

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: 168P177

Luminaire Tested: **FAS-X-332-80/86**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: 168P177
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FAS-X-332-80/86
Description: FAIL-SAFE FAS SERIES LUMINAIRE
Light Source: THREE - FO32/35K - 2800 LUMENS EA. - 32 WATTS EA.
Ballast/Driver: ADVANCE REL-3P32-SC

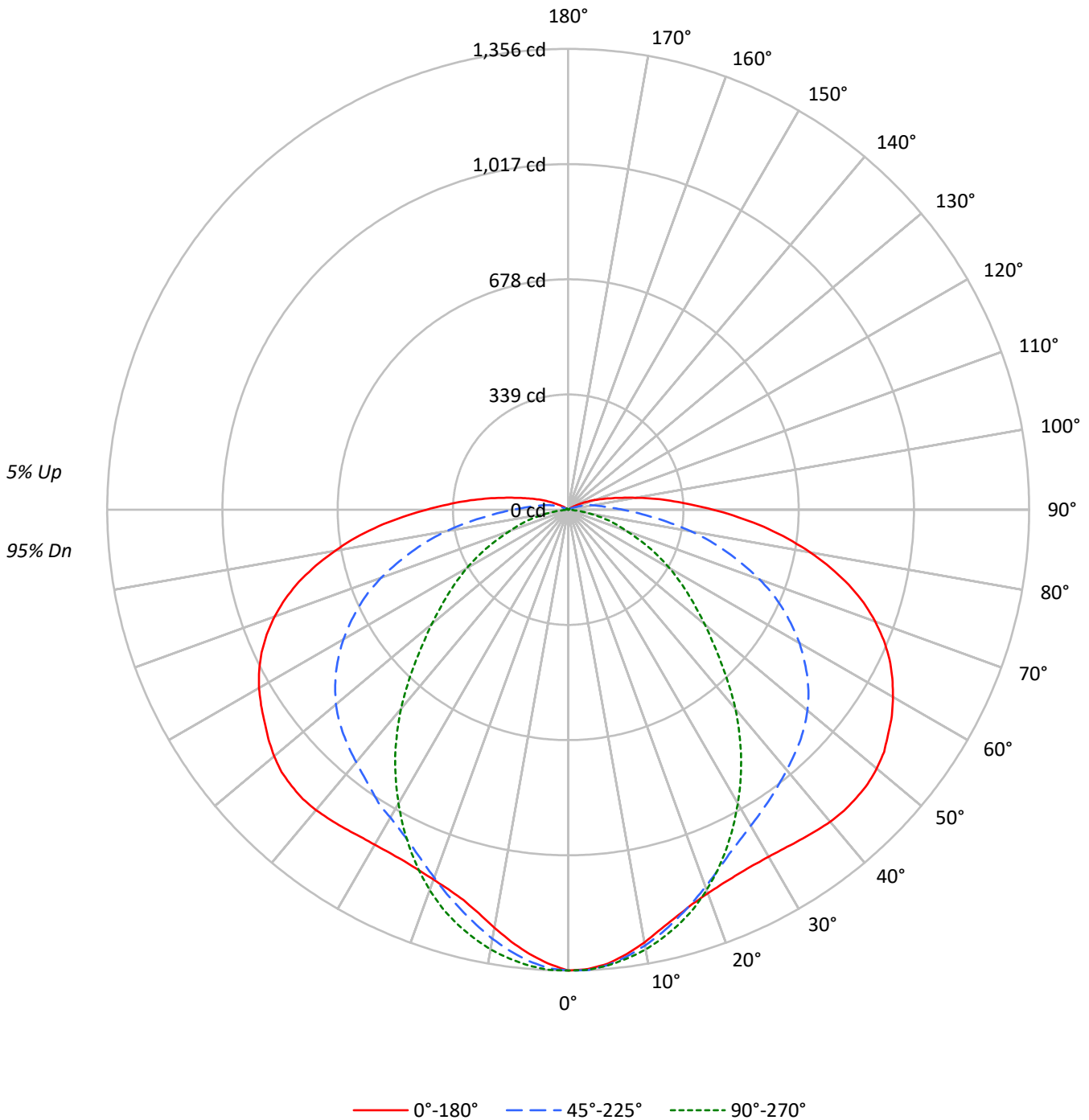
Summary

Lumens per Lamp: 2800 (3 lamps)
Luminaire Lumens: 4761.1 lumens
Efficiency: 56.7%
Efficacy: 60.3 lumens/watt
Spacing Criteria (0/90/45): 1.32 / 1.11 / 1.39
Luminous Opening: Rectangular w/ Sides (W: 3.83' x L: 0.68' x H: 0.24')
CIE Type: Direct

Input Watts (W): 79
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	67	67	67	67	65	65	65	65	61	61	61	58	58	58	55	55	55	54
1	59	56	53	50	58	55	52	49	52	49	47	49	47	45	46	45	43	42
2	53	48	43	40	52	47	43	39	44	41	38	42	39	36	40	37	35	34
3	48	42	36	32	47	40	36	32	38	34	31	36	33	30	34	32	29	28
4	44	37	31	27	42	36	30	27	34	29	26	32	28	25	30	27	25	23
5	40	32	27	23	39	32	26	23	30	26	22	29	25	22	27	24	21	20
6	37	29	24	20	36	28	23	20	27	22	19	26	22	19	25	21	18	17
7	34	26	21	17	33	26	21	17	24	20	17	23	19	16	22	19	16	15
8	32	24	19	15	31	23	19	15	22	18	15	21	18	15	21	17	14	13
9	30	22	17	14	29	21	17	14	21	16	13	20	16	13	19	15	13	12
10	28	20	15	12	27	20	15	12	19	15	12	18	15	12	18	14	12	11

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	5604	5604	5604
5°	5397	5554	5280
10°	5108	5454	4935
15°	4839	5311	4648
20°	4681	5121	4513
25°	4632	4878	4468
30°	4674	4597	4512
35°	4802	4287	4632
40°	4991	3921	4804
45°	5180	3498	4968
50°	5363	3135	5110
55°	5505	2837	5222
60°	5658	2565	5386
65°	5806	2250	5539
70°	5896	1876	5638
75°	5892	1605	5651
80°	5733	1124	5519
85°	5435	442	5275



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	45°	90°	135°	180°	Flux
0°-10°	126.3	2.7	1.5	0°	1356	1356	1356	1356	1356	
10°-20°	348.4	7.3	4.1	5°	1341	1345	1346	1333	1312	126
20°-30°	517.0	10.9	6.2	15°	1238	1244	1262	1218	1189	350
30°-40°	641.4	13.5	7.6	25°	1183	1119	1101	1090	1141	548
40°-50°	716.8	15.1	8.5	35°	1187	1037	887	1008	1145	746
50°-60°	726.3	15.3	8.6	45°	1199	964	636	935	1150	927
60°-70°	651.4	13.7	7.8	55°	1149	859	429	834	1090	1029
70°-80°	501.7	10.5	6.0	65°	1043	700	261	681	995	1030
80°-90°	307.6	6.5	3.7	75°	855	485	124	476	820	898
90°-100°	144.6	3.0	1.7	85°	577	248	16	248	560	501
100°-110°	58.5	1.2	0.7	90°	426	160	0	161	416	234
110°-120°	18.0	0.4	0.2	95°	302	105	0	106	299	227
120°-130°	3.1	0.1	0.0	105°	130	49	1	50	131	143
130°-140°	0.0	0.0	0.0	115°	47	8	3	9	46	48
140°-150°	0.0	0.0	0.0	125°	4	5	5	4	4	6
150°-160°	0.0	0.0	0.0	135°	0	0	0	0	0	0
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°	991.6	20.8	11.8	165°	0	0	0	0	0	0
0°-40°	1633.0	34.3	19.4	175°	0	0	0	0	0	0
0°-60°	3076.2	64.6	36.6	180°	0	0	0	0	0	0
0°-90°	4536.9	95.3	54.0							
90°-120°	221.1	4.6	2.6							
90°-150°	224.2	4.7	2.7							
90°-180°	224.0	4.7	2.7							
0°-180°	4761.1	100.0	56.7							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
0°	1356	1356	1356	1356	1356	1356	1356	1356	1356
2.5°	1353	1354	1356	1357	1355	1353	1350	1345	1337
5°	1341	1340	1345	1348	1346	1342	1333	1325	1312
7.5°	1319	1317	1326	1334	1332	1324	1310	1297	1282
10°	1293	1290	1302	1314	1314	1303	1282	1266	1249
12.5°	1263	1261	1275	1290	1290	1276	1251	1234	1216
15°	1238	1234	1244	1261	1262	1246	1218	1204	1189
17.5°	1216	1209	1213	1227	1230	1210	1186	1177	1171
20°	1201	1188	1181	1189	1191	1170	1152	1156	1158
22.5°	1190	1170	1149	1149	1148	1129	1120	1138	1148
25°	1183	1158	1119	1106	1101	1086	1090	1126	1141
27.5°	1179	1152	1095	1061	1051	1041	1066	1119	1138
30°	1179	1148	1074	1014	998	995	1046	1115	1138
32.5°	1182	1147	1055	966	944	947	1031	1116	1140
35°	1187	1149	1037	918	887	900	1008	1115	1145
37.5°	1193	1150	1018	873	827	855	988	1116	1150
40°	1199	1151	1000	828	765	811	970	1115	1154
42.5°	1201	1148	982	783	700	768	953	1112	1155
45°	1199	1142	964	740	636	726	935	1105	1150
47.5°	1195	1132	943	698	577	684	915	1095	1143
50°	1185	1118	919	658	524	645	892	1081	1129
52.5°	1171	1100	891	617	474	606	864	1061	1111
55°	1149	1076	859	577	429	567	834	1038	1090
57.5°	1129	1049	823	533	386	525	800	1011	1071
60°	1103	1022	786	484	344	478	764	985	1050
62.5°	1075	989	743	429	303	424	723	954	1025
65°	1043	950	700	372	261	368	681	919	995
67.5°	1005	906	652	320	219	316	636	877	960
70°	961	861	599	275	182	271	585	834	919
72.5°	912	810	541	236	152	234	530	787	873
75°	855	751	485	202	124	200	476	732	820
77.5°	791	683	428	176	93	174	422	669	760
80°	723	614	367	152	64	151	364	604	696
82.5°	651	543	305	129	37	129	304	536	631
85°	577	472	248	109	16	109	248	470	560
87.5°	500	401	199	89	4	89	200	401	487
90°	426	333	160	71	0	71	161	335	416
92.5°	358	272	129	53	0	55	130	275	354
95°	302	220	105	37	0	39	106	222	299
97.5°	250	178	88	23	0	25	88	180	247
100°	201	143	75	12	1	13	75	145	200
102.5°	162	117	62	5	1	6	62	118	162
105°	130	97	49	1	1	1	50	98	131
107.5°	104	80	34	2	1	2	36	81	105
110°	83	62	21	3	2	2	22	64	83



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°	112.5°	135°	157.5°	180°
112.5°	64	45	12	4	3	3	13	47	64
115°	47	30	8	3	3	3	9	32	46
117.5°	31	19	5	3	4	3	3	20	31
120°	19	13	5	2	4	2	4	14	19
122.5°	12	5	5	3	4	2	4	5	14
125°	4	6	5	3	5	3	4	4	4
127.5°	0	0	0	0	0	0	0	0	0
130°	0	0	0	0	0	0	0	0	0
132.5°	0	0	0	0	0	0	0	0	0
135°	0	0	0	0	0	0	0	0	0
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)