

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: 168P133

Luminaire Tested: **FUST5-X12-228-120-80/86-FNL**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: 168P133
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: FUST5-X12-228-120-80/86-FNL
Description: FAIL-SAFE 1 X 4 Fail-Safe Series with .125 Prismatic Acrylic Lens
and a .250 Clear Polycarbonate Lens
Light Source: Two - F28T5/835 - 2900 Lumens ea. - 28 Watts ea.
Ballast/Driver: Energy Savings ES-2-T5-28-120-F Electronic - L.O.B.F. = 92.6

Summary

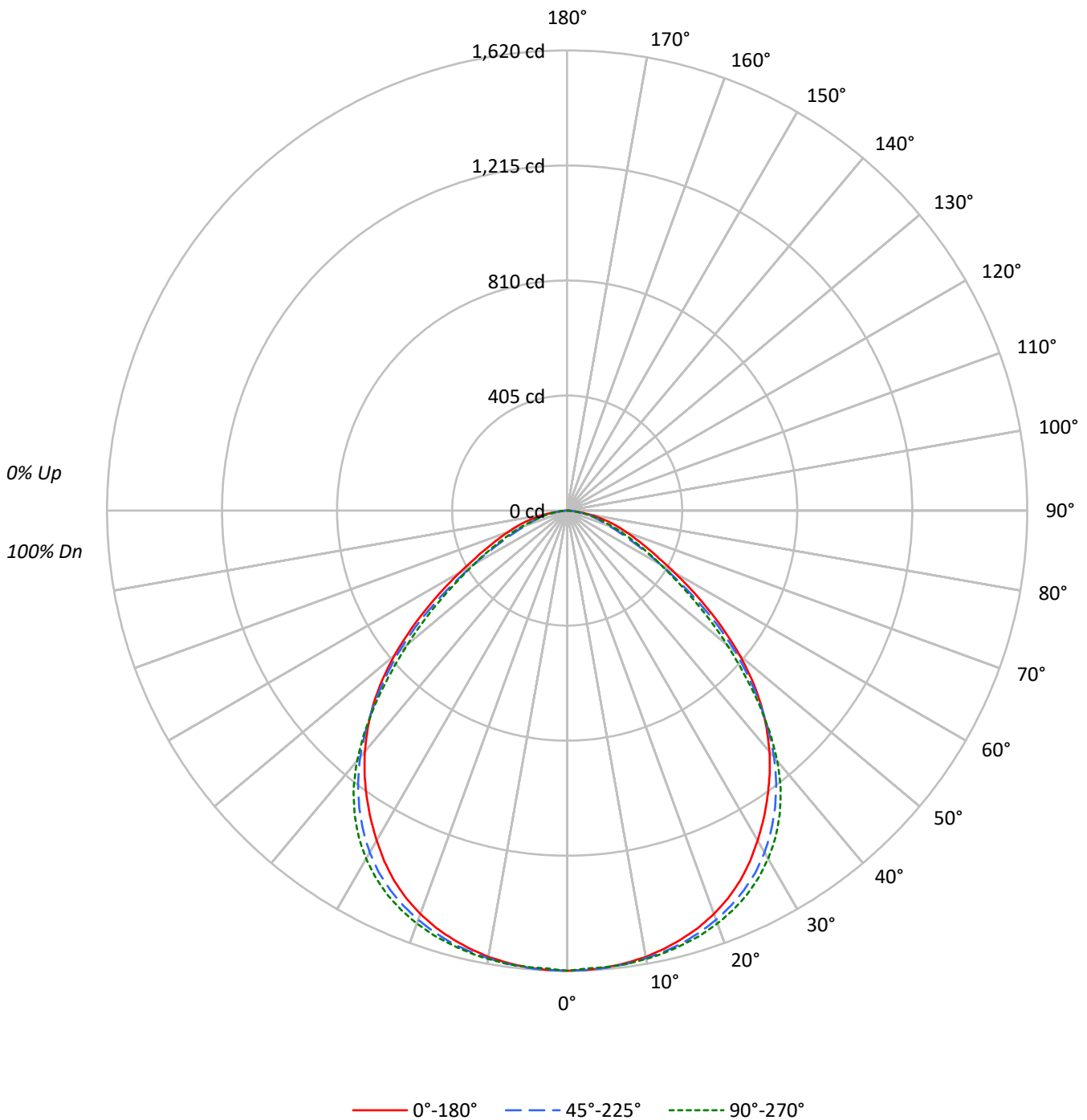
Lumens per Lamp: 2900 (2 lamps)
Luminaire Lumens: 3739.2 lumens
Efficiency: 64.5%
Efficacy: 64.5 lumens/watt
Spacing Criteria (0/90/45): 1.23 / 1.28 / 1.32
Luminous Opening: Rectangular (W 0.44' x L: 3.92' x H: 0')
CIE Type: Direct

Input Watts (W): 58
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	77	77	77	77	75	75	75	75	72	72	72	69	69	69	66	66	66	64
1	71	69	66	64	70	67	65	63	64	63	61	62	61	59	60	59	57	56
2	66	61	57	54	64	60	56	53	58	55	52	55	53	51	54	52	50	48
3	60	54	50	46	59	53	49	46	51	48	45	50	47	44	48	46	43	42
4	56	49	44	40	54	48	43	39	46	42	39	45	41	38	44	40	38	37
5	52	44	39	35	50	43	38	35	42	38	34	41	37	34	40	36	33	32
6	48	40	35	31	47	39	34	31	38	34	30	37	33	30	36	33	30	29
7	44	36	31	27	43	36	31	27	35	30	27	34	30	27	33	29	27	26
8	41	33	28	25	41	33	28	25	32	28	24	31	27	24	31	27	24	23
9	39	31	26	22	38	30	25	22	30	25	22	29	25	22	28	25	22	21
10	36	28	23	20	36	28	23	20	27	23	20	27	23	20	26	23	20	19

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	10110	10110	10110
5°	10111	10117	10105
10°	10107	10139	10158
15°	10085	10176	10215
20°	10035	10181	10274
25°	9909	10150	10287
30°	9663	10016	10197
35°	9371	9721	9942
40°	9026	9238	9377
45°	8517	8464	8367
50°	7709	7505	7126
55°	6604	6191	5843
60°	5429	4730	4730
65°	4578	3603	3898
70°	4051	2846	3211
75°	3641	2580	2676
80°	2911	2192	2049
85°	1504	1360	1289



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ZONAL LUMENS:

CANDELA DISTRIBUTION:

Zone	Lumens	% Fixture	% Lamp		0°	22.5°	45°	67.5°	90°	Flux
0°-10°	153.7	4.1	2.7	0°	1620	1620	1620	1620	1620	
10°-20°	444.4	11.9	7.7	5°	1614	1612	1615	1621	1613	153
20°-30°	676.7	18.1	11.7	15°	1561	1564	1575	1587	1581	441
30°-40°	792.8	21.2	13.7	25°	1439	1450	1474	1494	1494	661
40°-50°	733.6	19.6	12.6	35°	1230	1245	1276	1300	1305	769
50°-60°	510.4	13.7	8.8	45°	965	951	959	954	948	740
60°-70°	272.5	7.3	4.7	55°	607	601	569	532	537	544
70°-80°	128.0	3.4	2.2	65°	310	294	244	249	264	313
80°-90°	27.0	0.7	0.5	75°	151	134	107	111	111	159
90°-100°	0.0	0.0	0.0	85°	21	22	19	18	18	30
100°-110°	0.0	0.0	0.0	90°	0	0	0	0	0	1
110°-120°	0.0	0.0	0.0	95°	0	0	0	0	0	0
120°-130°	0.0	0.0	0.0	105°	0	0	0	0	0	0
130°-140°	0.0	0.0	0.0	115°	0	0	0	0	0	0
140°-150°	0.0	0.0	0.0	125°	0	0	0	0	0	0
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°	1274.9	34.1	22.0	165°	0	0	0	0	0	0
0°-40°	2067.7	55.3	35.6	175°	0	0	0	0	0	0
0°-60°	3311.7	88.6	57.1	180°	0	0	0	0	0	0
0°-90°	3739.2	100.0	64.5							
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°	3739.2	100.0	64.5							



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1620	1620	1620	1620	1620
2.5°	1619	1617	1619	1622	1613
5°	1614	1612	1615	1621	1613
7.5°	1606	1604	1609	1616	1610
10°	1595	1594	1600	1609	1603
12.5°	1580	1581	1589	1599	1594
15°	1561	1564	1575	1587	1581
17.5°	1539	1542	1556	1570	1567
20°	1511	1517	1533	1550	1547
22.5°	1478	1486	1506	1525	1523
25°	1439	1450	1474	1494	1494
27.5°	1393	1406	1436	1458	1458
30°	1341	1357	1390	1414	1415
32.5°	1287	1303	1336	1362	1365
35°	1230	1245	1276	1300	1305
37.5°	1171	1182	1209	1230	1235
40°	1108	1113	1134	1148	1151
42.5°	1039	1035	1049	1056	1054
45°	965	951	959	954	948
47.5°	883	863	867	849	839
50°	794	776	773	743	734
52.5°	701	689	673	637	634
55°	607	601	569	532	537
57.5°	517	512	468	439	451
60°	435	428	379	363	379
62.5°	366	354	305	301	319
65°	310	294	244	249	264
67.5°	262	245	194	205	217
70°	222	205	156	170	176
72.5°	186	168	129	139	141
75°	151	134	107	111	111
77.5°	116	100	85	83	83
80°	81	71	61	56	57
82.5°	48	45	37	34	34
85°	21	22	19	18	18
87.5°	5	7	8	10	10
90°	0	0	0	0	0
92.5°	0	0	0	0	0
95°	0	0	0	0	0
97.5°	0	0	0	0	0
100°	0	0	0	0	0
102.5°	0	0	0	0	0
105°	0	0	0	0	0
107.5°	0	0	0	0	0
110°	0	0	0	0	0



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	0	0	0	0	0
115°	0	0	0	0	0
117.5°	0	0	0	0	0
120°	0	0	0	0	0
122.5°	0	0	0	0	0
125°	0	0	0	0	0
127.5°	0	0	0	0	0
130°	0	0	0	0	0
132.5°	0	0	0	0	0
135°	0	0	0	0	0
137.5°	0	0	0	0	0
140°	0	0	0	0	0
142.5°	0	0	0	0	0
145°	0	0	0	0	0
147.5°	0	0	0	0	0
150°	0	0	0	0	0
152.5°	0	0	0	0	0
155°	0	0	0	0	0
157.5°	0	0	0	0	0
160°	0	0	0	0	0
162.5°	0	0	0	0	0
165°	0	0	0	0	0
167.5°	0	0	0	0	0
170°	0	0	0	0	0
172.5°	0	0	0	0	0
175°	0	0	0	0	0
177.5°	0	0	0	0	0
180°	0	0	0	0	0

(END OF REPORT)