

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: HALO

Report Number: P601168

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - TL41R_ TL42S_ 3500K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601168
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML406AWW9FS1E - TIR4D25AWW - TL41R_ TL42S_ 3500K
 Description: RETROFIT, 25D WW OPTIC, OPEN TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3500K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 527.5 lumens
 Efficiency: N/A
 Efficacy: 63.6 lumens/watt
 Spacing Criteria (0/90/45): 1.31 / 0.61 / 0.81
 Luminous Opening: Circular (Dia: 0.21' x H: 0')
 CIE Type: Direct

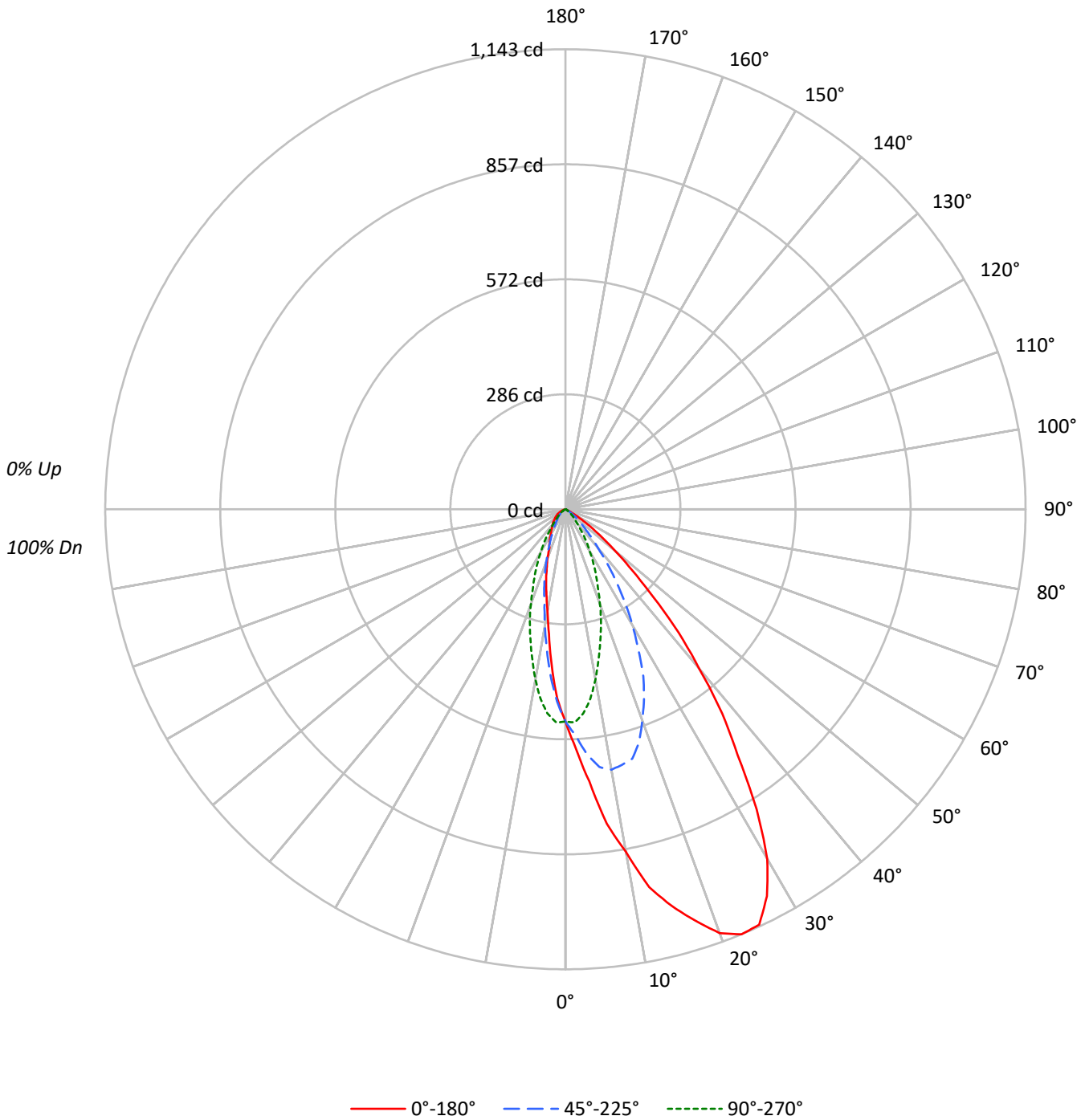
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas			
Instrument	Identificatio		Calibration Due Date
Photometer	GONIO 1 11111111	4/22/2021	10/22/2021
Power Meter	XITRON 2801 IN0197	12/1/2020	12/1/2021
AC Power Source	CHROMA 61505 IN0196	12/1/2020	12/1/2021
DC Power Supply	AGILENT E3634A IN0198	11/30/2020	11/30/2021
Room Thermometer	ONSET IN0143	12/1/2020	12/1/2021

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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	110	107	105	111	108	106	103	104	102	100	100	99	97	97	96	94	93
2	107	102	97	94	105	100	96	93	97	93	91	94	91	89	91	89	87	85
3	101	94	89	84	99	93	88	84	90	86	82	87	84	81	85	82	80	78
4	95	87	81	77	93	86	80	76	84	79	75	82	78	74	80	76	73	72
5	90	81	75	70	88	80	74	70	78	73	69	76	72	68	75	71	68	66
6	85	75	69	64	83	75	68	64	73	68	64	72	67	63	70	66	63	61
7	80	70	64	59	79	70	64	59	68	63	59	67	62	59	66	62	58	57
8	76	66	60	55	75	65	59	55	64	59	55	63	58	55	62	58	54	53
9	72	62	56	51	71	61	55	51	60	55	51	60	54	51	59	54	51	49
10	69	58	52	48	68	58	52	48	57	52	48	56	51	48	55	51	48	46

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	166535	166535	166535
5°	215128	161434	123872
10°	276966	137521	82051
15°	333508	109382	60477
20°	376522	84243	43886
25°	396733	62365	32820
30°	365708	44446	26471
35°	287297	29990	23013
40°	213480	18178	20322
45°	137853	12370	18130
50°	80711	8941	16162
55°	42830	6166	14258
60°	17999	3284	12567
65°	6426	2615	9713
70°	831	1570	5632
75°	1098	1098	0
80°	0	0	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	48.6	9.2
10°-20°	125.9	23.9
20°-30°	153.8	29.2
30°-40°	115.1	21.8
40°-50°	57.1	10.8
50°-60°	21.0	4.0
60°-70°	5.2	1.0
70°-80°	0.7	0.1
80°-90°	0.0	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°	328.3	62.2
0°-40°	443.5	84.1
0°-60°	521.6	98.9
0°-90°	527.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	527.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	527	527	527	527	527	
5°	679	610	509	418	391	71
15°	1020	642	335	203	185	290
25°	1139	457	179	90	94	511
35°	745	220	78	42	60	470
45°	309	72	28	23	41	246
55°	78	20	11	10	26	74
65°	9	3	4	4	13	10
75°	1	1	1	0	0	1
85°	0	0	0	0	0	0
90°	0	0	0	0	0	0

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	527.4	527.4	527.4	527.4	527.4	527.4	527.4	527.4	527.4	527.4	527.4
2.5°	594.0	594.0	600.9	589.7	589.7	586.2	561.1	546.4	530.0	505.8	477.3
5°	678.7	696.0	682.2	663.2	674.4	669.2	610.4	556.8	509.3	462.6	417.6
7.5°	787.7	792.0	779.9	755.7	750.5	747.0	645.9	557.7	474.7	404.6	352.8
10°	863.8	869.8	864.6	856.0	826.6	819.7	657.1	524.8	428.9	354.5	292.2
12.5°	961.5	959.7	951.9	926.9	893.1	883.6	650.2	495.4	380.4	298.3	239.5
15°	1020.2	1030.6	1019.4	952.8	937.2	913.0	641.5	455.7	334.6	258.5	203.2
17.5°	1071.3	1066.9	1045.3	1003.0	963.2	941.6	607.8	397.7	294.0	215.3	167.7
20°	1120.5	1121.4	1087.7	1035.8	971.8	932.9	557.7	358.0	250.7	177.2	139.2
22.5°	1143.0	1141.3	1098.1	1021.1	946.8	907.0	510.1	313.0	210.1	143.5	111.5
25°	1138.7	1107.6	1079.0	988.3	904.4	856.0	457.4	274.1	179.0	121.0	89.9
27.5°	1083.4	1067.8	1019.4	928.6	831.8	782.5	391.7	234.3	149.6	95.1	73.5
30°	1003.0	984.8	926.9	851.6	724.5	685.6	333.7	191.9	121.9	81.3	60.5
32.5°	883.6	869.8	810.1	711.6	612.1	568.1	276.7	153.0	98.6	59.7	49.3
35°	745.3	744.4	691.7	611.3	507.5	462.6	219.6	122.8	77.8	47.6	41.5
37.5°	639.8	617.3	565.5	491.1	403.8	366.6	172.1	96.0	57.9	37.2	34.6
40°	517.9	508.4	453.9	390.8	313.9	286.2	127.1	71.8	44.1	30.3	31.1
42.5°	416.7	403.8	358.8	297.4	243.0	220.5	96.8	55.3	34.6	25.9	27.7
45°	308.7	302.6	276.7	221.3	179.8	164.3	71.8	43.2	27.7	21.6	23.3
47.5°	224.8	217.9	199.7	164.3	130.6	121.0	55.3	33.7	22.5	17.3	18.2
50°	164.3	160.0	147.8	119.3	96.0	88.2	41.5	25.9	18.2	13.8	15.6
52.5°	113.3	115.0	104.6	84.7	68.3	63.1	31.1	19.0	14.7	11.2	13.0
55°	77.8	76.1	71.8	55.3	44.1	40.6	19.9	13.0	11.2	8.6	9.5
57.5°	47.6	47.6	44.1	34.6	27.7	25.9	12.1	8.6	7.8	6.1	7.8
60°	28.5	28.5	24.2	19.9	16.4	14.7	6.9	5.2	5.2	4.3	6.1
62.5°	15.6	15.6	13.8	11.2	8.6	7.8	4.3	4.3	3.5	3.5	5.2
65°	8.6	7.8	6.9	5.2	4.3	4.3	2.6	3.5	3.5	3.5	3.5
67.5°	3.5	3.5	3.5	2.6	2.6	2.6	1.7	2.6	2.6	2.6	2.6
70°	0.9	1.7	1.7	1.7	0.9	0.9	1.7	1.7	1.7	1.7	1.7
72.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
75°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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):

	157.5°	180°
0°	527.4	527.4
2.5°	478.1	470.4
5°	400.3	390.8
7.5°	318.2	312.1
10°	260.2	255.9
12.5°	219.6	217.0
15°	185.9	185.0
17.5°	156.5	153.9
20°	128.0	130.6
22.5°	105.5	103.8
25°	89.1	94.2
27.5°	76.1	83.0
30°	66.6	72.6
32.5°	57.1	66.6
35°	50.1	59.7
37.5°	45.0	53.6
40°	41.5	49.3
42.5°	36.3	45.8
45°	32.0	40.6
47.5°	27.7	36.3
50°	25.1	32.9
52.5°	21.6	29.4
55°	18.2	25.9
57.5°	16.4	23.3
60°	13.8	19.9
62.5°	10.4	16.4
65°	7.8	13.0
67.5°	5.2	9.5
70°	2.6	6.1
72.5°	0.9	1.7
75°	0.0	0.0
77.5°	0.0	0.0
80°	0.0	0.0
82.5°	0.0	0.0
85°	0.0	0.0
87.5°	0.0	0.0
90°	0.0	0.0

(END OF REPORT)