

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: P85068

Luminaire Tested: **ELG405840TBZ (25deg Beam-35deg tilt)**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P85068  
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (P21169)  
Test Lab: INNOVATION CENTER P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: ELG405840TBZ (25deg Beam-35deg tilt)  
Description: HALO 4 INCH RECESSED FIXTURE WITH ROUND TUSCAN BRONZE TRIM,  
TUSCAN BRONZE GIMBAL, NARROW 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: 678 (1 lamp)  
Luminaire Lumens: 678.1 lumens  
Efficiency: 100.0%  
Efficacy: 49.9 lumens/watt  
Spacing Criteria (0/90/45): 2.63 / 0.67 / 1.56  
Luminous Opening: Vertical Cylinder (Dia: 0.33' x H: 0.1')  
CIE Type: Direct

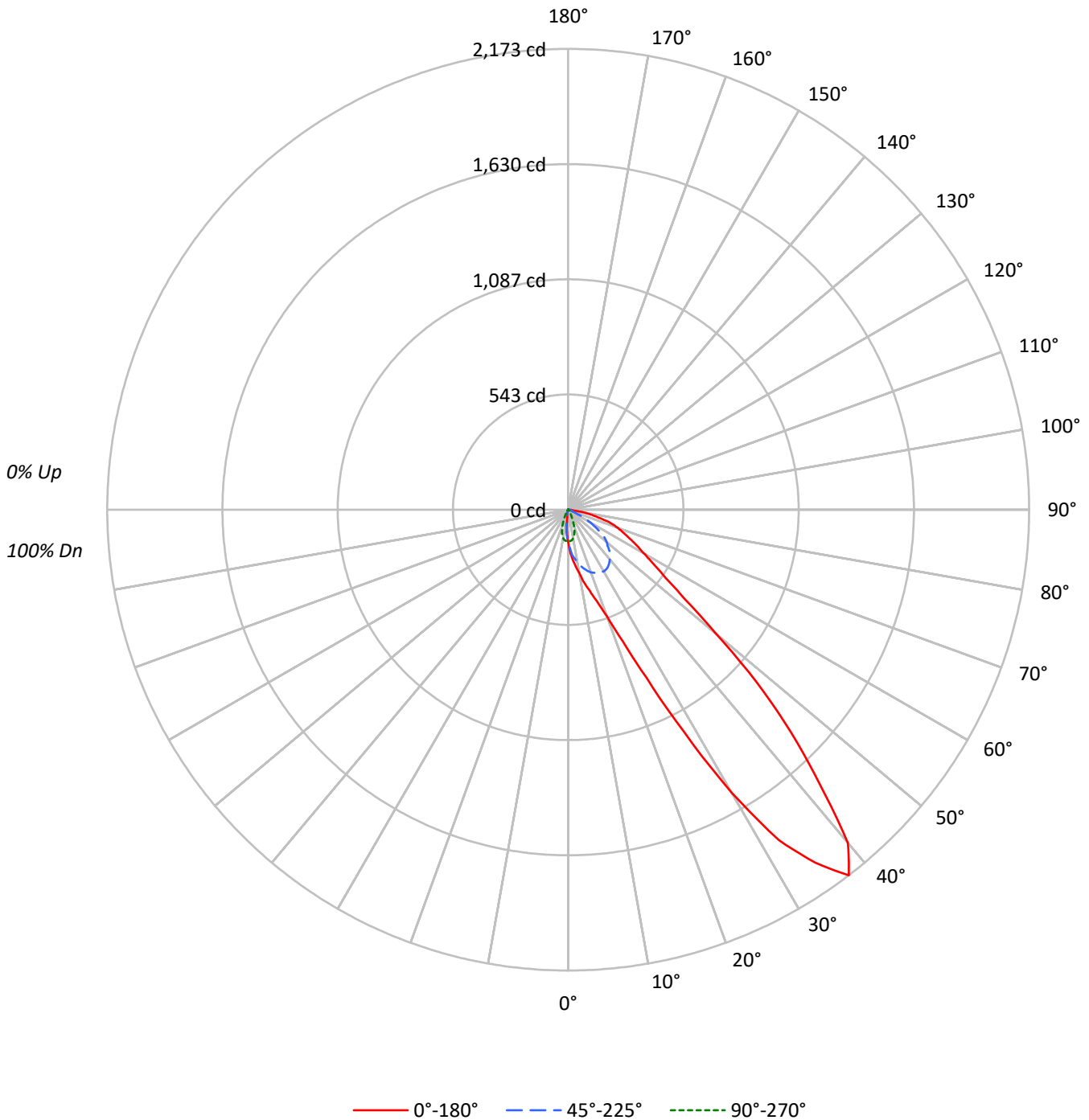
Input Watts (W): 13.6  
Input Voltage (V): NR  
Input Current (Ain): 0.11946  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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CATALOG NUMBER: ELG405840TBZ (25deg 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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	110	106	102	98	107	103	100	97	99	96	94	95	93	91	92	90	88	86
2	101	93	87	81	98	91	85	81	88	83	79	84	80	77	82	78	75	73
3	92	82	74	68	90	81	73	68	78	71	66	75	70	65	72	68	64	62
4	84	73	64	58	82	71	64	57	69	62	57	67	61	56	65	59	55	53
5	77	65	56	50	75	64	55	49	62	54	49	60	53	48	58	52	48	46
6	71	58	49	43	69	57	49	43	55	48	42	54	47	42	52	46	42	40
7	66	52	44	38	64	51	43	37	50	42	37	48	42	37	47	41	37	35
8	61	47	39	33	59	47	39	33	45	38	33	44	37	32	43	37	32	30
9	56	43	35	29	55	42	35	29	41	34	29	40	34	29	39	33	29	27
10	53	39	31	26	51	39	31	26	38	31	26	37	30	26	36	30	26	24

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

	0°	90°	180°
0°	18662	18662	18662
5°	27916	17601	8998
10°	35767	15935	2335
15°	46047	13044	1274
20°	61584	9035	380
25°	101023	4979	0
30°	179485	2322	0
35°	241501	1711	0
40°	250161	1475	0
45°	187454	833	0
50°	119839	145	0
55°	77739	153	0
60°	60990	0	0
65°	51019	0	0
70°	43323	194	0
75°	30808	216	0
80°	16354	0	0
85°	3798	290	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture	% Lamp
0°-10°	14.3	2.1	2.1
10°-20°	44.9	6.6	6.6
20°-30°	96.3	14.2	14.2
30°-40°	176.5	26.0	26.0
40°-50°	162.0	23.9	23.9
50°-60°	97.8	14.4	14.4
60°-70°	58.6	8.6	8.6
70°-80°	23.9	3.5	3.5
80°-90°	3.8	0.6	0.6
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°	155.4	22.9	22.9
0°-40°	331.9	49.0	49.0
0°-60°	591.7	87.3	87.3
0°-90°	678.1	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°	678.1	100.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	151	151	151	151	151	
5°	233	214	147	90	75	24
15°	398	287	113	16	11	118
25°	874	329	43	3	0	448
35°	2033	328	14	1	0	1240
45°	1485	275	7	0	0	1136
55°	559	183	1	0	0	532
65°	318	51	0	0	0	319
75°	157	13	1	0	0	169
85°	14	2	1	1	0	23
90°	0	0	0	0	0	



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CATALOG NUMBER: ELG405840TBZ (25deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3
2.5°	197.7	196.5	195.4	194.3	193.2	191.0	188.8	185.5	182.2	180.0	175.6
5°	233.0	231.9	230.8	229.7	228.6	227.5	225.3	221.9	218.6	214.2	208.7
7.5°	268.3	267.2	266.1	262.8	258.4	252.9	247.3	241.8	237.4	233.0	226.4
10°	304.8	302.5	300.3	295.9	291.5	286.0	280.5	272.7	262.8	252.9	242.9
12.5°	354.4	352.2	347.8	341.2	332.4	322.4	309.2	295.9	283.8	272.7	259.5
15°	397.5	395.3	388.7	380.9	369.9	357.8	342.3	324.6	304.8	287.1	270.5
17.5°	453.8	450.5	441.7	427.3	408.6	389.8	368.8	347.8	325.7	302.5	280.5
20°	534.4	526.7	511.2	488.1	460.4	428.4	396.4	369.9	342.3	314.7	288.2
22.5°	668.0	653.7	621.7	574.2	522.3	475.9	429.5	388.7	354.4	322.4	290.4
25°	874.5	851.3	786.2	700.1	611.7	530.0	467.1	410.8	366.6	329.1	292.6
27.5°	1178.2	1131.8	1013.7	862.4	715.5	594.1	502.4	433.9	376.5	333.5	293.7
30°	1538.1	1459.7	1270.9	1037.9	817.1	650.4	527.8	449.4	384.3	335.7	291.5
32.5°	1847.3	1765.6	1495.1	1184.8	901.0	685.7	540.0	454.9	385.4	333.5	287.1
35°	2032.8	1973.2	1639.7	1267.6	943.0	692.3	536.6	450.5	382.1	327.9	282.7
37.5°	2173.1	2061.5	1675.1	1278.7	937.5	674.7	520.1	437.3	374.3	318.0	273.8
40°	2051.6	1924.6	1576.8	1213.5	882.3	634.9	499.1	419.6	360.0	304.8	261.7
42.5°	1755.7	1659.6	1396.8	1081.0	788.4	580.8	473.7	397.5	340.1	290.4	245.1
45°	1485.1	1405.6	1187.0	914.3	685.7	530.0	440.6	374.3	319.1	274.9	231.9
47.5°	1205.8	1135.1	955.1	760.8	595.2	488.1	408.6	350.0	299.2	251.8	213.1
50°	908.8	864.6	758.6	633.8	525.6	439.5	375.4	322.4	276.0	237.4	184.4
52.5°	693.4	670.2	610.6	538.8	466.0	395.3	342.3	297.0	254.0	214.2	156.8
55°	558.7	546.6	514.6	464.9	405.2	353.3	310.3	270.5	231.9	183.3	128.1
57.5°	477.0	468.2	438.4	400.8	357.8	316.9	281.6	248.4	207.6	152.4	98.3
60°	410.8	403.0	383.2	353.3	319.1	284.9	255.1	221.9	174.5	119.3	65.1
62.5°	363.3	355.6	340.1	314.7	287.1	257.3	231.9	193.2	138.0	85.0	36.4
65°	318.0	312.5	301.4	281.6	258.4	234.1	203.2	155.7	100.5	50.8	19.9
67.5°	279.4	273.8	265.0	250.7	230.8	205.4	165.6	111.5	61.8	26.5	15.5
70°	246.2	242.9	234.1	218.6	197.7	164.5	117.0	69.6	33.1	17.7	13.3
72.5°	212.0	207.6	194.3	176.7	149.1	112.6	70.7	36.4	17.7	15.5	11.0
75°	156.8	154.6	144.6	127.0	100.5	65.1	36.4	18.8	15.5	13.3	8.8
77.5°	114.8	109.3	97.2	78.4	53.0	30.9	17.7	14.4	12.1	9.9	3.3
80°	72.9	67.4	54.1	37.5	23.2	16.6	14.4	13.3	9.9	5.5	2.2
82.5°	21.0	19.9	18.8	16.6	15.5	14.4	13.3	9.9	5.5	3.3	1.1
85°	14.4	14.4	14.4	13.3	13.3	12.1	9.9	5.5	2.2	2.2	1.1
87.5°	13.3	12.1	11.0	11.0	9.9	7.7	4.4	2.2	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



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CATALOG NUMBER: ELG405840TBZ (25deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	112.5°	135°	157.5°
0°	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3	151.3
2.5°	171.2	167.8	164.5	160.1	157.9	154.6	152.4	149.1	141.3	129.2	119.3
5°	201.0	192.1	183.3	174.5	166.7	159.0	153.5	146.9	121.5	90.5	79.5
7.5°	220.8	212.0	202.1	189.9	176.7	163.4	152.4	143.5	97.2	65.1	38.6
10°	234.1	223.0	213.1	198.8	182.2	164.5	150.2	135.8	76.2	29.8	21.0
12.5°	246.2	233.0	218.6	203.2	184.4	162.3	142.4	124.8	54.1	19.9	15.5
15°	256.2	238.5	221.9	203.2	182.2	156.8	132.5	112.6	32.0	15.5	13.3
17.5°	261.7	244.0	223.0	202.1	178.9	149.1	121.5	96.1	21.0	12.1	11.0
20°	266.1	245.1	224.2	199.9	172.3	139.1	108.2	78.4	17.7	11.0	6.6
22.5°	266.1	244.0	221.9	195.4	163.4	124.8	89.4	59.6	15.5	7.7	2.2
25°	265.0	241.8	217.5	187.7	150.2	107.1	71.8	43.1	13.3	3.3	1.1
27.5°	263.9	237.4	210.9	175.6	132.5	87.2	53.0	29.8	12.1	2.2	1.1
30°	260.6	233.0	202.1	161.2	112.6	67.4	37.5	19.9	9.9	1.1	1.1
32.5°	256.2	224.2	188.8	140.2	89.4	49.7	25.4	16.6	4.4	1.1	1.1
35°	248.4	212.0	170.0	117.0	68.5	34.2	18.8	14.4	4.4	1.1	1.1
37.5°	235.2	196.5	146.9	95.0	49.7	23.2	16.6	13.3	2.2	1.1	1.1
40°	221.9	176.7	123.7	71.8	33.1	16.6	14.4	12.1	2.2	1.1	1.1
42.5°	205.4	151.3	99.4	50.8	21.0	14.4	13.3	9.9	1.1	0.0	0.0
45°	181.1	128.1	76.2	32.0	16.6	13.3	11.0	6.6	1.1	0.0	1.1
47.5°	157.9	103.8	53.0	19.9	15.5	12.1	9.9	3.3	2.2	1.1	1.1
50°	130.3	77.3	30.9	16.6	13.3	9.9	4.4	1.1	1.1	1.1	0.0
52.5°	102.7	50.8	19.9	13.3	12.1	6.6	2.2	1.1	1.1	0.0	0.0
55°	75.1	27.6	15.5	12.1	8.8	3.3	1.1	1.1	1.1	0.0	0.0
57.5°	46.4	19.9	14.4	11.0	6.6	2.2	1.1	1.1	2.2	1.1	1.1
60°	23.2	14.4	12.1	7.7	2.2	1.1	1.1	0.0	1.1	0.0	0.0
62.5°	16.6	13.3	9.9	4.4	2.2	1.1	1.1	1.1	1.1	0.0	0.0
65°	14.4	11.0	6.6	2.2	1.1	1.1	1.1	0.0	1.1	0.0	0.0
67.5°	13.3	8.8	3.3	1.1	1.1	1.1	1.1	0.0	1.1	0.0	1.1
70°	11.0	4.4	2.2	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0
72.5°	7.7	2.2	1.1	1.1	1.1	1.1	1.1	0.0	1.1	0.0	0.0
75°	3.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	1.1
77.5°	1.1	1.1	1.1	0.0	1.1	0.0	1.1	0.0	1.1	0.0	0.0
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	1.1	0.0	0.0
82.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	1.1
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87.5°	1.1	1.1	1.1	1.1	1.1	0.0	1.1	0.0	1.1	1.1	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: P85068

CATALOG NUMBER: ELG405840TBZ (25deg Beam-35deg tilt)

**CANDELA DISTRIBUTION (continued):**

	180°
0°	151.3
2.5°	114.8
5°	75.1
7.5°	28.7
10°	19.9
12.5°	14.4
15°	11.0
17.5°	8.8
20°	3.3
22.5°	1.1
25°	0.0
27.5°	0.0
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)