

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: P601331

Luminaire Tested: **ML4DM06AWW9FS1E - TIR4D25AWW - TL45R6G\_ TL46S6G\_ 3500K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601331  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML4DM06AWW9FS1E - TIR4D25AWW - TL45R6G\_ TL46S6G\_ 3500K  
 Description: DIRECT MOUNT, 25D WW OPTIC, LINEAR SPREAD LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 90CRI / 3500K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 647.4 lumens  
 Efficiency: N/A  
 Efficacy: 78.0 lumens/watt  
 Spacing Criteria (0/90/45): 1.21 / 0.78 / 1  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

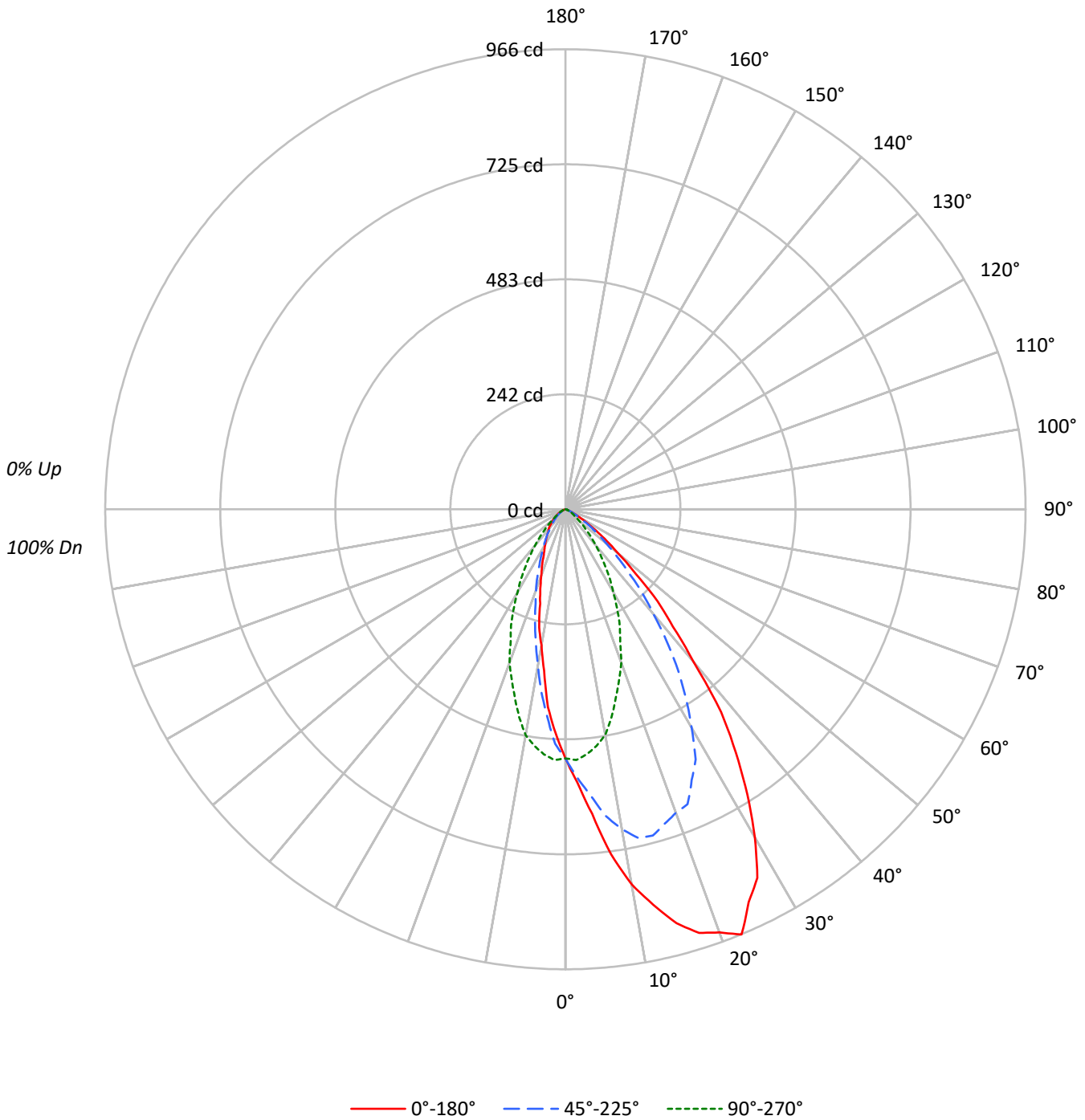
Input Watts (W): 8.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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	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	100	96	96	96	92	92	92	88	88	88	84	84	84	
1	113	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92	92	91	89	87	85	83	83	82	80	78	76	76	74	74	
2	106	100	96	92	104	99	95	91	95	92	89	92	90	87	90	87	85	83	83	82	80	78	76	76	74	74	72	70	68	66	64	64	
3	100	92	87	82	98	91	86	81	88	84	80	86	82	79	83	80	78	76	76	74	72	70	68	66	64	64	62	60	58	56	54	54	
4	94	85	79	74	92	84	78	73	82	76	72	79	75	72	78	74	71	69	74	69	65	63	61	59	57	55	53	51	49	47	45	43	43
5	88	78	72	67	86	77	71	67	76	70	66	74	69	65	72	68	65	63	72	68	65	63	61	59	57	55	53	51	49	47	45	43	43
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	58	72	68	65	63	61	59	57	55	53	51	49	47	45	43	43
7	78	68	61	56	77	67	60	56	65	60	55	64	59	55	63	58	55	54	72	68	65	63	61	59	57	55	53	51	49	47	45	43	43
8	74	63	56	52	72	62	56	51	61	55	51	60	55	51	59	54	51	50	72	68	65	63	61	59	57	55	53	51	49	47	45	43	43
9	70	59	52	48	68	58	52	48	57	52	47	56	51	47	55	51	47	46	72	68	65	63	61	59	57	55	53	51	49	47	45	43	43
10	66	55	49	44	65	55	48	44	54	48	44	53	48	44	52	47	44	43	72	68	65	63	61	59	57	55	53	51	49	47	45	43	43

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	165145	165145	165145
5°	203369	163684	132272
10°	256317	154290	92824
15°	294181	133867	66950
20°	317717	115258	49531
25°	317156	94070	37698
30°	290051	73215	30919
35°	240307	55817	25634
40°	172548	40849	22589
45°	122313	27955	18622
50°	71771	17930	15376
55°	43051	12222	12222
60°	23051	9031	9031
65°	12702	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°	49.5	7.7
10°-20°	134.8	20.8
20°-30°	176.2	27.2
30°-40°	151.1	23.3
40°-50°	86.4	13.4
50°-60°	35.3	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°	360.6	55.7
0°-40°	511.7	79.0
0°-60°	633.5	97.8
0°-90°	647.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	647.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	523	523	523	523	523	
5°	642	602	516	437	417	67
15°	900	710	410	246	205	254
25°	910	627	270	129	108	417
35°	623	412	145	68	66	385
45°	274	186	63	34	42	208
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	

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	45°	67.5°	90°	112.5°	135°
0°	523.0	523.0	523.0	523.0	523.0	523.0	523.0	523.0	523.0	523.0	523.0
2.5°	573.8	585.6	581.6	588.2	586.9	575.1	563.4	545.1	526.9	516.4	493.0
5°	641.6	656.0	666.4	658.6	654.7	645.6	602.5	562.1	516.4	470.8	436.9
7.5°	730.3	726.4	738.1	714.7	716.0	712.1	649.5	571.2	500.8	434.3	386.0
10°	799.4	787.7	799.4	791.6	776.0	757.7	682.1	567.3	481.2	397.8	332.6
12.5°	850.3	866.0	866.0	847.7	832.0	811.2	706.8	564.7	447.3	353.4	286.9
15°	899.9	905.1	895.9	881.6	866.0	822.9	709.5	547.7	409.5	310.4	246.5
17.5°	932.5	933.8	929.9	916.8	894.6	868.6	692.5	532.1	374.3	276.5	207.4
20°	945.5	935.1	933.8	910.3	890.7	867.3	678.2	494.3	343.0	236.0	180.0
22.5°	966.4	941.6	941.6	918.1	877.7	873.8	670.3	451.2	300.0	202.1	153.9
25°	910.3	906.4	914.2	881.6	850.3	843.8	627.3	418.6	270.0	174.8	129.1
27.5°	872.5	862.0	851.6	830.7	800.7	785.1	592.1	376.9	234.7	146.1	109.5
30°	795.5	795.5	782.5	772.1	731.6	719.9	529.5	337.8	200.8	125.2	91.3
32.5°	710.8	699.0	700.3	688.6	663.8	654.7	470.8	294.7	173.5	101.7	79.6
35°	623.4	610.3	603.8	594.7	590.8	562.1	412.1	254.3	144.8	88.7	67.8
37.5°	537.3	524.3	519.0	504.7	483.8	477.3	348.2	211.3	121.3	73.0	56.1
40°	418.6	418.6	417.3	401.7	395.2	391.2	288.2	176.1	99.1	58.7	48.3
42.5°	333.9	337.8	335.2	328.6	314.3	311.7	240.0	143.5	80.9	49.6	40.4
45°	273.9	262.1	259.5	258.2	250.4	249.1	186.5	113.5	62.6	40.4	33.9
47.5°	200.8	199.5	202.1	195.6	186.5	194.3	147.4	86.1	49.6	32.6	28.7
50°	146.1	148.7	148.7	142.2	139.5	142.2	113.5	65.2	36.5	26.1	24.8
52.5°	109.5	108.2	106.9	108.2	106.9	106.9	84.8	48.3	28.7	20.9	19.6
55°	78.2	78.2	76.9	79.6	80.9	78.2	63.9	35.2	22.2	17.0	15.6
57.5°	54.8	54.8	52.2	54.8	54.8	57.4	45.6	26.1	18.3	13.0	13.0
60°	36.5	36.5	36.5	37.8	39.1	39.1	31.3	18.3	14.3	10.4	10.4
62.5°	24.8	24.8	24.8	26.1	26.1	28.7	22.2	14.3	11.7	9.1	7.8
65°	17.0	17.0	17.0	17.0	18.3	18.3	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°	523.0	523.0
2.5°	479.9	470.8
5°	406.9	417.3
7.5°	354.7	341.7
10°	297.3	289.5
12.5°	258.2	254.3
15°	213.9	204.8
17.5°	183.9	174.8
20°	153.9	147.4
22.5°	131.7	127.8
25°	113.5	108.2
27.5°	97.8	95.2
30°	84.8	84.8
32.5°	73.0	75.6
35°	65.2	66.5
37.5°	56.1	58.7
40°	52.2	54.8
42.5°	44.3	49.6
45°	37.8	41.7
47.5°	32.6	36.5
50°	27.4	31.3
52.5°	24.8	27.4
55°	20.9	22.2
57.5°	17.0	18.3
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)