

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: P601180

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - TL45R6G_ TL46S6G_ 5000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601180
 Test Lab: COOPER LIGHTING SOLUTIONS
 Issue Date: 7/29/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: HALO
 Catalog Number: ML406AWW9FS1E - TIR4D25AWW - TL45R6G_ TL46S6G_ 5000K
 Description: RETROFIT, 25D WW OPTIC, LINEAR SPREAD LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 5000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 673.5 lumens
 Efficiency: N/A
 Efficacy: 81.1 lumens/watt
 Spacing Criteria (0/90/45): 1.21 / 0.78 / 1
 Luminous Opening: Circular (Dia: 0.21' x H: 0')
 CIE Type: Direct

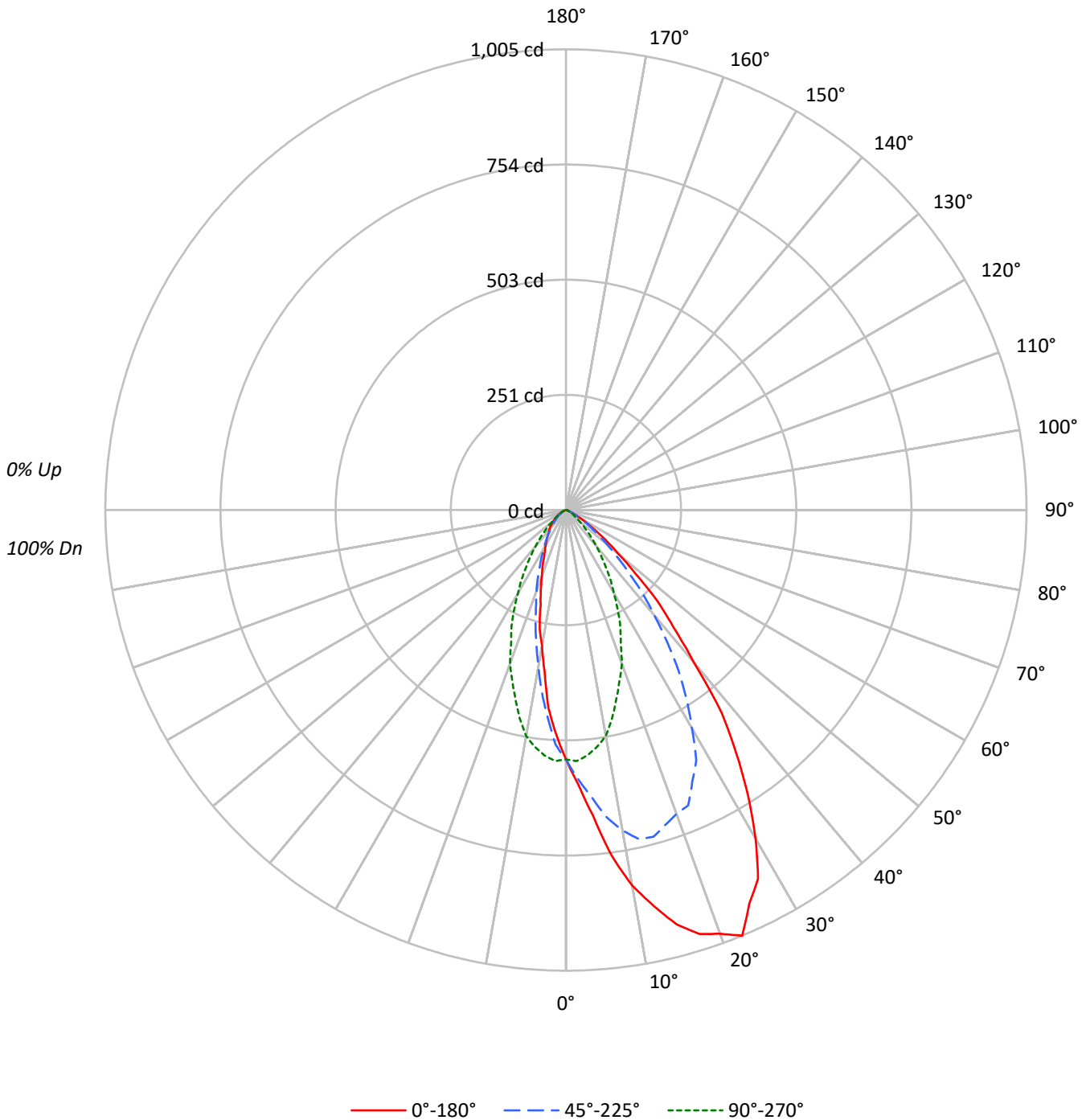
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



Meas		Calibration Due Date	
Instrument	Identificatio		
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	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92
2	106	100	96	92	104	99	95	91	95	92	89	92	90	87	90	87	85	83
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	78	76
4	94	85	79	74	92	84	78	73	82	76	72	79	75	72	78	74	71	69
5	88	78	72	67	86	77	71	67	76	70	66	74	69	65	72	68	65	63
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	58
7	78	68	61	56	77	67	60	56	65	60	55	64	59	55	63	58	55	53
8	74	63	56	52	72	62	56	51	61	55	51	60	55	51	59	54	51	49
9	70	59	52	48	68	58	52	48	57	52	47	56	51	47	55	51	47	46
10	66	55	49	44	65	55	48	44	54	48	44	53	48	44	52	47	44	42

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	171776	171776	171776
5°	211547	170277	137597
10°	266609	160479	96544
15°	305982	139228	69631
20°	330486	119896	51513
25°	329873	97833	39231
30°	301718	76168	32159
35°	249944	58053	26675
40°	179473	42498	23496
45°	127225	29071	19381
50°	74620	18667	16015
55°	44812	12717	12717
60°	23998	9410	9410
65°	13150	7098	6052
70°	7478	4985	3785
75°	3294	3294	0
80°	2546	2546	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	51.5	7.7
10°-20°	140.2	20.8
20°-30°	183.3	27.2
30°-40°	157.2	23.3
40°-50°	89.9	13.3
50°-60°	36.8	5.5
60°-70°	11.8	1.7
70°-80°	2.5	0.4
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°	375.1	55.7
0°-40°	532.3	79.0
0°-60°	658.9	97.8
0°-90°	673.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	673.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	544	544	544	544	544	
5°	667	627	537	454	434	69
15°	936	738	426	256	213	264
25°	947	652	281	134	113	433
35°	648	429	151	70	69	400
45°	285	194	65	35	43	217
55°	81	66	23	16	23	77
65°	18	15	10	7	8	19
75°	3	3	3	1	0	4
85°	0	0	0	0	0	1
90°	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°	544.0	544.0	544.0	544.0	544.0	544.0	544.0	544.0	544.0	544.0	544.0
2.5°	596.9	609.1	605.0	611.8	610.4	598.2	586.0	567.0	548.0	537.2	512.8
5°	667.4	682.3	693.2	685.0	681.0	671.5	626.7	584.6	537.2	489.7	454.4
7.5°	759.6	755.6	767.8	743.4	744.7	740.6	675.5	594.1	520.9	451.7	401.5
10°	831.5	819.3	831.5	823.4	807.1	788.1	709.4	590.1	500.5	413.7	345.9
12.5°	884.4	900.7	900.7	881.7	865.4	843.7	735.2	587.4	465.3	367.6	298.4
15°	936.0	941.4	931.9	917.0	900.7	855.9	737.9	569.7	425.9	322.8	256.4
17.5°	969.9	971.2	967.2	953.6	930.6	903.4	720.3	553.4	389.3	287.6	215.7
20°	983.5	972.6	971.2	946.8	926.5	902.1	705.4	514.1	356.8	245.5	187.2
22.5°	1005.2	979.4	979.4	955.0	912.9	908.9	697.2	469.3	312.0	210.3	160.1
25°	946.8	942.8	950.9	917.0	884.4	877.7	652.5	435.4	280.8	181.8	134.3
27.5°	907.5	896.6	885.8	864.1	832.9	816.6	615.8	392.0	244.2	151.9	113.9
30°	827.5	827.5	813.9	803.0	761.0	748.8	550.7	351.3	208.9	130.2	95.0
32.5°	739.3	727.1	728.4	716.2	690.5	681.0	489.7	306.6	180.4	105.8	82.7
35°	648.4	634.8	628.1	618.6	614.5	584.6	428.7	264.5	150.6	92.2	70.5
37.5°	558.9	545.3	539.9	525.0	503.3	496.5	362.2	219.8	126.2	76.0	58.3
40°	435.4	435.4	434.1	417.8	411.0	406.9	299.8	183.1	103.1	61.0	50.2
42.5°	347.3	351.3	348.6	341.8	326.9	324.2	249.6	149.2	84.1	51.5	42.1
45°	284.9	272.7	269.9	268.6	260.4	259.1	194.0	118.0	65.1	42.1	35.3
47.5°	208.9	207.5	210.3	203.5	194.0	202.1	153.3	89.5	51.5	33.9	29.8
50°	151.9	154.6	154.6	147.9	145.1	147.9	118.0	67.8	38.0	27.1	25.8
52.5°	113.9	112.6	111.2	112.6	111.2	111.2	88.2	50.2	29.8	21.7	20.3
55°	81.4	81.4	80.0	82.7	84.1	81.4	66.5	36.6	23.1	17.6	16.3
57.5°	57.0	57.0	54.3	57.0	57.0	59.7	47.5	27.1	19.0	13.6	13.6
60°	38.0	38.0	38.0	39.3	40.7	40.7	32.6	19.0	14.9	10.9	10.9
62.5°	25.8	25.8	25.8	27.1	27.1	29.8	23.1	14.9	12.2	9.5	8.1
65°	17.6	17.6	17.6	17.6	19.0	19.0	14.9	10.9	9.5	8.1	6.8
67.5°	10.9	12.2	10.9	12.2	12.2	12.2	9.5	8.1	6.8	5.4	4.1
70°	8.1	8.1	8.1	8.1	8.1	8.1	6.8	6.8	5.4	4.1	2.7
72.5°	5.4	5.4	5.4	5.4	5.4	5.4	4.1	4.1	4.1	2.7	2.7
75°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	1.4	1.4
77.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.0
80°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.0	0.0
82.5°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	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°	544.0	544.0
2.5°	499.2	489.7
5°	423.2	434.1
7.5°	369.0	355.4
10°	309.3	301.1
12.5°	268.6	264.5
15°	222.5	213.0
17.5°	191.3	181.8
20°	160.1	153.3
22.5°	137.0	132.9
25°	118.0	112.6
27.5°	101.7	99.0
30°	88.2	88.2
32.5°	76.0	78.7
35°	67.8	69.2
37.5°	58.3	61.0
40°	54.3	57.0
42.5°	46.1	51.5
45°	39.3	43.4
47.5°	33.9	38.0
50°	28.5	32.6
52.5°	25.8	28.5
55°	21.7	23.1
57.5°	17.6	19.0
60°	13.6	14.9
62.5°	10.9	12.2
65°	8.1	8.1
67.5°	5.4	6.8
70°	2.7	4.1
72.5°	1.4	1.4
75°	1.4	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)