

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: P31804

Luminaire Tested: **FUSL-D16-432-UNV-80/86-EB81**

Issue Date: 3/3/2020



**Test Information**

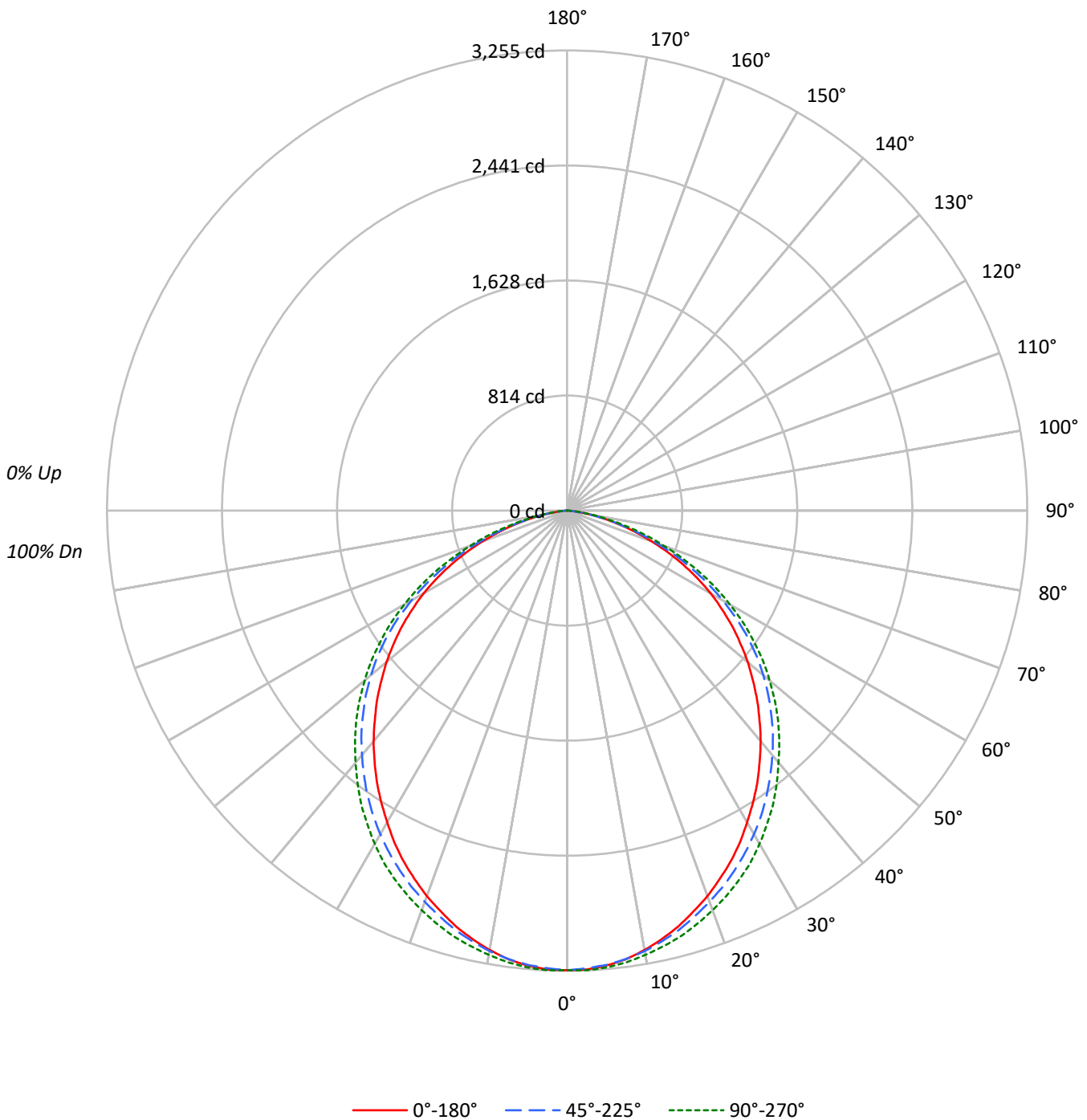
Test Method: LM-79-08  
Report Number: P31804  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: FUSL-D16-432-UNV-80/86-EB81  
Description: FAIL-SAFE 1X4 FLUORESCENT 16 GAUGE CONFINEMENT-CORRECTIONAL  
FIXTURE WITH A 0.125 PRISMATIC LENS FIXTURE SIDE, A 0.250  
CLEAR POLYCARBONATE LENS ENVIRONMENTAL SIDE  
Light Source: (4) GE BIPIN T8 DOUBLE ENDED LINEAR FLUORESCENT LAMP 3500K  
F32T8-SPX835-ECO  
Ballast/Driver: (1) SYLVANIA BALLAST  
QTP4X32UNVISNSC

**Summary**

Lumens per Lamp: 3100 (4 lamps)  
Luminaire Lumens: 8402.6 lumens  
Efficiency: 67.8%  
Efficacy: 81.9 lumens/watt  
Spacing Criteria (0/90/45): 1.17 / 1.24 / 1.34  
Luminous Opening: Rectangular (W 1' x L: 4' x H: 0')  
CIE Type: Direct  
  
Input Watts (W): 102.6  
Input Voltage (V): 120.04  
Input Current (Ain): 0.856  
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	81	81	81	81	79	79	79	79	75	75	75	72	72	72	69	69	69	68
1	74	71	69	66	72	70	67	65	67	65	63	64	63	61	62	60	59	58
2	68	62	58	54	66	61	57	54	59	55	52	57	54	51	55	52	50	49
3	62	55	50	45	60	54	49	45	52	48	44	50	47	43	48	45	43	41
4	57	49	43	39	55	48	43	38	46	42	38	45	41	37	43	40	37	35
5	52	44	38	33	51	43	37	33	42	37	33	40	36	33	39	35	32	31
6	48	39	34	29	47	39	33	29	38	33	29	36	32	29	35	31	28	27
7	45	36	30	26	44	35	30	26	34	29	26	33	29	25	32	28	25	24
8	42	33	27	23	41	32	27	23	31	26	23	30	26	23	30	26	23	21
9	39	30	25	21	38	30	24	21	29	24	21	28	24	21	27	23	20	19
10	37	28	22	19	36	27	22	19	27	22	19	26	22	19	25	21	19	17

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

	0°	45°	90°
0°	8748	8748	8748
5°	8725	8712	8760
10°	8624	8646	8719
15°	8480	8547	8681
20°	8310	8431	8614
25°	8130	8329	8554
30°	7908	8213	8458
35°	7707	8085	8341
40°	7482	7932	8174
45°	7238	7775	8034
50°	6983	7582	7824
55°	6690	7300	7553
60°	6308	6835	7158
65°	5762	6208	6597
70°	5012	5319	5751
75°	3993	4138	4564
80°	2681	2712	3130
85°	1204	1204	1482



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**ZONAL LUMENS:**

**CANDELA DISTRIBUTION:**

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	306.6	3.6	2.5	0°	3251	3251	3251	3251	3251	
10°-20°	866.9	10.3	7.0	5°	3230	3232	3225	3237	3243	306
20°-30°	1293.9	15.4	10.4	15°	3044	3053	3068	3099	3116	857
30°-40°	1532.8	18.2	12.4	25°	2738	2761	2805	2860	2881	1260
40°-50°	1562.0	18.6	12.6	35°	2346	2385	2461	2519	2539	1466
50°-60°	1372.1	16.3	11.1	45°	1902	1953	2043	2103	2111	1466
60°-70°	963.2	11.5	7.8	55°	1426	1473	1556	1602	1610	1271
70°-80°	438.5	5.2	3.5	65°	905	931	975	1027	1036	895
80°-90°	66.4	0.8	0.5	75°	384	385	398	432	439	412
90°-100°	0.0	0.0	0.0	85°	39	40	39	46	48	62
100°-110°	0.0	0.0	0.0	90°	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°	2467.5	29.4	19.9							
0°-40°	4000.3	47.6	32.3							
0°-60°	6934.4	82.5	55.9							
0°-90°	8402.6	100.0	67.8							
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°	8402.6	100.0	67.8							



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3251	3251	3251	3251	3251
2.5°	3249	3249	3240	3251	3255
5°	3230	3232	3225	3237	3243
7.5°	3200	3203	3199	3216	3222
10°	3156	3162	3164	3186	3191
12.5°	3103	3111	3118	3144	3156
15°	3044	3053	3068	3099	3116
17.5°	2973	2989	3008	3047	3064
20°	2902	2917	2944	2991	3008
22.5°	2821	2845	2879	2927	2948
25°	2738	2761	2805	2860	2881
27.5°	2647	2673	2727	2789	2808
30°	2545	2582	2643	2705	2722
32.5°	2447	2484	2555	2614	2631
35°	2346	2385	2461	2519	2539
37.5°	2237	2281	2361	2419	2435
40°	2130	2171	2258	2316	2327
42.5°	2014	2063	2155	2212	2221
45°	1902	1953	2043	2103	2111
47.5°	1783	1840	1930	1989	1992
50°	1668	1722	1811	1865	1869
52.5°	1544	1601	1690	1737	1746
55°	1426	1473	1556	1602	1610
57.5°	1297	1344	1418	1467	1478
60°	1172	1209	1270	1327	1330
62.5°	1039	1067	1125	1176	1187
65°	905	931	975	1027	1036
67.5°	770	787	827	870	881
70°	637	648	676	719	731
72.5°	504	513	535	572	585
75°	384	385	398	432	439
77.5°	271	273	276	303	309
80°	173	173	175	194	202
82.5°	94	93	97	106	109
85°	39	40	39	46	48
87.5°	8	10	12	14	14
90°	0	0	0	0	0

(END OF REPORT)