

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: P85074

Luminaire Tested: **ELG405840TBZ (50deg Beam-35deg tilt)**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P85074  
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: ELG405840TBZ (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 4000K  
(1) 221 14 WATTS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: 669 (1 lamp)  
Luminaire Lumens: 669.1 lumens  
Efficiency: 100.0%  
Efficacy: 49.2 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

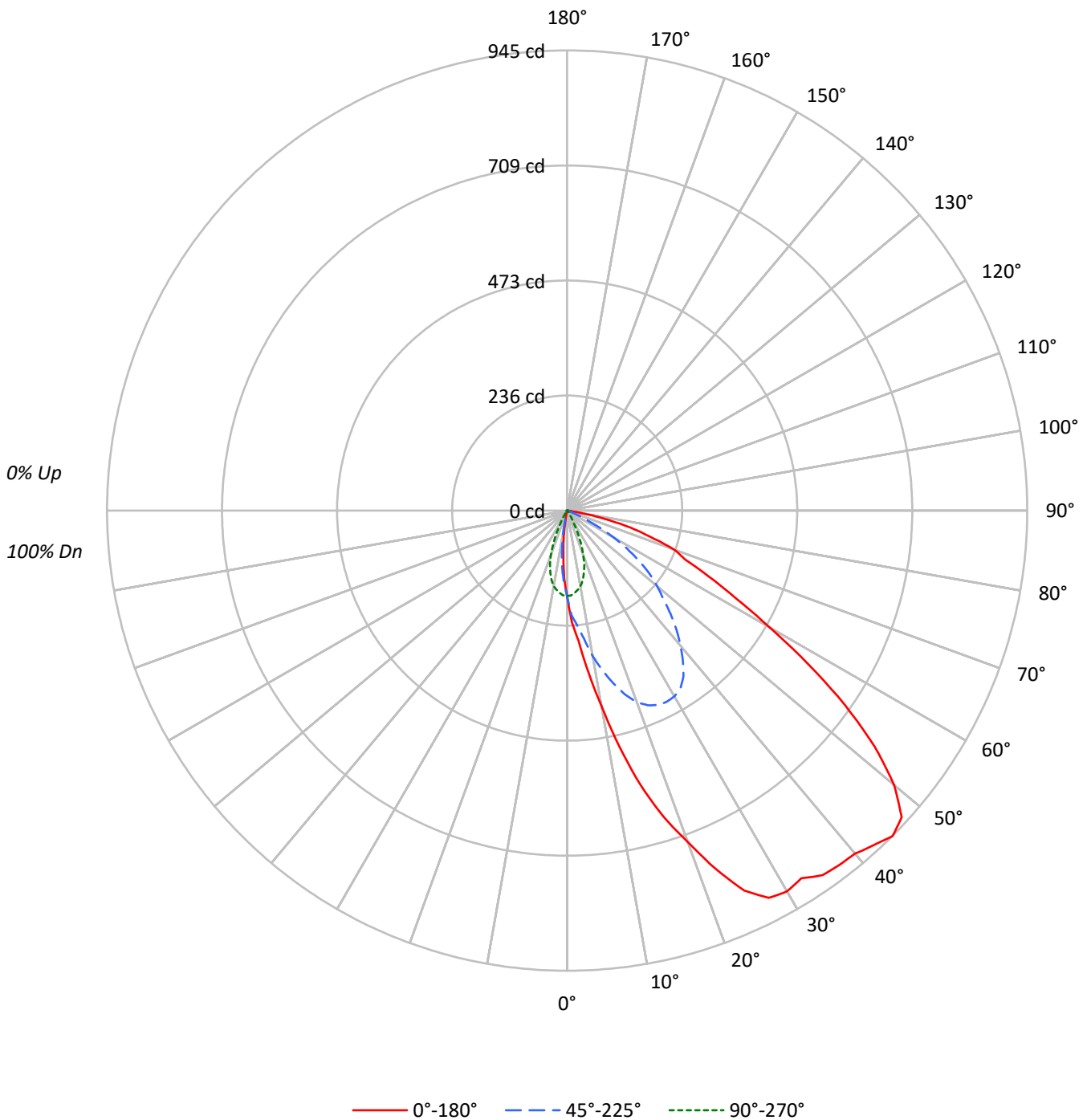
Input Watts (W): 13.6  
Input Voltage (V): NR  
Input Current (Ain): 0.11963  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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CATALOG NUMBER: ELG405840TBZ (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	103	99	108	104	101	98	100	97	95	96	94	92	92	91	89	87				87
2	101	94	88	83	99	92	86	82	88	84	80	85	81	78	82	79	76	74				74
3	93	83	75	69	90	81	74	69	79	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	55	50	59	53	49	47				47
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	48	43	41				41
7	67	53	45	39	65	53	45	39	51	44	39	50	43	38	48	43	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	28	38	32	27	37	32	27	26				26

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

	0°	90°	180°
0°	21659	21659	21659
5°	32146	20368	10448
10°	47947	18529	1561
15°	67662	15349	382
20°	83480	11201	254
25°	99498	5996	127
30°	105397	2194	0
35°	108621	653	0
40°	112156	402	0
45°	119306	278	0
50°	115606	290	0
55°	96941	153	0
60°	71308	163	0
65°	51549	176	0
70°	41194	194	0
75°	26466	216	0
80°	7426	247	0
85°	1160	290	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture	% Lamp
0°-10°	17.1	2.6	2.6
10°-20°	57.9	8.7	8.7
20°-30°	109.9	16.4	16.4
30°-40°	146.4	21.9	21.9
40°-50°	152.4	22.8	22.8
50°-60°	109.5	16.4	16.4
60°-70°	56.2	8.4	8.4
70°-80°	17.9	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°	184.9	27.6	27.6
0°-40°	331.3	49.5	49.5
0°-60°	593.2	88.7	88.7
0°-90°	669.1	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°	669.1	100.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	176	176	176	176	176	
5°	268	236	170	117	87	30
15°	584	368	132	9	3	168
25°	861	441	52	2	1	392
35°	914	416	6	1	0	572
45°	945	300	2	1	0	718
55°	697	180	1	1	0	615
65°	321	38	1	1	0	329
75°	135	3	1	1	0	138
85°	4	2	1	1	0	9
90°	0	0	0	0	0	



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CATALOG NUMBER: ELG405840TBZ (50deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6
2.5°	229.7	229.7	229.7	228.6	227.5	226.4	224.2	221.9	218.6	215.3	210.9
5°	268.3	267.2	266.1	263.9	259.5	255.1	250.7	246.2	240.7	236.3	231.9
7.5°	335.7	334.6	332.4	326.8	320.2	312.5	302.5	290.4	278.3	265.0	254.0
10°	408.6	408.6	403.0	395.3	384.3	371.0	356.7	340.1	322.4	303.7	283.8
12.5°	496.9	494.7	486.9	474.8	458.2	437.3	413.0	387.6	362.2	336.8	311.4
15°	584.1	580.8	569.8	553.2	530.0	503.5	472.6	439.5	403.0	367.7	333.5
17.5°	660.3	658.1	648.2	630.5	604.0	567.6	527.8	485.8	441.7	396.4	354.4
20°	724.4	721.0	710.0	692.3	666.9	628.3	577.5	525.6	473.7	418.5	367.7
22.5°	796.1	791.7	775.1	750.9	717.7	675.8	618.3	558.7	498.0	432.8	373.2
25°	861.3	858.0	843.6	816.0	774.0	718.8	650.4	580.8	512.3	440.6	374.3
27.5°	896.6	898.8	895.5	881.1	840.3	770.7	682.4	597.4	521.2	442.8	369.9
30°	903.2	909.9	915.4	908.8	878.9	808.3	711.1	613.9	524.5	440.6	362.2
32.5°	895.5	902.1	909.9	898.8	873.4	813.8	726.6	623.9	522.3	432.8	350.0
35°	914.3	913.2	916.5	901.0	865.7	805.0	723.2	617.2	510.1	416.3	334.6
37.5°	917.6	923.1	930.8	915.4	869.0	792.8	706.7	599.6	489.2	390.9	313.6
40°	919.8	926.4	926.4	905.4	853.5	774.0	682.4	570.9	456.0	362.2	289.3
42.5°	931.9	935.3	926.4	891.1	829.3	749.7	646.0	525.6	416.3	332.4	263.9
45°	945.2	946.3	940.8	892.2	809.4	712.2	591.8	471.5	376.5	300.3	241.8
47.5°	931.9	930.8	918.7	856.9	756.4	642.6	523.4	417.4	335.7	267.2	218.6
50°	876.7	866.8	843.6	768.5	665.8	558.7	454.9	365.5	295.9	240.7	187.7
52.5°	796.1	786.2	743.1	660.3	570.9	478.1	389.8	319.1	260.6	213.1	156.8
55°	696.7	681.3	631.6	563.1	482.5	403.0	334.6	280.5	230.8	180.0	124.8
57.5°	587.4	572.0	528.9	469.3	401.9	337.9	290.4	246.2	201.0	145.8	92.8
60°	480.3	467.1	435.1	388.7	335.7	290.4	254.0	214.2	165.6	110.4	58.5
62.5°	390.9	382.1	357.8	323.5	287.1	254.0	221.9	180.0	125.9	72.9	26.5
65°	321.3	314.7	295.9	274.9	250.7	221.9	186.6	138.0	85.0	37.5	8.8
67.5°	261.7	259.5	250.7	236.3	214.2	185.5	143.5	90.5	44.2	13.3	5.5
70°	234.1	229.7	217.5	198.8	173.4	136.9	89.4	47.5	16.6	5.5	4.4
72.5°	177.8	173.4	163.4	145.8	118.1	82.8	45.3	17.7	6.6	4.4	3.3
75°	134.7	130.3	117.0	97.2	68.5	38.6	16.6	5.5	4.4	3.3	3.3
77.5°	78.4	76.2	66.3	47.5	27.6	11.0	5.5	4.4	3.3	3.3	2.2
80°	33.1	28.7	21.0	12.1	6.6	4.4	4.4	3.3	3.3	2.2	2.2
82.5°	8.8	7.7	6.6	5.5	4.4	3.3	3.3	3.3	2.2	2.2	2.2
85°	4.4	4.4	3.3	3.3	3.3	3.3	2.2	2.2	2.2	2.2	2.2
87.5°	3.3	3.3	3.3	3.3	2.2	2.2	2.2	2.2	2.2	2.2	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



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**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	112.5°	135°	157.5°
0°	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6	175.6
2.5°	207.6	203.2	198.8	193.2	188.8	183.3	178.9	174.5	156.8	146.9	141.3
5°	227.5	221.9	215.3	207.6	198.8	188.8	178.9	170.0	141.3	117.0	95.0
7.5°	244.0	235.2	226.4	216.4	205.4	192.1	178.9	164.5	121.5	79.5	61.8
10°	266.1	250.7	236.3	221.9	208.7	192.1	175.6	157.9	96.1	49.7	17.7
12.5°	286.0	263.9	244.0	225.3	207.6	188.8	167.8	146.9	69.6	17.7	9.9
15°	302.5	272.7	248.4	225.3	203.2	182.2	157.9	132.5	44.2	8.8	4.4
17.5°	313.6	279.4	250.7	223.0	198.8	173.4	144.6	117.0	22.1	4.4	3.3
20°	321.3	280.5	248.4	219.7	192.1	161.2	129.2	97.2	9.9	4.4	2.2
22.5°	319.1	276.0	241.8	212.0	181.1	146.9	109.3	75.1	5.5	3.3	2.2
25°	313.6	269.4	233.0	202.1	167.8	127.0	86.1	51.9	4.4	2.2	2.2
27.5°	305.9	259.5	223.0	189.9	150.2	104.9	62.9	33.1	3.3	2.2	1.1
30°	297.0	250.7	213.1	175.6	129.2	80.6	43.1	18.8	3.3	2.2	1.1
32.5°	287.1	239.6	199.9	155.7	104.9	58.5	26.5	8.8	2.2	1.1	1.1
35°	272.7	224.2	181.1	131.4	79.5	37.5	13.3	5.5	2.2	1.1	1.1
37.5°	254.0	207.6	159.0	106.0	56.3	21.0	6.6	4.4	2.2	1.1	0.0
40°	235.2	186.6	133.6	80.6	35.3	9.9	4.4	3.3	1.1	1.1	0.0
42.5°	215.3	161.2	108.2	56.3	17.7	5.5	3.3	3.3	1.1	1.1	0.0
45°	189.9	134.7	81.7	33.1	7.7	4.4	3.3	2.2	1.1	1.1	0.0
47.5°	161.2	107.1	54.1	15.5	5.5	3.3	3.3	2.2	1.1	1.1	0.0
50°	132.5	78.4	29.8	7.7	4.4	3.3	2.2	2.2	1.1	1.1	0.0
52.5°	102.7	49.7	12.1	4.4	3.3	2.2	2.2	2.2	1.1	1.1	0.0
55°	71.8	23.2	6.6	3.3	3.3	2.2	2.2	1.1	1.1	1.1	0.0
57.5°	40.9	9.9	4.4	3.3	2.2	2.2	2.2	1.1	1.1	1.1	0.0
60°	15.5	5.5	3.3	3.3	2.2	2.2	1.1	1.1	1.1	1.1	0.0
62.5°	7.7	4.4	3.3	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
65°	4.4	3.3	3.3	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
67.5°	3.3	3.3	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
70°	3.3	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	0.0
72.5°	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
75°	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
77.5°	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
80°	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	2.2	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: P85074

CATALOG NUMBER: ELG405840TBZ (50deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (continued):**

	180°
0°	175.6
2.5°	139.1
5°	87.2
7.5°	53.0
10°	13.3
12.5°	7.7
15°	3.3
17.5°	3.3
20°	2.2
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)