

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: P601238

Luminaire Tested: **ML408LSAWW95FS1E - TIR4D25AWW - TL43R2G\_ TL44S2G\_ 5000K**

Issue Date: 7/29/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P601238  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Issue Date: 7/29/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: HALO  
 Catalog Number: ML408LSAWW95FS1E - TIR4D25AWW - TL43R2G\_ TL44S2G\_ 5000K  
 Description: RETROFIT, 25D WW OPTIC, DIFFUSE CLEAR LENS TRIM  
 Light Source: (1) SELECTABLE LUMEN LED 95CRI / 5000K CCT  
 Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 761.8 lumens  
 Efficiency: N/A  
 Efficacy: 74.0 lumens/watt  
 Spacing Criteria (0/90/45): 1.33 / 0.62 / 0.83  
 Luminous Opening: Circular (Dia: 0.21' x H: 0')  
 CIE Type: Direct

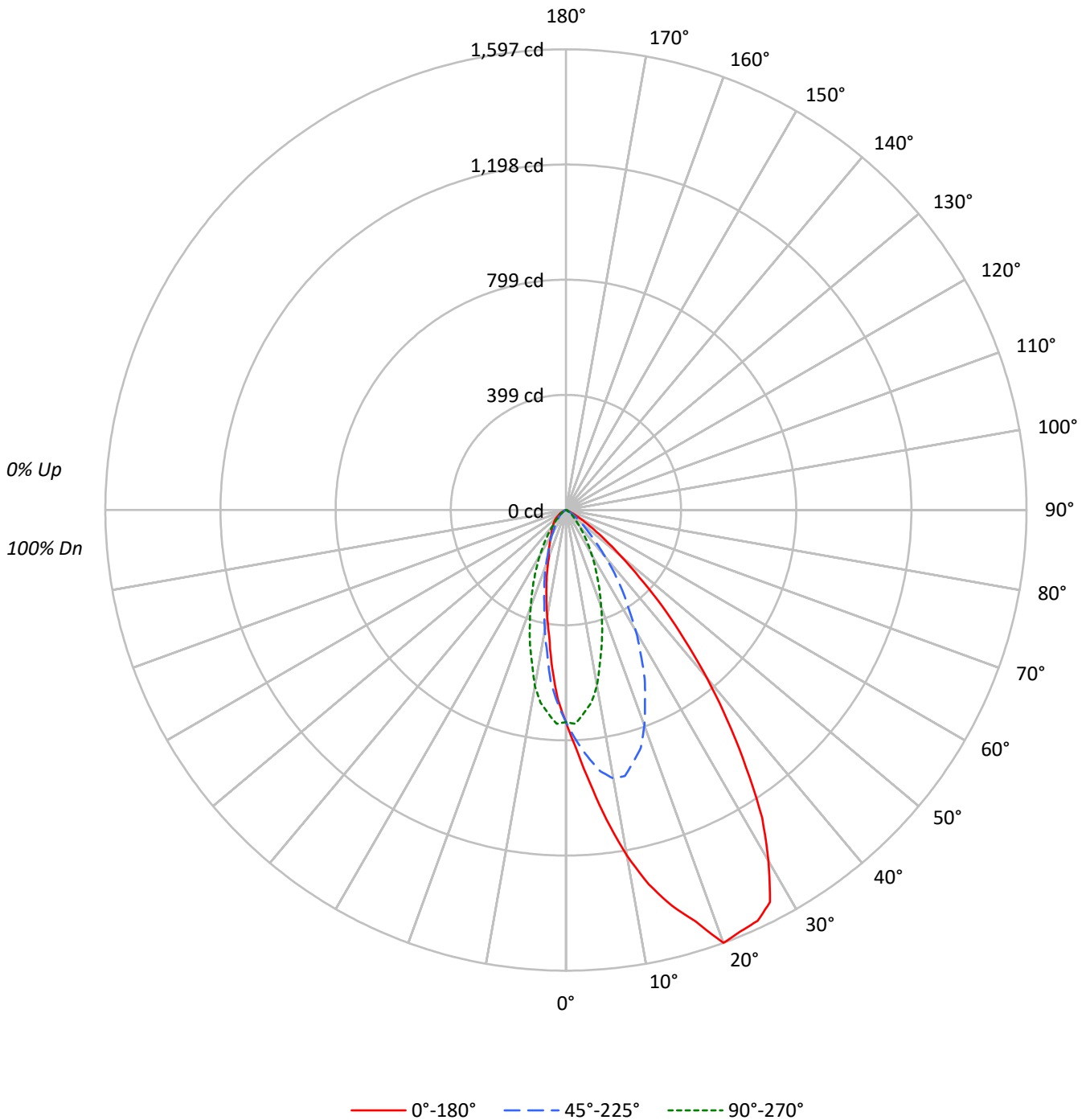
Input Watts (W): 10.3  
 Input Voltage (V): NR  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: NR  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 25 FT



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	98	97	97	95	94	92	92	92	85					
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	97	95	94	92	92	85	85	86	85	85	85	85	85	85				
2	107	101	97	93	104	100	96	92	96	93	90	93	91	88	91	88	86	85	85	85	85	85	85	85	85	85	85	85				
3	101	94	88	84	99	92	87	83	89	85	82	87	83	80	85	82	79	78	78	78	78	78	78	78	78	78	78	78				
4	95	87	81	76	93	85	80	75	83	78	75	81	77	74	79	76	73	71	71	71	71	71	71	71	71	71	71	71				
5	89	80	74	69	88	79	73	69	78	72	68	76	71	68	74	70	67	65	65	65	65	65	65	65	65	65	65	65				
6	84	75	68	64	83	74	68	63	72	67	63	71	66	62	70	65	62	60	60	60	60	60	60	60	60	60	60	60				
7	80	70	63	59	78	69	63	58	68	62	58	66	62	58	65	61	57	56	56	56	56	56	56	56	56	56	56	56				
8	76	65	59	54	74	65	58	54	64	58	54	62	57	54	61	57	53	52	52	52	52	52	52	52	52	52	52	52				
9	72	61	55	51	70	61	55	50	60	54	50	59	54	50	58	53	50	48	48	48	48	48	48	48	48	48	48	48				
10	68	58	51	47	67	57	51	47	56	51	47	55	50	47	55	50	47	45	45	45	45	45	45	45	45	45	45	45				

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

	0°	90°	180°
0°	232119	232119	232119
5°	300235	224226	173288
10°	389862	198506	119533
15°	464237	157176	85257
20°	536506	119526	57562
25°	547559	89959	47279
30°	512028	65339	36972
35°	419940	44176	32997
40°	313315	28772	28772
45°	211178	19425	25275
50°	123597	14246	22008
55°	65292	10130	17396
60°	31640	5810	13325
65°	12777	3960	8891
70°	6093	2400	4893
75°	3172	1586	0
80°	2364	2364	0
85°	0	0	0

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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	68.3	9.0
10°-20°	176.7	23.2
20°-30°	216.4	28.4
30°-40°	169.6	22.3
40°-50°	87.4	11.5
50°-60°	33.2	4.4
60°-70°	8.5	1.1
70°-80°	1.7	0.2
80°-90°	0.1	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°	461.4	60.6
0°-40°	631.0	82.8
0°-60°	751.5	98.7
0°-90°	761.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	761.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	735	735	735	735	735	
5°	947	858	707	599	547	99
15°	1420	904	481	288	261	406
25°	1572	646	258	134	136	714
35°	1089	342	115	63	86	676
45°	473	119	44	34	57	368
55°	119	37	18	16	32	115
65°	17	7	5	5	12	21
75°	3	1	1	1	0	3
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°	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1	735.1
2.5°	828.6	824.7	845.7	815.4	795.7	822.0	798.3	770.6	741.7	692.9	667.9
5°	947.2	949.8	953.8	944.5	940.6	937.9	857.6	782.5	707.4	633.6	599.4
7.5°	1082.9	1057.8	1073.6	1038.1	1044.6	1026.2	912.9	770.6	673.2	578.3	498.0
10°	1215.9	1188.2	1201.4	1168.5	1160.6	1144.8	944.5	739.0	619.1	491.4	422.9
12.5°	1329.2	1317.3	1304.2	1259.4	1243.6	1200.1	944.5	696.9	542.7	424.2	345.1
15°	1420.1	1408.2	1393.7	1335.8	1287.0	1248.8	903.7	637.6	480.8	363.6	288.5
17.5°	1495.2	1449.1	1450.4	1367.4	1325.2	1275.2	864.2	577.0	416.3	304.3	245.0
20°	1596.6	1512.3	1497.8	1409.6	1330.5	1275.2	794.4	511.1	355.7	256.9	201.6
22.5°	1580.8	1505.7	1522.8	1392.4	1308.1	1285.7	716.6	441.3	305.6	216.0	162.0
25°	1571.6	1517.6	1488.6	1349.0	1247.5	1176.4	645.5	386.0	258.2	177.8	134.4
27.5°	1532.1	1450.4	1406.9	1266.0	1154.0	1096.0	561.2	326.7	216.0	141.0	113.3
30°	1404.3	1345.0	1298.9	1151.4	1032.8	977.5	486.1	271.4	179.2	115.9	89.6
32.5°	1266.0	1214.6	1143.4	1022.3	886.6	832.6	403.1	231.9	146.2	92.2	75.1
35°	1089.4	1047.3	980.1	857.6	727.2	703.5	342.5	185.7	114.6	73.8	63.2
37.5°	918.2	881.3	812.8	702.1	600.7	566.5	276.6	148.9	92.2	60.6	54.0
40°	760.1	716.6	671.8	563.8	480.8	443.9	212.1	115.9	69.8	48.7	46.1
42.5°	604.7	578.3	529.6	450.5	368.9	345.1	158.1	86.9	55.3	40.8	39.5
45°	472.9	445.3	399.2	346.5	278.0	259.5	118.6	67.2	43.5	32.9	34.3
47.5°	345.1	332.0	301.7	256.9	212.1	191.0	89.6	52.7	34.3	27.7	29.0
50°	251.6	238.4	223.9	183.1	147.5	142.3	67.2	40.8	29.0	22.4	23.7
52.5°	173.9	172.6	156.8	130.4	108.0	98.8	51.4	31.6	23.7	18.4	19.8
55°	118.6	117.2	106.7	90.9	76.4	69.8	36.9	23.7	18.4	14.5	15.8
57.5°	76.4	77.7	71.1	61.9	50.1	46.1	25.0	17.1	13.2	10.5	11.9
60°	50.1	50.1	43.5	39.5	31.6	29.0	17.1	11.9	9.2	7.9	9.2
62.5°	30.3	31.6	27.7	22.4	19.8	17.1	10.5	7.9	6.6	5.3	6.6
65°	17.1	18.4	15.8	13.2	11.9	10.5	6.6	5.3	5.3	4.0	5.3
67.5°	10.5	10.5	9.2	7.9	6.6	6.6	4.0	4.0	4.0	4.0	4.0
70°	6.6	6.6	5.3	5.3	4.0	4.0	2.6	4.0	2.6	2.6	2.6
72.5°	4.0	4.0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.3	1.3
75°	2.6	2.6	2.6	2.6	1.3	1.3	1.3	1.3	1.3	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°	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°	735.1	735.1
2.5°	652.1	654.7
5°	562.5	546.7
7.5°	467.7	442.6
10°	378.1	372.8
12.5°	318.8	312.2
15°	267.4	260.8
17.5°	223.9	212.1
20°	187.1	171.3
22.5°	155.4	156.8
25°	133.1	135.7
27.5°	114.6	117.2
30°	96.2	101.4
32.5°	86.9	94.8
35°	75.1	85.6
37.5°	67.2	77.7
40°	59.3	69.8
42.5°	52.7	63.2
45°	46.1	56.6
47.5°	40.8	51.4
50°	34.3	44.8
52.5°	29.0	38.2
55°	23.7	31.6
57.5°	19.8	26.3
60°	15.8	21.1
62.5°	11.9	15.8
65°	7.9	11.9
67.5°	5.3	7.9
70°	4.0	5.3
72.5°	1.3	2.6
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)