

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: P85070

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

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P85070
REPORT IS SCALED FROM IESNA LM-79-08 TEST DATA (P21164)
Test Lab: INNOVATION CENTER P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: ELG405835TBZ (35deg Beam-35deg tilt)
Description: HALO 4 INCH RECESSED FIXTURE WITH ROUND TUSCAN BRONZE TRIM, TUSCAN BRONZE GIMBAL, MEDIUM 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: 638 (1 lamp)
Luminaire Lumens: 638.3 lumens
Efficiency: 100.0%
Efficacy: 46.9 lumens/watt
Spacing Criteria (0/90/45): 2.5 / 0.7 / 1.45
Luminous Opening: Vertical Cylinder (Dia: 0.33' x H: 0.1')
CIE Type: Direct

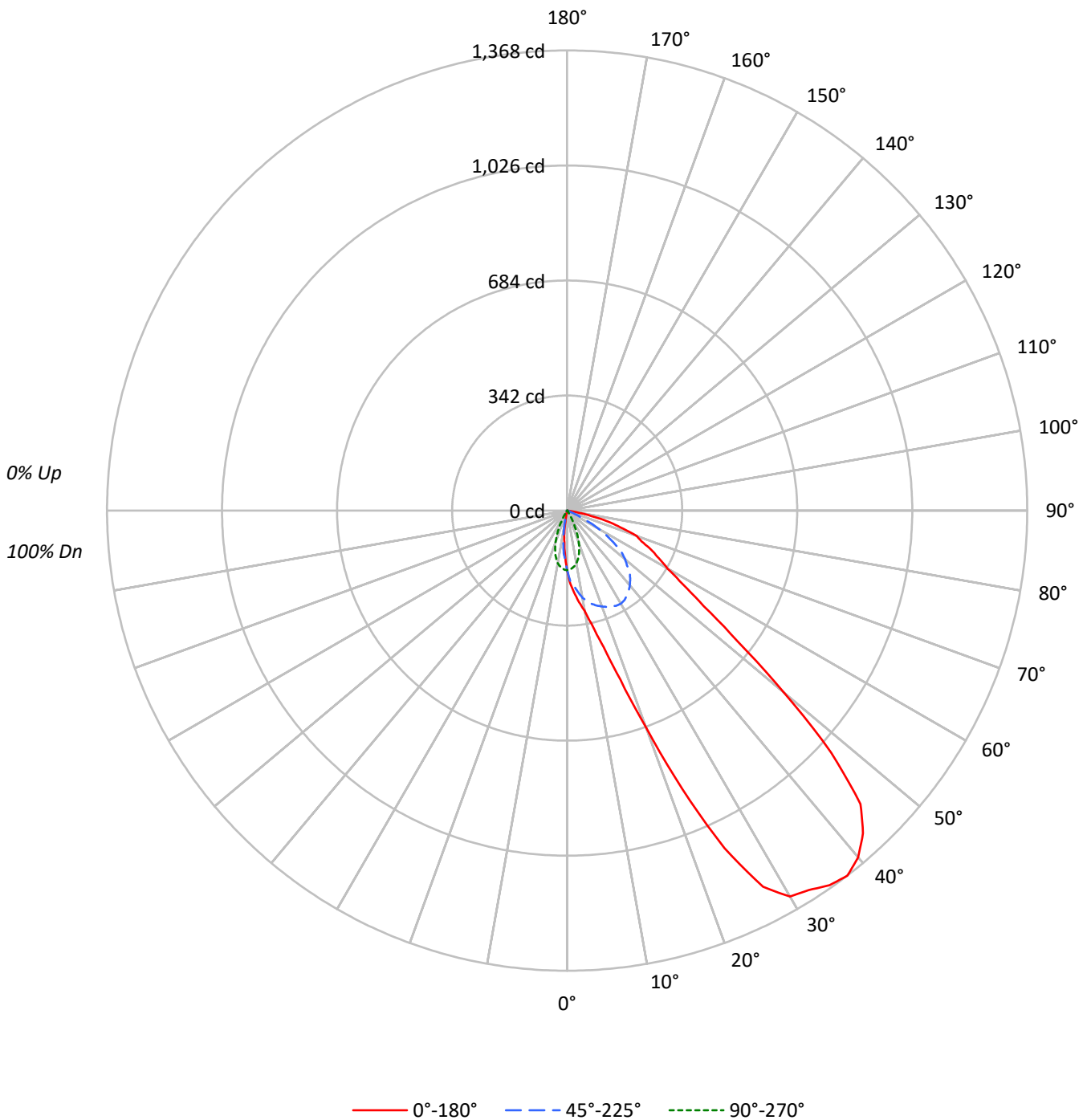
Input Watts (W): 13.6
Input Voltage (V): NR
Input Current (Ain): 0.11939
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: ELG405835TBZ (35deg 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	111	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	94	88	83	99	92	87	82	89	84	80	86	82	78	83	80	77	75
3	93	84	76	70	91	82	75	70	79	73	68	76	71	67	74	70	66	64
4	85	74	66	60	83	73	65	60	71	64	59	68	63	58	66	61	57	55
5	79	67	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50	48
6	73	60	51	45	71	59	51	45	57	50	45	55	49	44	54	48	44	42
7	67	54	46	40	65	53	45	39	52	44	39	50	44	39	49	43	39	37
8	62	49	41	35	61	48	40	35	47	40	35	46	39	35	45	39	34	32
9	58	45	37	31	57	44	36	31	43	36	31	42	35	31	41	35	31	29
10	54	41	33	28	53	41	33	28	40	33	28	39	32	28	38	32	28	26

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	21845	21845	21845
5°	29426	20584	11370
10°	35626	18681	1854
15°	48711	15627	487
20°	78951	11662	242
25°	127974	6816	127
30°	154606	2579	128
35°	161536	630	0
40°	164124	512	0
45°	155659	404	0
50°	110911	145	0
55°	68931	153	0
60°	51176	163	0
65°	44297	176	0
70°	38572	194	0
75°	24855	216	0
80°	6147	247	0
85°	1108	290	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture	% Lamp
0°-10°	16.1	2.5	2.5
10°-20°	47.7	7.5	7.5
20°-30°	108.3	17.0	17.0
30°-40°	162.0	25.4	25.4
40°-50°	148.7	23.3	23.3
50°-60°	87.0	13.6	13.6
60°-70°	50.2	7.9	7.9
70°-80°	16.8	2.6	2.6
80°-90°	1.6	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°	172.0	27.0	27.0
0°-40°	334.0	52.3	52.4
0°-60°	569.6	89.2	89.3
0°-90°	638.3	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°	638.3	100.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	177	177	177	177	177	
5°	246	222	172	122	95	25
15°	420	288	135	10	4	132
25°	1108	315	59	3	1	503
35°	1360	309	5	1	0	849
45°	1233	264	3	1	0	903
55°	495	173	1	1	0	474
65°	276	35	1	1	0	273
75°	126	4	1	1	0	128
85°	4	2	1	1	0	8
90°	0	0	0	0	0	



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

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1
2.5°	218.2	217.1	217.1	217.1	216.1	215.0	214.0	212.9	210.8	208.7	206.6
5°	245.6	245.6	244.5	242.4	240.3	237.2	234.0	229.8	225.6	222.4	218.2
7.5°	275.1	275.1	274.0	271.9	268.8	265.6	261.4	257.2	250.9	243.5	236.1
10°	303.6	302.5	301.4	298.3	294.1	288.8	283.5	277.2	270.9	263.5	255.1
12.5°	352.0	349.9	345.7	338.3	328.8	317.3	305.7	295.1	285.6	276.1	266.7
15°	420.5	417.4	406.8	392.1	374.2	356.3	337.3	317.3	300.4	287.7	274.0
17.5°	527.0	520.7	504.9	479.6	445.8	409.0	373.1	344.7	317.3	296.2	280.4
20°	685.1	672.5	639.8	592.4	537.5	480.6	421.6	372.1	335.2	303.6	282.5
22.5°	895.9	875.9	821.1	738.9	646.1	557.6	476.4	403.7	349.9	309.9	283.5
25°	1107.8	1088.8	1024.5	912.8	769.4	638.7	527.0	433.2	362.6	315.1	283.5
27.5°	1260.6	1250.0	1201.6	1083.5	905.4	722.0	572.3	458.5	373.1	318.3	284.6
30°	1324.9	1321.7	1294.3	1195.2	1011.8	788.4	605.0	473.2	377.3	319.4	283.5
32.5°	1337.5	1337.5	1310.1	1225.8	1060.3	823.2	616.6	472.2	375.2	316.2	281.4
35°	1359.7	1360.7	1328.0	1232.1	1058.2	814.7	601.8	457.4	366.8	308.8	277.2
37.5°	1368.1	1371.3	1329.1	1217.4	1019.2	773.6	566.0	432.1	352.0	300.4	269.8
40°	1346.0	1330.2	1282.7	1158.4	946.5	706.2	516.5	403.7	329.9	289.9	257.2
42.5°	1301.7	1290.1	1220.5	1064.5	835.8	618.7	463.8	371.0	310.9	277.2	239.3
45°	1233.2	1207.9	1108.8	923.3	703.0	531.2	415.3	338.3	295.1	263.5	224.5
47.5°	1064.5	1034.0	917.0	750.5	587.1	454.3	370.0	312.0	279.3	241.4	207.6
50°	841.1	808.4	716.7	598.7	482.7	392.1	331.0	292.0	260.3	224.5	180.2
52.5°	637.7	615.5	556.5	475.4	401.6	343.6	300.4	271.9	240.3	203.4	150.7
55°	495.4	480.6	441.6	394.2	344.7	305.7	278.3	251.9	217.1	172.9	122.3
57.5°	406.8	397.4	372.1	338.3	305.7	278.3	257.2	229.8	191.8	141.2	89.6
60°	344.7	338.3	322.5	302.5	278.3	258.2	235.0	203.4	159.2	107.5	55.9
62.5°	306.7	303.6	293.0	277.2	258.2	235.0	209.7	172.9	121.2	70.6	25.3
65°	276.1	273.0	263.5	249.8	231.9	209.7	178.1	132.8	81.2	34.8	8.4
67.5°	239.3	238.2	232.9	221.3	202.4	176.0	137.0	85.4	41.1	11.6	5.3
70°	219.2	216.1	205.5	188.7	164.4	129.6	84.3	44.3	15.8	5.3	4.2
72.5°	165.5	162.3	153.9	137.0	111.7	76.9	42.2	16.9	6.3	4.2	3.2
75°	126.5	122.3	109.6	90.6	63.2	34.8	14.8	6.3	4.2	4.2	3.2
77.5°	72.7	70.6	61.1	43.2	24.2	10.5	5.3	4.2	4.2	3.2	2.1
80°	27.4	24.2	17.9	10.5	6.3	5.3	4.2	4.2	3.2	2.1	2.1
82.5°	7.4	6.3	5.3	4.2	4.2	4.2	3.2	3.2	2.1	2.1	2.1
85°	4.2	4.2	4.2	3.2	3.2	3.2	2.1	2.1	2.1	2.1	1.1
87.5°	3.2	3.2	3.2	3.2	3.2	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: P85070

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

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	112.5°	135°	157.5°
0°	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1	177.1
2.5°	204.5	201.3	197.1	193.9	189.7	185.5	180.2	176.0	157.0	145.5	139.1
5°	215.0	211.9	207.6	202.4	197.1	188.7	180.2	171.8	140.2	122.3	102.2
7.5°	228.7	222.4	215.0	208.7	201.3	190.8	179.2	166.5	124.4	84.3	66.4
10°	244.5	235.0	224.5	214.0	202.4	190.8	175.0	159.2	101.2	56.9	24.2
12.5°	256.1	243.5	230.8	216.1	201.3	185.5	167.6	148.6	74.8	22.1	10.5
15°	261.4	247.7	232.9	216.1	197.1	179.2	158.1	134.9	50.6	9.5	4.2
17.5°	265.6	249.8	232.9	214.0	192.9	171.8	145.5	119.1	27.4	5.3	3.2
20°	266.7	249.8	230.8	209.7	186.6	161.3	131.8	101.2	11.6	4.2	2.1
22.5°	264.6	247.7	226.6	204.5	178.1	148.6	113.8	81.2	6.3	3.2	2.1
25°	262.4	243.5	221.3	196.0	166.5	130.7	91.7	59.0	4.2	3.2	1.1
27.5°	260.3	239.3	214.0	186.6	151.8	109.6	69.6	37.9	4.2	2.1	1.1
30°	259.3	234.0	205.5	172.9	131.8	86.4	48.5	22.1	3.2	1.1	1.1
32.5°	256.1	226.6	193.9	154.9	108.6	63.2	29.5	10.5	3.2	1.1	1.1
35°	248.7	214.0	178.1	132.8	84.3	42.2	15.8	5.3	2.1	1.1	0.0
37.5°	236.1	199.2	157.0	107.5	60.1	23.2	7.4	4.2	2.1	1.1	0.0
40°	220.3	181.3	132.8	83.3	37.9	10.5	4.2	4.2	1.1	1.1	0.0
42.5°	204.5	157.0	107.5	59.0	19.0	5.3	4.2	3.2	1.1	1.1	0.0
45°	182.3	131.8	83.3	34.8	8.4	4.2	3.2	3.2	1.1	1.1	0.0
47.5°	156.0	106.5	55.9	15.8	5.3	3.2	3.2	2.1	1.1	1.1	0.0
50°	129.6	79.1	29.5	7.4	4.2	3.2	3.2	1.1	1.1	1.1	0.0
52.5°	101.2	50.6	11.6	4.2	3.2	3.2	2.1	1.1	1.1	1.1	0.0
55°	70.6	22.1	6.3	4.2	3.2	2.1	1.1	1.1	1.1	1.1	0.0
57.5°	40.1	9.5	4.2	3.2	2.1	1.1	1.1	1.1	1.1	1.1	0.0
60°	14.8	4.2	4.2	3.2	2.1	1.1	1.1	1.1	1.1	1.1	0.0
62.5°	6.3	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	1.1	1.1	1.1	1.1	1.1	1.1	0.0
67.5°	4.2	3.2	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
70°	3.2	3.2	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
72.5°	3.2	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	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	1.1	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: P85070

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

CANDELA DISTRIBUTION (continued):

	180°
0°	177.1
2.5°	137.0
5°	94.9
7.5°	61.1
10°	15.8
12.5°	9.5
15°	4.2
17.5°	3.2
20°	2.1
22.5°	1.1
25°	1.1
27.5°	1.1
30°	1.1
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)