

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: P886958

Luminaire Tested: ML412LSFL9FS1E-TIR4D25AWW-TL4RWMW-1200LM-4000K

Issue Date: 7/9/2024

Test Information

Test Method: LM-79-2019
Report Number: P886958
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2402-314-45)
Test Lab: COOPER LIGHTING SOLUTIONS
Issue Date: 7/9/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: ML412LSFL9FS1E-TIR4D25AWW-TL4RMMW-1200LM-4000K
Description: 4IN ROUND ML FLEX, SELECTABLE CCT, WITH WW TIR, MATTE WHITE TRIM
Light Source: (1) STANDARD SELECTABLE LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1115.0 lumens
Efficiency: N/A
Efficacy: 63.4 lumens/watt
Spacing Criteria (0/90/45): 1.16 / 0.81 / 1.01
Luminous Opening: Circular (Dia: 0.25' x H: 0')
CIE Type: Direct

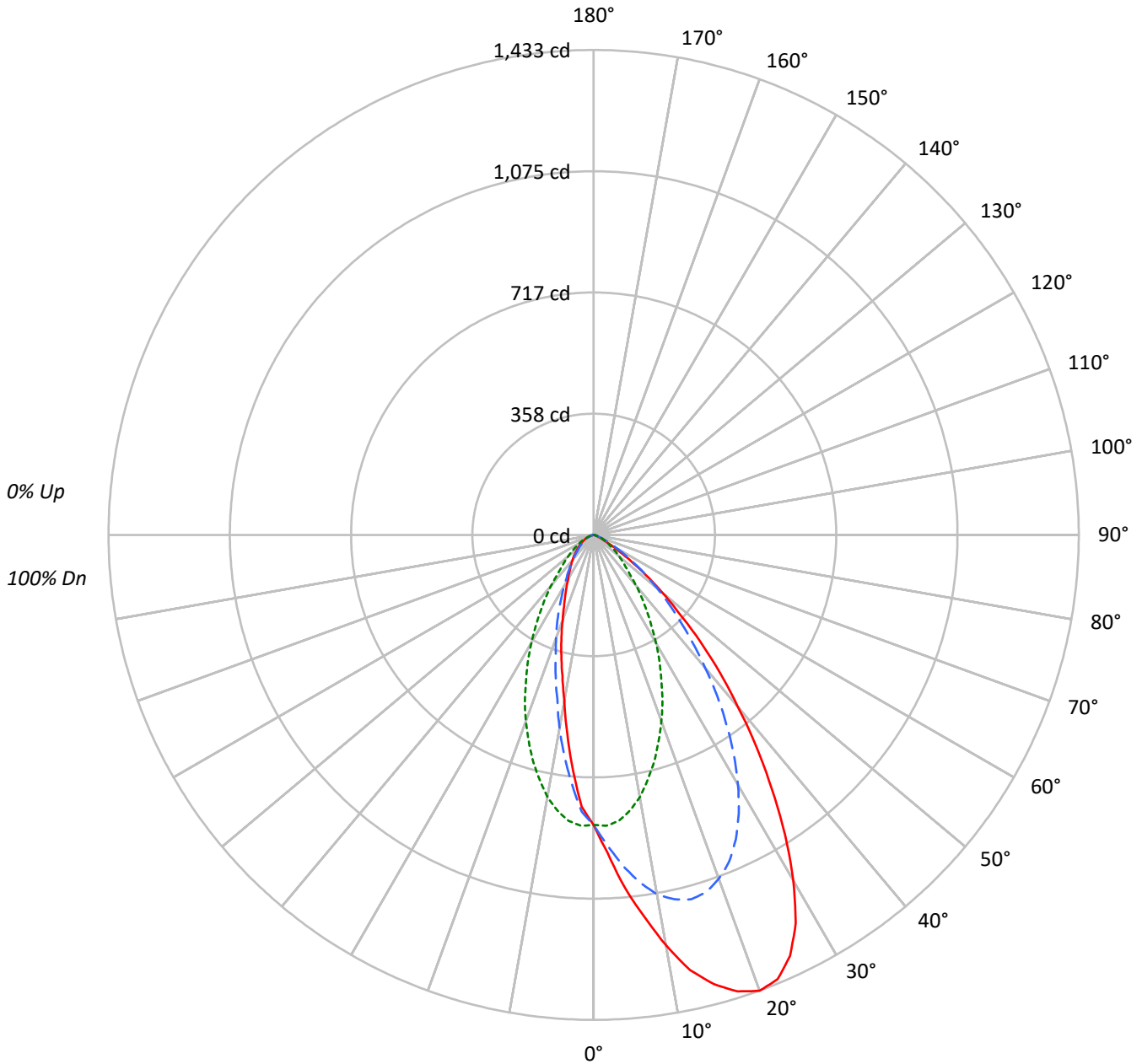
Input Watts (W): 17.6
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					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	112	109	106	103	110	107	104	102	103	101	99	99	97	96	96	94	93	91					91			
2	105	100	95	91	103	98	93	90	94	91	88	91	88	86	89	86	84	82					82			
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74					74			
4	92	83	77	72	91	82	76	71	80	75	71	78	73	70	76	72	69	67					67			
5	87	77	70	65	85	76	69	65	74	68	64	72	67	63	70	66	63	61					61			
6	81	71	64	59	80	70	63	59	69	63	58	67	62	58	66	61	57	56					56			
7	77	66	59	54	75	65	58	54	64	58	53	62	57	53	61	56	53	51					51			
8	72	61	54	49	71	61	54	49	59	53	49	58	53	49	57	52	49	47					47			
9	68	57	50	46	67	57	50	46	56	50	45	55	49	45	54	49	45	44					44			
10	65	53	47	42	63	53	47	42	52	46	42	51	46	42	50	45	42	40					40			

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°	135°	180°
0°	187924	187924	187924	187924	187924
5°	230024	215672	186704	162601	153841
10°	274299	240198	175080	129278	111287
15°	312056	253055	157163	98411	83587
20°	334442	252372	136512	75607	62445
25°	332051	240268	114249	58334	47882
30°	298755	216033	92951	43956	38082
35°	245715	183102	72812	34345	32257
40°	189612	146560	55704	26908	27852
45°	137503	112136	41152	21615	24002
50°	90163	82812	33193	17739	20741
55°	50311	57269	25806	15636	17739
60°	22805	35151	20876	14078	15525
65°	11467	18653	16655	12038	12608
70°	7117	10643	12053	9938	9232
75°	4660	6058	9404	6524	4660
80°	1389	2778	4167	4167	4167
85°	0	2768	5535	5535	5535

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 137503 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	81.1	7.3
10°-20°	218.5	19.6
20°-30°	284.6	25.5
30°-40°	250.5	22.5
40°-50°	160.4	14.4
50°-60°	79.7	7.1
60°-70°	30.0	2.7
70°-80°	8.8	0.8
80°-90°	1.6	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°	584.1	52.4
0°-40°	834.6	74.9
0°-60°	1074.7	96.4
0°-90°	1115.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1115.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	857	857	857	857	857	
5°	1045	980	848	739	699	105
15°	1375	1115	692	434	368	388
25°	1372	993	472	241	198	621
35°	918	684	272	128	120	572
45°	443	362	133	70	77	344
55°	132	150	68	41	46	125
65°	22	36	32	23	24	25
75°	6	7	11	8	6	6
85°	0	1	2	2	2	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°	857.0	857.0	857.0	857.0	857.0	857.0	857.0	857.0	857.0	857.0	857.0
2.5°	940.0	942.2	934.4	926.7	922.3	912.3	900.2	882.5	873.6	860.3	836.0
5°	1045.0	1045.0	1037.3	1014.1	994.2	965.4	941.1	909.0	878.0	848.2	790.7
7.5°	1135.7	1135.7	1120.2	1098.1	1057.2	1011.8	966.5	914.5	867.0	821.6	734.3
10°	1231.9	1226.4	1205.4	1164.5	1108.1	1049.4	978.7	909.0	847.1	786.3	670.1
12.5°	1317.1	1302.7	1269.5	1216.4	1143.4	1062.7	979.8	892.4	812.8	739.8	603.8
15°	1374.6	1362.4	1318.2	1250.7	1163.4	1066.0	966.5	864.8	773.0	692.3	541.9
17.5°	1414.4	1402.2	1344.7	1264.0	1162.2	1050.6	938.9	828.3	727.6	638.1	477.7
20°	1433.2	1416.6	1356.9	1260.7	1142.3	1020.7	897.9	779.6	676.8	585.0	420.2
22.5°	1421.0	1401.1	1332.5	1236.3	1112.5	978.7	851.5	732.1	620.4	530.8	364.9
25°	1372.4	1359.1	1287.2	1183.3	1061.6	924.5	791.8	671.2	562.9	472.2	316.3
27.5°	1292.7	1269.5	1205.4	1118.0	995.3	861.5	727.6	611.5	508.7	420.2	272.0
30°	1179.9	1160.0	1110.3	1027.3	919.0	787.4	662.4	545.2	450.1	367.1	233.3
32.5°	1052.8	1045.0	999.7	932.2	832.7	710.0	599.4	485.5	395.9	317.4	199.1
35°	917.9	906.8	875.8	810.6	733.2	634.8	524.2	423.5	345.0	272.0	167.0
37.5°	790.7	775.2	749.8	704.4	640.3	557.3	453.4	362.7	290.8	232.2	141.5
40°	662.4	654.7	631.4	597.2	549.6	474.4	388.2	310.7	249.9	194.6	118.3
42.5°	551.8	538.5	523.1	500.9	464.5	403.6	329.5	261.0	202.4	159.2	98.4
45°	443.4	433.5	429.1	413.6	385.9	337.3	275.4	211.2	167.0	132.7	81.8
47.5°	340.6	342.8	342.8	337.3	320.7	279.8	224.5	174.7	141.5	115.0	70.8
50°	264.3	262.1	267.6	272.0	257.7	227.8	179.1	146.0	120.5	97.3	60.8
52.5°	193.5	193.5	205.7	215.6	205.7	182.5	146.0	119.4	98.4	82.9	53.1
55°	131.6	137.1	147.1	165.9	160.3	139.3	118.3	95.1	80.7	67.5	44.2
57.5°	84.0	89.6	100.6	120.5	116.1	106.2	88.5	76.3	63.0	54.2	37.6
60°	52.0	55.3	65.2	81.8	84.0	76.3	65.2	56.4	53.1	47.6	34.3
62.5°	33.2	35.4	45.3	54.2	56.4	50.9	47.6	45.3	44.2	39.8	29.9
65°	22.1	23.2	28.8	36.5	36.5	35.4	33.2	35.4	35.4	32.1	24.3
67.5°	14.4	15.5	19.9	24.3	24.3	24.3	26.5	27.6	27.6	24.3	18.8
70°	11.1	11.1	13.3	15.5	16.6	16.6	17.7	21.0	21.0	18.8	15.5
72.5°	7.7	7.7	8.8	10.0	11.1	11.1	13.3	14.4	15.5	14.4	12.2
75°	5.5	5.5	5.5	6.6	6.6	7.7	8.8	10.0	11.1	11.1	8.8
77.5°	3.3	3.3	3.3	4.4	4.4	4.4	5.5	5.5	6.6	6.6	5.5
80°	1.1	1.1	2.2	2.2	2.2	2.2	3.3	3.3	3.3	3.3	3.3
82.5°	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2	2.2	2.2
85°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	2.2	2.2	2.2
87.5°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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°	857.0	857.0	857.0
2.5°	818.3	802.8	804.0
5°	738.7	704.4	698.9
7.5°	659.1	608.2	593.8
10°	580.6	520.9	499.8
12.5°	496.5	445.7	425.8
15°	433.5	384.8	368.2
17.5°	372.7	331.8	316.3
20°	324.0	286.4	267.6
22.5°	282.0	243.3	228.9
25°	241.1	206.8	197.9
27.5°	204.6	176.9	172.5
30°	173.6	153.7	150.4
32.5°	148.2	134.9	136.0
35°	128.3	119.4	120.5
37.5°	110.6	103.9	108.4
40°	94.0	92.9	97.3
42.5°	81.8	82.9	87.4
45°	69.7	74.1	77.4
47.5°	59.7	67.5	68.6
50°	52.0	59.7	60.8
52.5°	46.4	53.1	53.1
55°	40.9	46.4	46.4
57.5°	36.5	39.8	40.9
60°	32.1	33.2	35.4
62.5°	27.6	28.8	29.9
65°	23.2	24.3	24.3
67.5°	18.8	19.9	19.9
70°	15.5	15.5	14.4
72.5°	10.0	11.1	8.8
75°	7.7	6.6	5.5
77.5°	4.4	4.4	3.3
80°	3.3	3.3	3.3
82.5°	3.3	3.3	2.2
85°	2.2	2.2	2.2
87.5°	1.1	1.1	1.1
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

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Scaled Data Report





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

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