

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: P886964

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWSL-1200LM-5000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886964
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: ML412LSFL9FS1E-TIR4D25AWW-TL4RWSL-1200LM-5000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, METALLIC SILVER TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 5000K CCT
Ballast/Driver: -

Summary

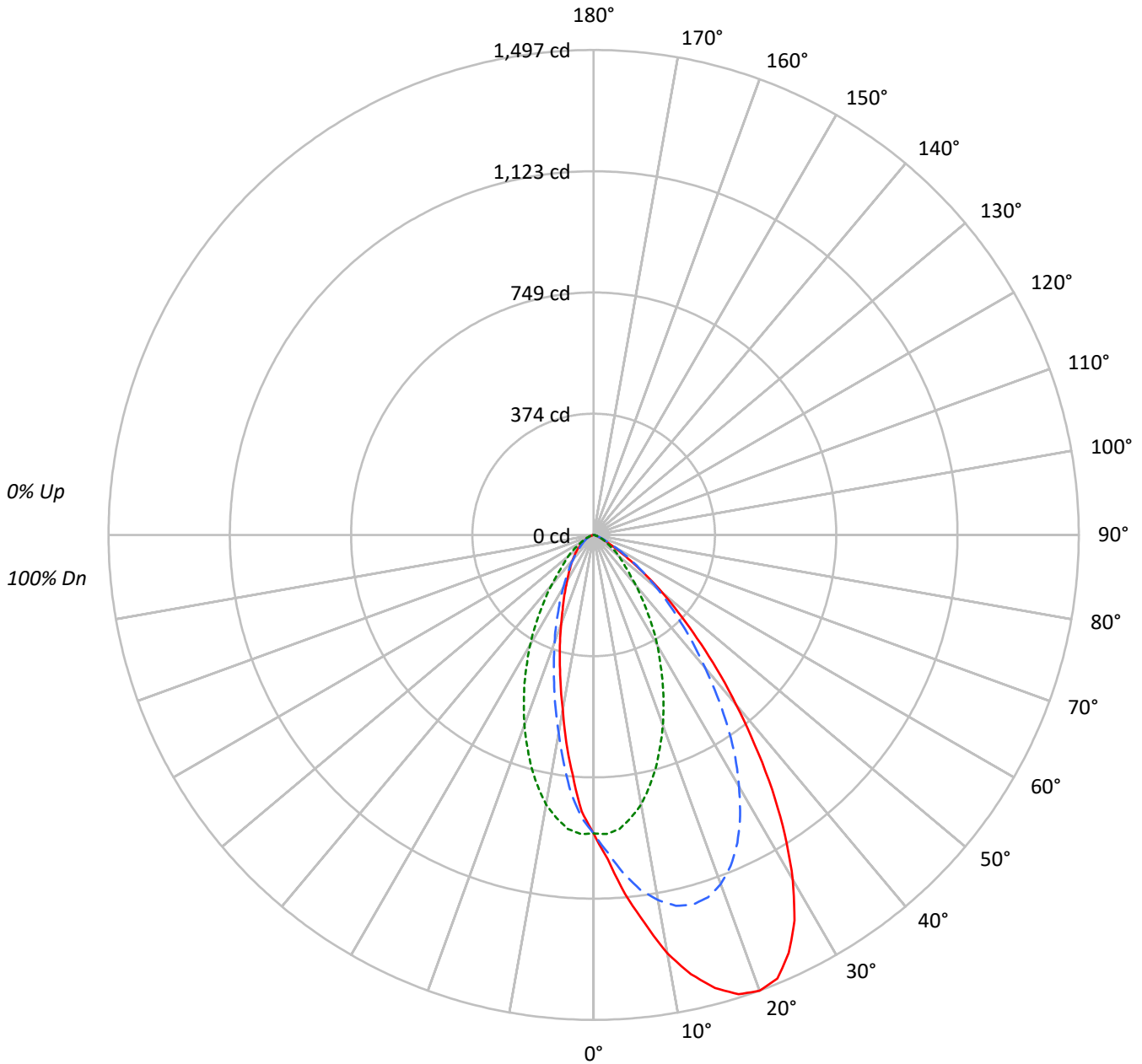
Lumens per Lamp: N/A
Luminaire Lumens: 1164.1 lumens
Efficiency: N/A
Efficacy: 66.1 lumens/watt
Spacing Criteria (0/90/45): 1.14 / 0.8 / 1
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (A_{in}): 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								
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	72	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°	202089	202089	202089	202089	202089
5°	244926	230552	200550	176183	163614
10°	292112	254883	188084	138541	121930
15°	328765	268197	168491	106856	91260
20°	349354	267657	145729	82117	68233
25°	344463	253841	122064	62302	52430
30°	311238	227162	99408	47197	41297
35°	256985	192591	76721	36165	33997
40°	195767	152915	57708	28024	28682
45°	139828	117252	42640	22049	24561
50°	94598	86445	34592	17091	20264
55°	52987	58569	25844	14680	16477
60°	26051	34734	18902	12280	13288
65°	13283	18757	14528	9651	10273
70°	7501	9328	9681	7501	6732
75°	3982	4914	5931	2965	1949
80°	1515	1515	1515	0	0
85°	0	0	3019	0	0

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 10°
 Vertical Angle: 45°
 Luminance: 141255 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	86.8	7.5
10°-20°	232.9	20.0
20°-30°	300.5	25.8
30°-40°	263.0	22.6
40°-50°	166.1	14.3
50°-60°	80.6	6.9
60°-70°	27.9	2.4
70°-80°	6.0	0.5
80°-90°	0.3	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°	620.2	53.3
0°-40°	883.2	75.9
0°-60°	1129.9	97.1
0°-90°	1164.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1164.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	922	922	922	922	922	
5°	1113	1047	911	800	743	112
15°	1448	1181	742	471	402	409
25°	1424	1049	504	258	217	646
35°	960	719	287	135	127	595
45°	451	378	138	71	79	353
55°	139	153	68	38	43	132
65°	26	36	28	19	20	29
75°	5	6	7	4	2	6
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°	921.6	921.6	921.6	921.6	921.6	921.6	921.6	921.6	921.6	921.6	921.6
2.5°	1002.0	998.5	1005.5	995.0	985.7	976.3	968.2	948.4	937.9	923.9	898.3
5°	1112.7	1111.5	1102.2	1082.4	1061.4	1033.4	1006.6	970.5	942.5	911.1	848.2
7.5°	1209.4	1210.5	1194.2	1162.7	1129.0	1080.0	1033.4	982.2	929.7	880.8	785.3
10°	1311.9	1297.9	1274.6	1235.0	1176.7	1112.7	1045.1	974.0	905.3	844.7	720.0
12.5°	1388.8	1372.5	1342.2	1285.1	1214.0	1131.3	1043.9	956.5	871.5	795.7	652.4
15°	1448.2	1435.4	1393.4	1320.0	1231.5	1131.3	1027.6	927.4	828.4	742.2	577.9
17.5°	1486.6	1471.5	1416.7	1332.9	1229.2	1116.1	998.5	882.0	777.1	682.7	516.1
20°	1497.1	1479.7	1421.4	1325.9	1210.5	1083.5	955.4	834.2	720.0	624.5	448.6
22.5°	1482.0	1458.7	1398.1	1301.4	1174.4	1036.9	905.3	775.9	659.4	562.7	390.3
25°	1423.7	1407.4	1344.5	1239.6	1117.3	981.0	837.7	715.4	598.9	504.5	340.2
27.5°	1342.2	1316.5	1262.9	1167.4	1049.7	907.6	771.3	647.8	535.9	445.1	288.9
30°	1229.2	1208.2	1154.6	1071.9	962.4	831.9	701.4	583.7	476.5	392.6	248.2
32.5°	1098.7	1089.3	1038.1	969.3	872.6	753.8	628.0	517.3	419.4	339.0	212.0
35°	960.0	944.9	907.6	856.3	771.3	667.6	555.7	449.7	357.7	286.6	177.1
37.5°	816.7	810.9	781.8	735.2	669.9	580.2	481.2	384.5	307.6	242.3	148.0
40°	683.9	687.4	659.4	626.8	570.9	497.5	413.6	327.4	255.2	201.6	123.5
42.5°	562.7	558.1	542.9	523.1	485.8	419.4	343.7	272.6	210.9	164.3	101.4
45°	450.9	455.5	447.4	431.1	404.3	351.9	285.4	220.2	172.4	137.5	82.7
47.5°	353.0	351.9	360.0	354.2	333.2	288.9	233.0	180.6	143.3	117.7	71.1
50°	277.3	273.8	278.5	281.9	273.8	233.0	187.6	150.3	122.3	101.4	64.1
52.5°	199.2	202.7	212.0	222.5	217.9	185.2	151.5	122.3	102.5	85.1	52.4
55°	138.6	145.6	155.0	171.3	164.3	142.1	117.7	99.0	79.2	67.6	44.3
57.5°	92.0	95.5	108.4	125.8	121.2	106.0	89.7	74.6	60.6	51.3	36.1
60°	59.4	61.7	73.4	86.2	82.7	75.7	65.2	54.8	47.8	43.1	30.3
62.5°	38.4	40.8	48.9	57.1	57.1	51.3	44.3	41.9	38.4	35.0	25.6
65°	25.6	28.0	33.8	39.6	37.3	35.0	31.5	31.5	30.3	28.0	21.0
67.5°	17.5	18.6	23.3	25.6	24.5	22.1	22.1	24.5	23.3	21.0	15.1
70°	11.7	12.8	15.1	16.3	15.1	14.0	15.1	17.5	16.3	15.1	11.7
72.5°	8.2	8.2	9.3	9.3	9.3	9.3	10.5	11.7	11.7	10.5	8.2
75°	4.7	4.7	4.7	5.8	5.8	5.8	7.0	7.0	7.0	7.0	4.7
77.5°	2.3	2.3	2.3	2.3	3.5	3.5	3.5	3.5	3.5	3.5	2.3
80°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	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°	921.6	921.6	921.6
2.5°	871.5	857.5	854.0
5°	800.4	758.5	743.3
7.5°	708.4	659.4	646.6
10°	622.2	567.4	547.6
12.5°	544.1	485.8	470.7
15°	470.7	415.9	402.0
17.5°	407.8	358.8	344.9
20°	351.9	307.6	292.4
22.5°	302.9	262.1	249.3
25°	257.5	222.5	216.7
27.5°	220.2	192.2	187.6
30°	186.4	165.4	163.1
32.5°	158.5	143.3	144.5
35°	135.1	125.8	127.0
37.5°	117.7	109.5	114.2
40°	97.9	95.5	100.2
42.5°	83.9	83.9	88.5
45°	71.1	74.6	79.2
47.5°	59.4	65.2	68.7
50°	50.1	57.1	59.4
52.5°	43.1	50.1	51.3
55°	38.4	43.1	43.1
57.5°	33.8	36.1	36.1
60°	28.0	30.3	30.3
62.5°	23.3	24.5	24.5
65°	18.6	19.8	19.8
67.5°	15.1	15.1	15.1
70°	11.7	10.5	10.5
72.5°	7.0	7.0	5.8
75°	3.5	2.3	2.3
77.5°	1.2	1.2	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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Scaled Data Report



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