

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: P601179

Luminaire Tested: **ML406AWW9FS1E - TIR4D25AWW - TL45R6G_ TL46S6G_ 4000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P601179
 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_ 4000K
 Description: RETROFIT, 25D WW OPTIC, LINEAR SPREAD LENS TRIM
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 4000K CCT
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 644.4 lumens
 Efficiency: N/A
 Efficacy: 77.6 lumens/watt
 Spacing Criteria (0/90/45): 1.21 / 0.78 / 1
 Luminous Opening: Circular (Dia: 0.21' x H: 0')
 CIE Type: Direct

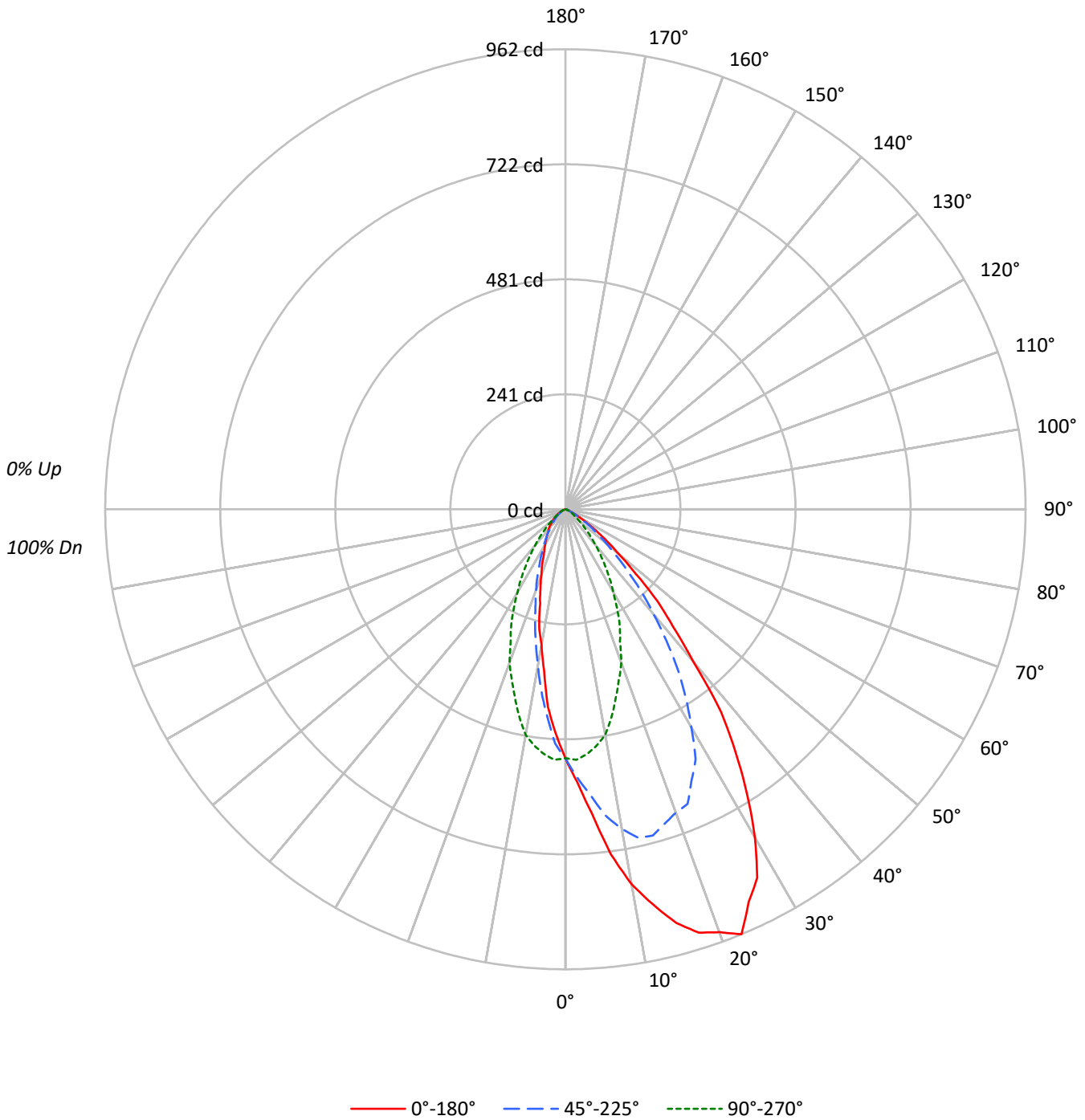
Input Watts (W): 8.3
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT



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°	164356	164356	164356
5°	202418	162923	131670
10°	255130	153585	92407
15°	292775	133246	66623
20°	316205	114721	49296
25°	315658	93617	37524
30°	288702	72886	30773
35°	239151	55547	25519
40°	171765	40643	22465
45°	121732	27821	18532
50°	71427	17832	15327
55°	42885	12166	12166
60°	22925	9031	9031
65°	12627	6799	5828
70°	7201	4801	3601
75°	3172	3172	0
80°	2364	2364	0
85°	0	0	0

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	49.3	7.7
10°-20°	134.2	20.8
20°-30°	175.4	27.2
30°-40°	150.4	23.3
40°-50°	86.0	13.3
50°-60°	35.2	5.5
60°-70°	11.3	1.7
70°-80°	2.4	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°	358.9	55.7
0°-40°	509.3	79.0
0°-60°	630.5	97.8
0°-90°	644.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	644.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	520	520	520	520	520	
5°	639	600	514	435	415	66
15°	896	706	408	245	204	253
25°	906	624	269	128	108	415
35°	620	410	144	68	66	383
45°	273	186	62	34	42	207
55°	78	64	22	16	22	74
65°	17	14	9	6	8	18
75°	3	3	3	1	0	4
85°	0	0	0	0	0	1
90°	0	0	0	0	0	

TEST NUMBER: P601179

CATALOG NUMBER: ML406AWW9FS1E - TIR4D25AWW - TL45R6G_ TL46S6G_ 4000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	520.5	520.5	520.5	520.5	520.5	520.5	520.5	520.5	520.5	520.5	520.5
2.5°	571.1	582.8	578.9	585.4	584.1	572.4	560.7	542.6	524.4	514.0	490.6
5°	638.6	652.9	663.3	655.5	651.6	642.5	599.7	559.4	514.0	468.6	434.8
7.5°	726.9	723.0	734.7	711.3	712.6	708.7	646.4	568.5	498.4	432.2	384.2
10°	795.7	784.0	795.7	787.9	772.3	754.1	678.8	564.6	479.0	395.9	331.0
12.5°	846.3	861.9	861.9	843.7	828.1	807.3	703.5	562.0	445.2	351.8	285.6
15°	895.6	900.8	891.7	877.4	861.9	819.0	706.1	545.2	407.6	308.9	245.3
17.5°	928.1	929.4	925.5	912.5	890.4	864.5	689.2	529.6	372.5	275.2	206.4
20°	941.0	930.7	929.4	906.0	886.5	863.2	675.0	491.9	341.4	234.9	179.1
22.5°	961.8	937.1	937.1	913.8	873.5	869.6	667.2	449.1	298.5	201.2	153.2
25°	906.0	902.1	909.9	877.4	846.3	839.8	624.3	416.7	268.7	173.9	128.5
27.5°	868.4	858.0	847.6	826.8	797.0	781.4	589.3	375.1	233.6	145.4	109.0
30°	791.8	791.8	778.8	768.4	728.2	716.5	527.0	336.2	199.9	124.6	90.9
32.5°	707.4	695.7	697.0	685.3	660.7	651.6	468.6	293.3	172.6	101.2	79.2
35°	620.4	607.5	601.0	591.9	588.0	559.4	410.2	253.1	144.1	88.3	67.5
37.5°	534.8	521.8	516.6	502.3	481.6	475.1	346.6	210.3	120.7	72.7	55.8
40°	416.7	416.7	415.4	399.8	393.3	389.4	286.9	175.2	98.6	58.4	48.0
42.5°	332.3	336.2	333.6	327.1	312.8	310.2	238.8	142.8	80.5	49.3	40.2
45°	272.6	260.9	258.3	257.0	249.2	247.9	185.6	112.9	62.3	40.2	33.7
47.5°	199.9	198.6	201.2	194.7	185.6	193.4	146.7	85.7	49.3	32.4	28.6
50°	145.4	148.0	148.0	141.5	138.9	141.5	112.9	64.9	36.3	26.0	24.7
52.5°	109.0	107.7	106.4	107.7	106.4	106.4	84.4	48.0	28.6	20.8	19.5
55°	77.9	77.9	76.6	79.2	80.5	77.9	63.6	35.0	22.1	16.9	15.6
57.5°	54.5	54.5	51.9	54.5	54.5	57.1	45.4	26.0	18.2	13.0	13.0
60°	36.3	36.3	36.3	37.6	38.9	38.9	31.2	18.2	14.3	10.4	10.4
62.5°	24.7	24.7	24.7	26.0	26.0	28.6	22.1	14.3	11.7	9.1	7.8
65°	16.9	16.9	16.9	16.9	18.2	18.2	14.3	10.4	9.1	7.8	6.5
67.5°	10.4	11.7	10.4	11.7	11.7	11.7	9.1	7.8	6.5	5.2	3.9
70°	7.8	7.8	7.8	7.8	7.8	7.8	6.5	6.5	5.2	3.9	2.6
72.5°	5.2	5.2	5.2	5.2	5.2	5.2	3.9	3.9	3.9	2.6	2.6
75°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.3	1.3
77.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.0
80°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.0	0.0
82.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	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°	520.5	520.5
2.5°	477.7	468.6
5°	405.0	415.4
7.5°	353.1	340.1
10°	295.9	288.2
12.5°	257.0	253.1
15°	212.9	203.8
17.5°	183.0	173.9
20°	153.2	146.7
22.5°	131.1	127.2
25°	112.9	107.7
27.5°	97.3	94.8
30°	84.4	84.4
32.5°	72.7	75.3
35°	64.9	66.2
37.5°	55.8	58.4
40°	51.9	54.5
42.5°	44.1	49.3
45°	37.6	41.5
47.5°	32.4	36.3
50°	27.3	31.2
52.5°	24.7	27.3
55°	20.8	22.1
57.5°	16.9	18.2
60°	13.0	14.3
62.5°	10.4	11.7
65°	7.8	7.8
67.5°	5.2	6.5
70°	2.6	3.9
72.5°	1.3	1.3
75°	1.3	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)