

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: FAIL-SAFE

Report Number: 768568

Luminaire Tested: **TRE11-C-D170MH**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: 768568
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: TRE11-C-D170MH
Description: FAIL-SAFE
Light Source: 70W MH CL HOR ED-17 6000 LUMENS
Ballast/Driver: -

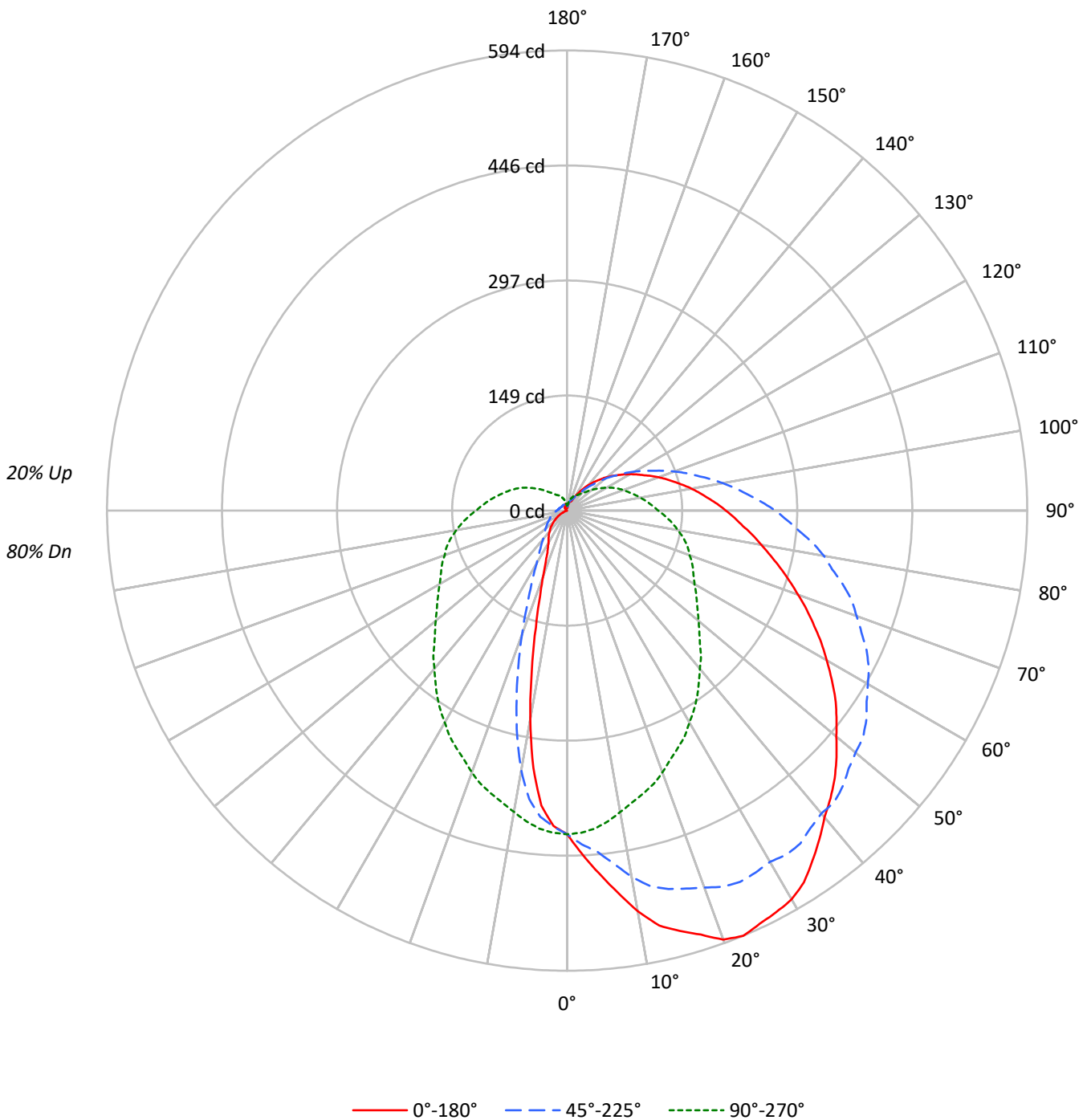
Summary

Lumens per Lamp: 6000 (1 lamp)
Luminaire Lumens: 1788.7 lumens
Efficiency: 29.8%
Efficacy: 25.6 lumens/watt
Spacing Criteria (0/90/45): 1.12 / 1.14 / 1.36
Luminous Opening: Point Source (0' x 0' x 0')
CIE Type: Semi-Direct

Input Watts (W): 70
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

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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	0
RCR																		
0	34	34	34	34	33	33	33	33	30	30	30	27	27	27	25	25	25	24
1	30	28	27	25	29	27	25	24	24	23	22	22	21	20	20	19	19	18
2	27	24	22	20	26	23	21	19	21	19	18	19	17	16	17	16	15	14
3	24	21	18	16	23	20	17	15	18	16	14	16	15	13	15	14	12	11
4	22	18	15	13	21	17	15	13	16	14	12	15	13	11	13	12	10	10
5	20	16	13	11	19	16	13	11	14	12	10	13	11	10	12	10	9	8
6	19	15	12	10	18	14	11	9	13	11	9	12	10	8	11	9	8	7
7	17	13	10	9	16	13	10	8	12	9	8	11	9	7	10	8	7	6
8	16	12	9	8	15	11	9	7	11	8	7	10	8	7	9	7	6	5
9	15	11	8	7	14	11	8	7	10	8	6	9	7	6	8	7	6	5
10	14	10	8	6	13	10	7	6	9	7	6	8	7	5	8	6	5	4

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	Luminaire represents a point source (luminous area is zero).		
5°	No luminance values can be calculated.		
10°			
15°			
20°			
25°			
30°			
35°			
40°			
45°			
50°			
55°			
60°			
65°			
70°			
75°			
80°			
85°			



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	45°	90°	135°	180°	Flux
0°-10°	39.5	2.2	0.7	0°	418	418	418	418	418	
10°-20°	105.9	5.9	1.8	5°	470	442	412	397	382	46
20°-30°	152.9	8.5	2.5	15°	562	506	378	252	156	160
30°-40°	185.4	10.4	3.1	25°	588	529	338	112	60	272
40°-50°	202.1	11.3	3.4	35°	552	525	293	61	42	345
50°-60°	206.8	11.6	3.4	45°	489	503	242	41	29	377
60°-70°	200.0	11.2	3.3	55°	423	472	204	32	17	378
70°-80°	181.3	10.1	3.0	65°	352	426	179	24	6	349
80°-90°	152.9	8.6	2.5	75°	284	369	158	20	0	301
90°-100°	121.4	6.8	2.0	85°	228	300	132	15	0	192
100°-110°	91.1	5.1	1.5	90°	205	269	118	13	0	112
110°-120°	63.3	3.5	1.1	95°	183	234	106	12	0	146
120°-130°	40.5	2.3	0.7	105°	143	174	86	11	0	153
130°-140°	23.9	1.3	0.4	115°	108	122	69	9	0	109
140°-150°	13.1	0.7	0.2	125°	80	80	50	8	2	72
150°-160°	6.9	0.4	0.1	135°	54	48	34	8	3	43
160°-170°	3.1	0.2	0.1	145°	32	26	25	9	6	21
170°-180°	0.8	0.0	0.0	155°	14	16	21	8	6	8
0°-30°	298.3	16.7	5.0	165°	11	12	15	10	9	3
0°-40°	483.7	27.0	8.1	175°	3	6	8	6	9	1
0°-60°	892.6	49.9	14.9	180°	6	6	6	6	6	
0°-90°	1426.9	79.8	23.8							
90°-120°	275.8	15.4	4.6							
90°-150°	353.4	19.8	5.9							
90°-180°	364.0	20.3	6.1							
0°-180°	1788.7	100.0	29.8							



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8
2.5°	443.8	443.0	439.8	436.9	432.9	431.2	427.2	425.1	419.9	416.6	416.2
5°	469.9	467.8	465.8	458.9	449.5	441.8	435.7	426.8	419.0	413.4	412.1
7.5°	496.7	495.1	493.8	485.3	472.7	459.3	446.7	431.2	418.2	408.1	404.4
10°	525.1	520.7	519.0	510.5	495.5	480.0	460.5	437.3	416.6	402.0	395.1
12.5°	548.7	543.8	539.0	529.2	514.2	496.7	470.7	442.2	414.2	395.5	386.1
15°	561.7	562.1	555.2	543.8	528.0	505.6	478.4	445.5	410.5	386.1	378.4
17.5°	573.9	575.5	569.0	556.4	536.5	511.7	482.9	447.1	407.3	376.4	370.3
20°	589.4	584.1	579.6	567.8	544.2	517.8	488.6	447.9	402.0	367.4	359.7
22.5°	594.2	587.7	584.1	574.3	554.4	525.5	492.2	447.1	396.7	358.5	347.9
25°	588.5	587.3	585.3	577.2	557.6	528.8	488.1	443.0	389.0	346.7	338.2
27.5°	584.5	586.1	584.1	575.9	554.8	526.8	485.3	440.2	382.5	336.5	328.4
30°	579.6	578.4	575.5	570.2	552.8	523.5	485.7	431.6	373.1	325.2	315.8
32.5°	569.0	563.7	564.2	563.7	554.8	526.8	484.5	425.1	365.0	313.0	304.8
35°	552.0	548.3	553.6	556.0	548.3	524.7	477.6	421.9	355.2	299.1	292.6
37.5°	534.9	535.7	542.2	545.0	537.7	516.2	473.5	416.2	346.3	287.4	279.2
40°	517.0	519.8	524.7	530.4	528.8	510.5	473.1	405.6	336.1	275.6	266.6
42.5°	503.2	501.2	508.5	519.4	523.9	510.5	471.5	402.0	328.4	263.0	255.7
45°	488.6	485.7	494.6	507.7	512.9	503.2	464.2	400.8	319.9	250.8	242.2
47.5°	471.5	472.3	480.8	492.2	499.5	493.0	458.9	393.4	312.6	241.8	231.3
50°	453.6	453.6	464.2	477.2	489.4	486.1	458.9	387.8	304.8	232.1	221.5
52.5°	438.2	436.9	447.5	464.6	480.4	481.2	454.0	384.9	297.9	222.7	212.2
55°	422.7	422.3	432.5	452.0	467.8	471.5	444.2	382.1	292.6	215.4	204.4
57.5°	404.8	405.2	417.0	435.3	452.8	458.5	437.3	375.6	287.8	209.3	197.1
60°	386.9	387.3	400.4	419.5	440.6	448.3	433.3	369.5	280.4	202.8	189.8
62.5°	369.9	369.9	382.5	405.6	429.2	439.0	423.9	365.4	275.2	196.7	184.1
65°	352.0	352.8	366.2	390.2	414.2	426.4	411.3	358.9	271.1	192.3	179.2
67.5°	334.9	335.7	349.5	373.1	397.9	411.3	402.0	352.0	264.6	188.2	174.4
70°	317.0	317.8	331.7	356.0	382.9	397.5	393.8	343.0	258.1	182.5	168.3
72.5°	300.8	300.8	314.6	340.2	369.5	385.3	379.2	334.5	253.2	178.0	163.8
75°	284.5	285.3	298.7	323.9	351.6	368.6	363.8	323.9	245.5	172.7	158.5
77.5°	269.1	269.9	282.1	306.5	333.7	350.4	349.5	311.3	237.0	167.5	152.0
80°	254.4	254.8	266.6	290.2	317.4	336.5	334.5	299.1	229.6	161.4	145.1
82.5°	241.4	241.0	252.0	273.9	301.2	319.5	319.5	287.8	222.3	154.5	138.6
85°	227.6	228.8	238.2	258.9	284.1	300.4	302.0	275.2	213.4	148.8	131.7
87.5°	216.2	216.2	225.2	244.3	267.4	284.1	286.1	260.1	204.0	142.7	124.8
90°	204.9	204.4	212.6	229.6	252.0	268.7	270.7	245.9	195.1	136.2	117.5
95°	182.9	182.9	189.4	202.8	221.1	234.5	235.3	218.7	177.2	124.8	106.5
105°	143.1	143.1	147.5	156.1	167.1	173.6	172.3	162.2	139.4	102.4	85.8
115°	108.1	108.9	111.0	115.8	120.7	121.5	116.7	109.7	101.2	79.7	68.7
125°	79.7	79.7	80.5	82.1	82.9	80.1	74.0	69.9	66.7	56.5	49.6
135°	54.5	54.1	53.7	53.2	51.6	48.0	43.9	43.1	42.3	37.4	33.7
145°	31.7	31.3	30.9	29.7	28.0	26.0	26.4	28.0	29.3	26.8	24.8
155°	13.8	13.8	13.8	13.8	15.0	16.3	18.7	20.7	21.9	21.1	20.7
165°	11.4	11.4	11.0	11.0	11.0	12.2	13.4	14.6	15.0	14.6	14.6



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CANDELA DISTRIBUTION (continued):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
175°	3.3	7.3	9.3	3.3	1.2	5.7	6.1	7.3	11.8	8.1	8.1
180°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5



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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
0°	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8	417.8
2.5°	416.2	415.0	411.7	411.7	408.1	407.7	406.9	406.9	405.2	407.3
5°	408.9	406.0	403.2	399.9	396.7	392.6	388.2	384.9	381.2	382.1
7.5°	400.8	396.7	393.0	384.5	375.6	363.0	351.2	341.4	336.5	334.9
10°	393.0	387.8	379.6	361.7	340.6	317.4	296.3	282.5	274.8	273.9
12.5°	384.5	378.0	362.1	333.3	298.3	264.6	237.8	220.7	210.5	210.5
15°	374.3	367.0	340.2	299.6	252.0	212.6	183.3	165.4	157.7	156.1
17.5°	363.8	353.2	318.2	263.4	208.5	166.6	139.4	124.0	117.1	116.2
20°	353.6	339.8	294.3	227.6	170.3	130.5	107.7	95.5	90.6	90.2
22.5°	344.7	328.4	269.9	195.1	137.4	103.2	85.8	76.4	72.8	72.3
25°	335.3	316.6	245.5	165.4	111.8	84.1	69.9	63.0	60.6	60.2
27.5°	328.0	304.0	223.5	141.9	93.5	71.1	60.6	55.7	54.1	53.7
30°	317.0	290.2	200.4	119.5	78.9	61.0	52.8	49.6	48.0	48.0
32.5°	306.1	277.2	180.1	102.0	68.7	54.5	48.4	45.9	44.7	44.7
35°	296.3	261.8	159.7	89.0	60.6	48.8	44.7	42.7	41.9	41.5
37.5°	286.1	246.3	141.4	77.6	54.1	45.1	41.5	39.8	39.0	39.0
40°	271.1	229.6	123.6	67.5	48.0	41.1	38.2	35.8	35.4	35.0
42.5°	260.1	214.2	109.3	60.6	45.1	39.0	35.8	34.1	32.9	32.5
45°	250.4	197.9	96.3	54.5	41.1	36.2	33.3	30.9	29.7	29.3
47.5°	237.8	184.1	85.4	49.6	38.6	34.1	30.9	28.0	26.4	26.0
50°	228.0	171.5	76.4	45.1	36.2	31.7	28.0	24.8	23.2	22.8
52.5°	220.3	160.1	69.9	41.9	33.7	29.3	25.2	21.9	19.9	19.5
55°	212.2	150.0	63.4	38.6	31.7	26.8	22.4	19.1	17.1	17.1
57.5°	204.0	140.6	58.5	36.2	30.1	24.8	20.3	16.3	14.2	13.8
60°	197.5	132.1	54.1	33.7	28.0	22.8	17.9	13.8	11.8	11.4
62.5°	191.4	124.0	50.4	32.1	26.0	20.3	15.4	11.4	9.3	8.9
65°	184.9	117.5	46.7	30.5	24.4	18.7	13.4	9.3	6.9	6.5
67.5°	179.2	111.4	44.7	29.7	23.6	17.9	12.6	8.1	5.3	4.9
70°	172.3	104.9	42.3	28.0	21.9	16.3	11.0	6.5	3.3	2.4
72.5°	166.6	99.2	39.8	26.4	20.7	15.0	8.9	4.9	1.2	0.8
75°	160.1	92.7	37.8	25.6	19.5	13.4	8.1	3.3	0.0	0.0
77.5°	151.6	86.6	35.8	24.0	18.7	12.6	6.5	2.0	0.0	0.0
80°	142.7	80.9	33.7	23.2	17.5	11.0	5.7	0.8	0.0	0.0
82.5°	134.9	74.8	31.7	21.9	15.9	10.2	4.9	0.4	0.0	0.0
85°	126.4	69.5	30.1	20.7	15.0	9.3	3.7	0.0	0.0	0.0
87.5°	117.9	64.2	28.9	19.9	14.2	8.1	3.3	0.0	0.0	0.0
90°	109.7	60.2	27.2	19.1	13.4	7.3	2.4	0.0	0.0	0.0
95°	98.0	52.8	24.8	17.5	11.8	6.1	1.6	0.0	0.0	0.0
105°	75.6	43.1	22.4	15.4	10.6	5.3	2.0	0.0	0.0	0.0
115°	59.3	36.2	19.5	13.4	9.3	5.3	2.4	0.0	0.0	0.0
125°	42.7	28.9	17.5	11.8	8.5	6.1	3.3	2.0	1.6	1.6
135°	29.3	22.4	15.4	11.0	8.5	6.9	5.3	4.1	3.3	3.3
145°	23.2	18.7	13.8	11.0	8.9	7.3	6.5	5.7	5.7	5.7
155°	19.5	17.1	13.8	11.0	8.5	7.7	6.9	6.9	6.9	6.5
165°	14.2	13.0	11.4	10.6	9.8	9.3	8.9	8.9	8.9	8.9



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CANDELA DISTRIBUTION (continued):

	95°	105°	115°	125°	135°	145°	155°	165°	175°	180°
175°	7.7	7.3	8.1	6.1	5.7	6.9	6.5	8.9	8.9	8.9
180°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5

(END OF REPORT)