

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P85073

Luminaire Tested: **ELG405835TBZ (50deg Beam-35deg tilt)**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P85073  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (P21166)  
Test Lab: INNOVATION CENTER P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: ELG405835TBZ (50deg Beam-35deg tilt)  
Description: HALO 4 INCH RECESSED FIXTURE WITH ROUND TUSCAN BRONZE TRIM, TUSCAN BRONZE GIMBAL, WIDE UPPER REFLECTOR AND CLEAR LENS .  
---ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING A 500 WATT, NIST TRACEABLE, OMNI-DIRECTIONAL LAB LUMEN STANDARD IN THE GONIOPHOTOMETER WITH TEST DISTANCE OF 28.75 FEET----  
Light Source: (1) SMT LED 3500K  
(1) 221 14 WATTS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: 639 (1 lamp)  
Luminaire Lumens: 638.8 lumens  
Efficiency: 100.0%  
Efficacy: 47.0 lumens/watt  
Spacing Criteria (0/90/45): 2.62 / 0.69 / 1.51  
Luminous Opening: Vertical Cylinder (Dia: 0.33' x H: 0.1')  
CIE Type: Direct

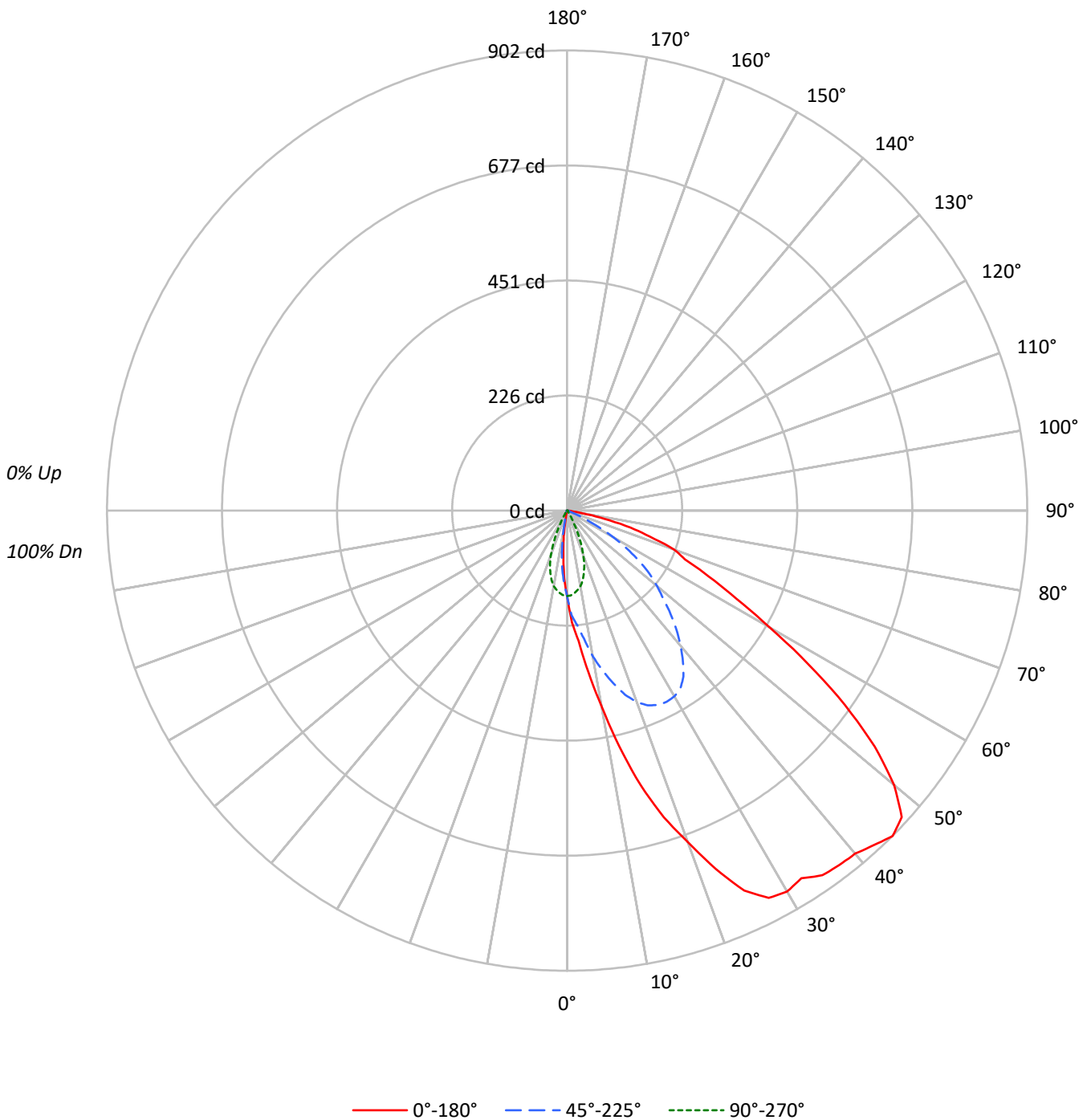
Input Watts (W): 13.6  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 0.11963  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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CATALOG NUMBER: ELG405835TBZ (50deg Beam-35deg tilt)

### 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	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	110	106	102	99	108	104	101	98	100	97	94	96	94	92	92	91	89	87				87
2	101	94	88	82	99	92	86	82	88	84	80	85	81	78	82	79	76	74				74
3	93	83	75	69	90	81	74	69	78	73	68	76	71	66	73	69	65	63				63
4	85	74	65	59	83	72	65	59	70	63	58	68	62	57	66	61	56	54				54
5	78	66	57	51	76	65	57	51	63	56	50	61	54	50	59	53	49	47				47
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41				41
7	67	53	45	39	65	53	45	39	51	44	39	50	43	38	48	42	38	36				36
8	62	49	40	35	60	48	40	34	47	39	34	45	39	34	44	38	34	32				32
9	58	44	36	31	56	44	36	31	43	36	31	42	35	30	41	35	30	28				28
10	54	41	33	28	53	40	33	28	39	32	27	38	32	27	37	32	27	26				26

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

	0°	90°	180°
0°	20673	20673	20673
5°	30684	19446	9980
10°	45765	17684	1479
15°	64593	14654	371
20°	79677	10694	242
25°	94970	5718	127
30°	100613	2089	0
35°	103679	630	0
40°	107059	390	0
45°	113879	265	0
50°	110358	277	0
55°	92544	153	0
60°	68072	163	0
65°	49207	176	0
70°	39311	194	0
75°	25267	216	0
80°	7089	247	0
85°	1108	290	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture	% Lamp
0°-10°	16.3	2.6	2.5
10°-20°	55.3	8.7	8.7
20°-30°	104.9	16.4	16.4
30°-40°	139.8	21.9	21.9
40°-50°	145.4	22.8	22.8
50°-60°	104.6	16.4	16.4
60°-70°	53.7	8.4	8.4
70°-80°	17.1	2.7	2.7
80°-90°	1.7	0.3	0.3
90°-100°	0.0	0.0	0.0
100°-110°	0.0	0.0	0.0
110°-120°	0.0	0.0	0.0
120°-130°	0.0	0.0	0.0
130°-140°	0.0	0.0	0.0
140°-150°	0.0	0.0	0.0
150°-160°	0.0	0.0	0.0
160°-170°	0.0	0.0	0.0
170°-180°	0.0	0.0	0.0
0°-30°	176.5	27.6	27.6
0°-40°	316.3	49.5	49.5
0°-60°	566.3	88.6	88.6
0°-90°	638.8	100.0	100.0
90°-120°	0.0	0.0	0.0
90°-150°	0.0	0.0	0.0
90°-180°	0.0	0.0	0.0
0°-180°	638.8	100.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	168	168	168	168	168	
5°	256	226	162	112	83	29
15°	558	351	126	8	3	161
25°	822	420	50	2	1	374
35°	873	397	5	1	0	546
45°	902	287	2	1	0	685
55°	665	172	1	1	0	587
65°	307	36	1	1	0	314
75°	129	3	1	1	0	132
85°	4	2	1	1	0	9
90°	0	0	0	0	0	



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CATALOG NUMBER: ELG405835TBZ (50deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6
2.5°	219.2	219.2	219.2	218.2	217.1	216.1	214.0	211.9	208.7	205.5	201.3
5°	256.1	255.1	254.0	251.9	247.7	243.5	239.3	235.0	229.8	225.6	221.3
7.5°	320.4	319.4	317.3	312.0	305.7	298.3	288.8	277.2	265.6	253.0	242.4
10°	390.0	390.0	384.7	377.3	366.8	354.1	340.4	324.6	307.8	289.9	270.9
12.5°	474.3	472.2	464.8	453.2	437.4	417.4	394.2	370.0	345.7	321.5	297.2
15°	557.6	554.4	543.9	528.1	505.9	480.6	451.1	419.5	384.7	351.0	318.3
17.5°	630.3	628.2	618.7	601.8	576.5	541.8	503.8	463.8	421.6	378.4	338.3
20°	691.4	688.3	677.7	660.9	636.6	599.7	551.2	501.7	452.2	399.5	351.0
22.5°	759.9	755.7	739.9	716.7	685.1	645.1	590.2	533.3	475.4	413.2	356.3
25°	822.1	819.0	805.3	778.9	738.9	686.2	620.8	554.4	489.1	420.5	357.3
27.5°	855.9	858.0	854.8	841.1	802.1	735.7	651.4	570.2	497.5	422.7	353.1
30°	862.2	868.5	873.8	867.4	839.0	771.5	678.8	586.0	500.7	420.5	345.7
32.5°	854.8	861.1	868.5	858.0	833.7	776.8	693.5	595.5	498.5	413.2	334.1
35°	872.7	871.7	874.8	860.1	826.3	768.4	690.4	589.2	487.0	397.4	319.4
37.5°	875.9	881.1	888.5	873.8	829.5	756.8	674.6	572.3	466.9	373.1	299.3
40°	878.0	884.3	884.3	864.3	814.7	738.9	651.4	544.9	435.3	345.7	276.1
42.5°	889.6	892.7	884.3	850.6	791.6	715.7	616.6	501.7	397.4	317.3	251.9
45°	902.2	903.3	898.0	851.6	772.6	679.8	564.9	450.1	359.4	286.7	230.8
47.5°	889.6	888.5	876.9	817.9	722.0	613.4	499.6	398.4	320.4	255.1	208.7
50°	836.9	827.4	805.3	733.6	635.6	533.3	434.3	348.9	282.5	229.8	179.2
52.5°	759.9	750.5	709.3	630.3	544.9	456.4	372.1	304.6	248.7	203.4	149.7
55°	665.1	650.3	602.9	537.5	460.6	384.7	319.4	267.7	220.3	171.8	119.1
57.5°	560.7	546.0	504.9	448.0	383.7	322.5	277.2	235.0	191.8	139.1	88.5
60°	458.5	445.8	415.3	371.0	320.4	277.2	242.4	204.5	158.1	105.4	55.9
62.5°	373.1	364.7	341.5	308.8	274.0	242.4	211.9	171.8	120.2	69.6	25.3
65°	306.7	300.4	282.5	262.4	239.3	211.9	178.1	131.8	81.2	35.8	8.4
67.5°	249.8	247.7	239.3	225.6	204.5	177.1	137.0	86.4	42.2	12.6	5.3
70°	223.4	219.2	207.6	189.7	165.5	130.7	85.4	45.3	15.8	5.3	4.2
72.5°	169.7	165.5	156.0	139.1	112.8	79.1	43.2	16.9	6.3	4.2	3.2
75°	128.6	124.4	111.7	92.8	65.3	36.9	15.8	5.3	4.2	3.2	3.2
77.5°	74.8	72.7	63.2	45.3	26.4	10.5	5.3	4.2	3.2	3.2	2.1
80°	31.6	27.4	20.0	11.6	6.3	4.2	4.2	3.2	3.2	2.1	2.1
82.5°	8.4	7.4	6.3	5.3	4.2	3.2	3.2	3.2	2.1	2.1	2.1
85°	4.2	4.2	3.2	3.2	3.2	3.2	2.1	2.1	2.1	2.1	2.1
87.5°	3.2	3.2	3.2	3.2	2.1	2.1	2.1	2.1	2.1	2.1	1.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P85073

CATALOG NUMBER: ELG405835TBZ (50deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	112.5°	135°	157.5°
0°	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6	167.6
2.5°	198.2	193.9	189.7	184.5	180.2	175.0	170.7	166.5	149.7	140.2	134.9
5°	217.1	211.9	205.5	198.2	189.7	180.2	170.7	162.3	134.9	111.7	90.6
7.5°	232.9	224.5	216.1	206.6	196.0	183.4	170.7	157.0	115.9	75.9	59.0
10°	254.0	239.3	225.6	211.9	199.2	183.4	167.6	150.7	91.7	47.4	16.9
12.5°	273.0	251.9	232.9	215.0	198.2	180.2	160.2	140.2	66.4	16.9	9.5
15°	288.8	260.3	237.2	215.0	193.9	173.9	150.7	126.5	42.2	8.4	4.2
17.5°	299.3	266.7	239.3	212.9	189.7	165.5	138.1	111.7	21.1	4.2	3.2
20°	306.7	267.7	237.2	209.7	183.4	153.9	123.3	92.8	9.5	4.2	2.1
22.5°	304.6	263.5	230.8	202.4	172.9	140.2	104.3	71.7	5.3	3.2	2.1
25°	299.3	257.2	222.4	192.9	160.2	121.2	82.2	49.5	4.2	2.1	2.1
27.5°	292.0	247.7	212.9	181.3	143.3	100.1	60.1	31.6	3.2	2.1	1.1
30°	283.5	239.3	203.4	167.6	123.3	76.9	41.1	17.9	3.2	2.1	1.1
32.5°	274.0	228.7	190.8	148.6	100.1	55.9	25.3	8.4	2.1	1.1	1.1
35°	260.3	214.0	172.9	125.4	75.9	35.8	12.6	5.3	2.1	1.1	1.1
37.5°	242.4	198.2	151.8	101.2	53.8	20.0	6.3	4.2	2.1	1.1	0.0
40°	224.5	178.1	127.5	76.9	33.7	9.5	4.2	3.2	1.1	1.1	0.0
42.5°	205.5	153.9	103.3	53.8	16.9	5.3	3.2	3.2	1.1	1.1	0.0
45°	181.3	128.6	78.0	31.6	7.4	4.2	3.2	2.1	1.1	1.1	0.0
47.5°	153.9	102.2	51.6	14.8	5.3	3.2	3.2	2.1	1.1	1.1	0.0
50°	126.5	74.8	28.5	7.4	4.2	3.2	2.1	2.1	1.1	1.1	0.0
52.5°	98.0	47.4	11.6	4.2	3.2	2.1	2.1	2.1	1.1	1.1	0.0
55°	68.5	22.1	6.3	3.2	3.2	2.1	2.1	1.1	1.1	1.1	0.0
57.5°	39.0	9.5	4.2	3.2	2.1	2.1	2.1	1.1	1.1	1.1	0.0
60°	14.8	5.3	3.2	3.2	2.1	2.1	1.1	1.1	1.1	1.1	0.0
62.5°	7.4	4.2	3.2	2.1	2.1	1.1	1.1	1.1	1.1	1.1	0.0
65°	4.2	3.2	3.2	2.1	2.1	1.1	1.1	1.1	1.1	1.1	0.0
67.5°	3.2	3.2	2.1	2.1	2.1	1.1	1.1	1.1	1.1	1.1	0.0
70°	3.2	2.1	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
72.5°	2.1	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
75°	2.1	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
77.5°	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
80°	2.1	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	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



TEST NUMBER: P85073

CATALOG NUMBER: ELG405835TBZ (50deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (continued):**

	180°
0°	167.6
2.5°	132.8
5°	83.3
7.5°	50.6
10°	12.6
12.5°	7.4
15°	3.2
17.5°	3.2
20°	2.1
22.5°	1.1
25°	1.1
27.5°	1.1
30°	0.0
32.5°	0.0
35°	0.0
37.5°	0.0
40°	0.0
42.5°	0.0
45°	0.0
47.5°	0.0
50°	0.0
52.5°	0.0
55°	0.0
57.5°	0.0
60°	0.0
62.5°	0.0
65°	0.0
67.5°	0.0
70°	0.0
72.5°	0.0
75°	0.0
77.5°	0.0
80°	0.0
82.5°	0.0
85°	0.0
87.5°	0.0
90°	0.0

(END OF REPORT)