150.5	146.8
30°	145.9	129.5	127.7
32.5°	124.0	112.2	113.1
35°	105.8	98.5	99.4
37.5°	92.1	85.7	89.4
40°	76.6	74.8	78.4
42.5°	65.7	65.7	69.3
45°	55.6	58.4	62.0
47.5°	46.5	51.1	53.8
50°	39.2	44.7	46.5
52.5°	33.7	39.2	40.1
55°	30.1	33.7	33.7
57.5°	26.4	28.3	28.3
60°	21.9	23.7	23.7
62.5°	18.2	19.2	19.2
65°	14.6	15.5	15.5
67.5°	11.9	11.9	11.9
70°	9.1	8.2	8.2
72.5°	5.5	5.5	4.6
75°	2.7	1.8	1.8
77.5°	0.9	0.9	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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