

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: 168P180

Luminaire Tested: **FCC-D-332-80/86**

Issue Date: 3/3/2020



**Test Information**

Test Method: LM-79-08  
Report Number: 168P180  
Test Lab:  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FCC-D-332-80/86  
Description: FCC Series Luminaire with an 80/86 Lens Assembly.  
Light Source: Three - FO32/35K - 2800 Lumens ea. - 32 Watts ea.  
Ballast/Driver: Advance REL 3P32-SC

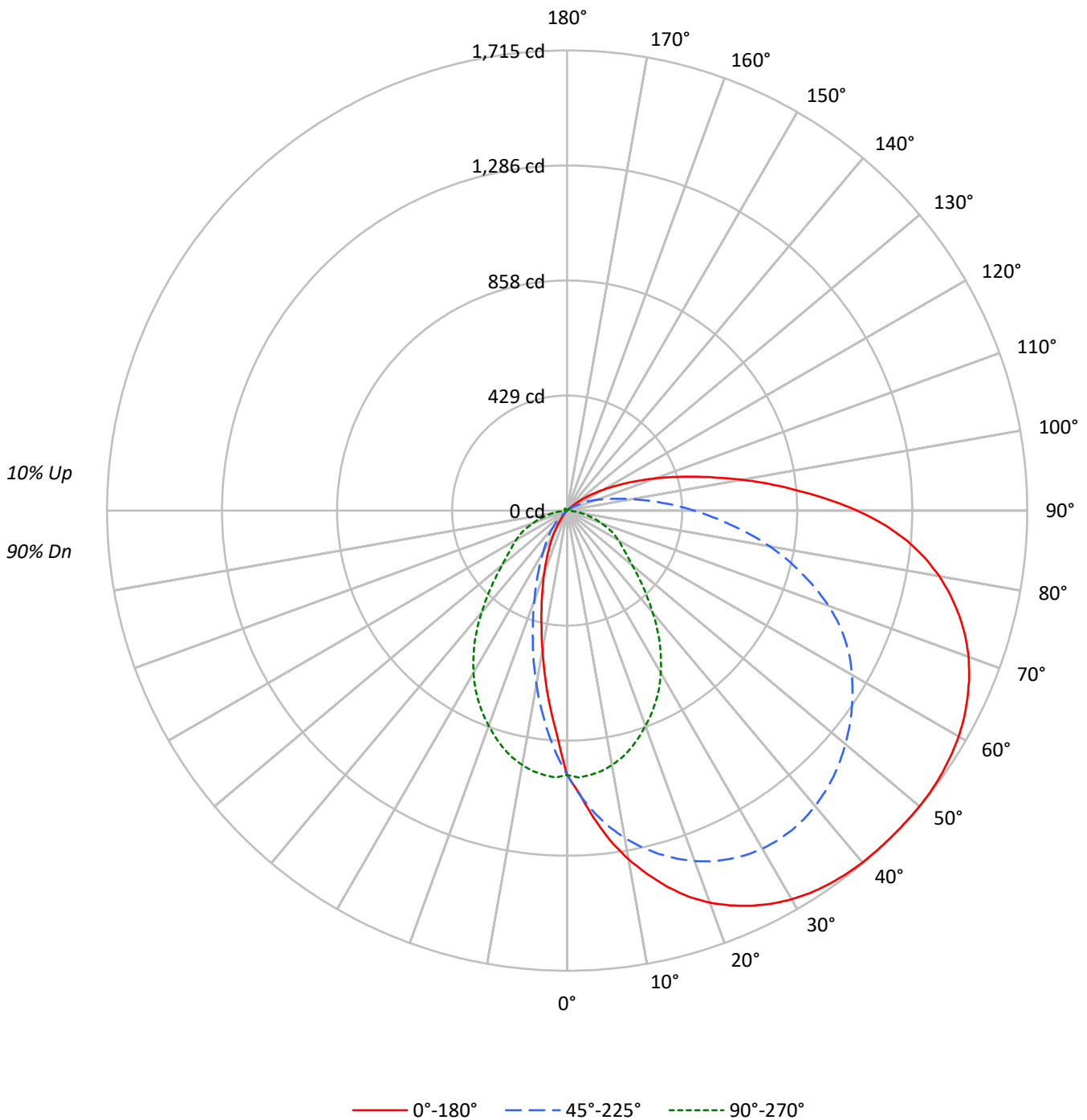
**Summary**

Lumens per Lamp: 2800 (3 lamps)  
Luminaire Lumens: 4042.8 lumens  
Efficiency: 48.1%  
Efficacy: 51.8 lumens/watt  
Spacing Criteria (0/90/45): 1.37 / 1.09 / 1.45  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 0.37' x H: 0.37')  
CIE Type: Semi-Direct

Input Watts (W): 78  
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	56	56	56	56	54	54	54	54	51	51	51	48	48	48	45	45	45	43
1	49	46	44	41	47	45	42	40	42	40	38	39	37	36	36	35	34	32
2	44	39	35	32	42	38	34	31	35	32	30	33	31	28	31	29	27	26
3	40	34	30	26	38	33	29	25	31	27	24	29	26	23	27	24	22	21
4	36	30	25	21	35	29	24	21	27	23	20	25	22	19	24	21	19	17
5	33	26	22	18	32	26	21	18	24	20	17	23	19	17	21	18	16	15
6	31	24	19	16	29	23	19	15	22	18	15	20	17	14	19	16	14	13
7	28	21	17	14	27	21	17	14	20	16	13	18	15	13	17	14	12	11
8	26	19	15	12	25	19	15	12	18	14	12	17	14	11	16	13	11	10
9	25	18	14	11	24	17	13	11	16	13	10	16	12	10	15	12	10	9
10	23	16	12	10	22	16	12	10	15	12	9	14	11	9	14	11	9	8

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

	0°	90°	180°
0°	7310	7310	7310
5°	7892	7307	5014
10°	8456	7138	3389
15°	8804	6872	2224
20°	9004	6521	1448
25°	9075	6141	910
30°	9089	5672	543
35°	9059	5107	256
40°	9018	4453	74
45°	9000	3817	16
50°	9034	3290	16
55°	9091	2964	5
60°	9154	2807	0
65°	9198	2643	0
70°	9218	2309	0
75°	9168	1951	0
80°	9020	1420	0
85°	8700	737	7



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**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	45°	90°	135°	180°	Flux
0°-10°	92.2	2.3	1.1	0°	985	985	985	985	985	
10°-20°	258.3	6.4	3.1	5°	1152	1127	989	827	732	115
20°-30°	389.1	9.6	4.6	15°	1453	1325	917	495	367	414
30°-40°	479.1	11.9	5.7	25°	1625	1433	783	255	163	752
40°-50°	528.4	13.1	6.3	35°	1700	1456	601	127	48	1067
50°-60°	547.4	13.5	6.5	45°	1715	1403	398	44	3	1328
60°-70°	528.8	13.1	6.3	55°	1706	1295	260	6	1	1528
70°-80°	462.8	11.4	5.5	65°	1647	1144	181	4	0	1631
80°-90°	352.2	8.7	4.2	75°	1513	905	92	3	0	1595
90°-100°	220.0	5.4	2.6	85°	1270	613	18	3	1	1064
100°-110°	112.5	2.8	1.3	90°	1081	473	8	4	1	591
110°-120°	51.1	1.3	0.6	95°	861	347	8	4	1	664
120°-130°	17.2	0.4	0.2	105°	488	167	8	3	1	525
130°-140°	3.6	0.1	0.0	115°	240	71	9	4	0	245
140°-150°	0.0	0.0	0.0	125°	92	10	9	4	1	85
150°-160°	0.0	0.0	0.0	135°	9	5	10	5	2	9
160°-170°	0.0	0.0	0.0	145°	0	0	0	0	0	0
170°-180°	0.0	0.0	0.0	155°	0	0	0	0	0	0
0°-30°	739.7	18.3	8.8	165°	0	0	0	0	0	0
0°-40°	1218.8	30.1	14.5	175°	0	0	0	0	0	0
0°-60°	2294.6	56.8	27.3	180°	0	0	0	0	0	0
0°-90°	3638.4	90.0	43.3							
90°-120°	383.6	9.5	4.6							
90°-150°	404.4	10.0	4.8							
90°-180°	404.0	10.0	4.8							
0°-180°	4042.8	100.0	48.1							



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
0°	985	985	985	985	985	985	985	985	985
2.5°	1056	1078	1060	1032	996	951	909	885	841
5°	1152	1166	1127	1067	989	903	827	777	732
7.5°	1242	1246	1187	1096	979	851	742	674	627
10°	1320	1317	1239	1120	963	795	658	579	529
12.5°	1389	1379	1285	1139	943	735	575	487	442
15°	1453	1438	1325	1152	917	674	495	406	367
17.5°	1509	1489	1360	1161	887	613	422	339	305
20°	1555	1532	1390	1164	854	552	358	284	250
22.5°	1593	1566	1415	1164	820	490	302	236	204
25°	1625	1595	1433	1159	783	431	255	195	163
27.5°	1652	1618	1447	1150	743	375	213	160	129
30°	1673	1637	1455	1136	698	323	179	129	100
32.5°	1689	1649	1458	1117	650	277	151	99	73
35°	1700	1658	1456	1095	601	236	127	71	48
37.5°	1708	1662	1449	1068	549	200	104	48	28
40°	1712	1662	1438	1037	496	171	83	28	14
42.5°	1714	1660	1422	1004	445	148	63	15	2
45°	1715	1655	1403	966	398	131	44	3	3
47.5°	1715	1648	1380	924	355	118	28	3	3
50°	1715	1641	1354	880	317	104	16	3	3
52.5°	1712	1630	1326	832	286	89	6	3	2
55°	1706	1618	1295	782	260	72	6	3	1
57.5°	1697	1603	1261	731	239	54	6	2	0
60°	1685	1586	1226	679	220	37	5	1	0
62.5°	1668	1565	1188	623	201	24	5	0	0
65°	1647	1539	1144	569	181	15	4	1	0
67.5°	1622	1507	1094	515	157	8	3	1	0
70°	1592	1469	1037	462	134	7	3	1	0
72.5°	1556	1424	973	415	113	7	3	1	0
75°	1513	1370	905	374	92	7	3	1	0
77.5°	1464	1308	839	337	71	7	3	1	0
80°	1408	1239	767	300	51	7	3	1	0
82.5°	1344	1160	690	267	33	7	3	1	0
85°	1270	1071	613	235	18	7	3	1	1
87.5°	1181	979	541	203	10	7	3	1	1
90°	1081	886	473	171	8	7	4	2	1
92.5°	971	790	409	141	8	7	4	2	1
95°	861	688	347	113	8	7	4	2	1
97.5°	759	591	292	88	8	7	4	2	1
100°	662	506	244	64	8	7	4	1	1
102.5°	568	433	202	45	8	7	4	1	1
105°	488	371	167	29	8	7	3	1	1
107.5°	416	316	140	18	8	7	3	1	1
110°	352	266	117	11	8	7	3	1	0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
112.5°	293	222	95	7	9	7	3	1	0
115°	240	184	71	8	9	7	4	1	0
117.5°	194	149	49	8	9	7	4	1	0
120°	156	116	31	8	9	8	4	1	0
122.5°	122	84	18	7	10	8	4	2	1
125°	92	56	10	7	9	8	4	2	1
127.5°	62	35	5	8	10	8	4	2	1
130°	38	19	5	8	10	8	5	2	1
132.5°	19	8	5	8	10	9	5	2	1
135°	9	2	5	8	10	9	5	3	2
137.5°	0	0	0	0	0	0	0	0	0
140°	0	0	0	0	0	0	0	0	0
142.5°	0	0	0	0	0	0	0	0	0
145°	0	0	0	0	0	0	0	0	0
147.5°	0	0	0	0	0	0	0	0	0
150°	0	0	0	0	0	0	0	0	0
152.5°	0	0	0	0	0	0	0	0	0
155°	0	0	0	0	0	0	0	0	0
157.5°	0	0	0	0	0	0	0	0	0
160°	0	0	0	0	0	0	0	0	0
162.5°	0	0	0	0	0	0	0	0	0
165°	0	0	0	0	0	0	0	0	0
167.5°	0	0	0	0	0	0	0	0	0
170°	0	0	0	0	0	0	0	0	0
172.5°	0	0	0	0	0	0	0	0	0
175°	0	0	0	0	0	0	0	0	0
177.5°	0	0	0	0	0	0	0	0	0
180°	0	0	0	0	0	0	0	0	0

(END OF REPORT)