

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: 4122.0

Luminaire Tested: **IBO-100**

Issue Date: 3/3/2020



Test Information

Test Method: LM-79-08
Report Number: 4122.0
Test Lab:
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: IBO-100
Description: FAIL-SAFE INCAND.
opal lens
Light Source: 100A19 1750 LUMENS
Ballast/Driver: -

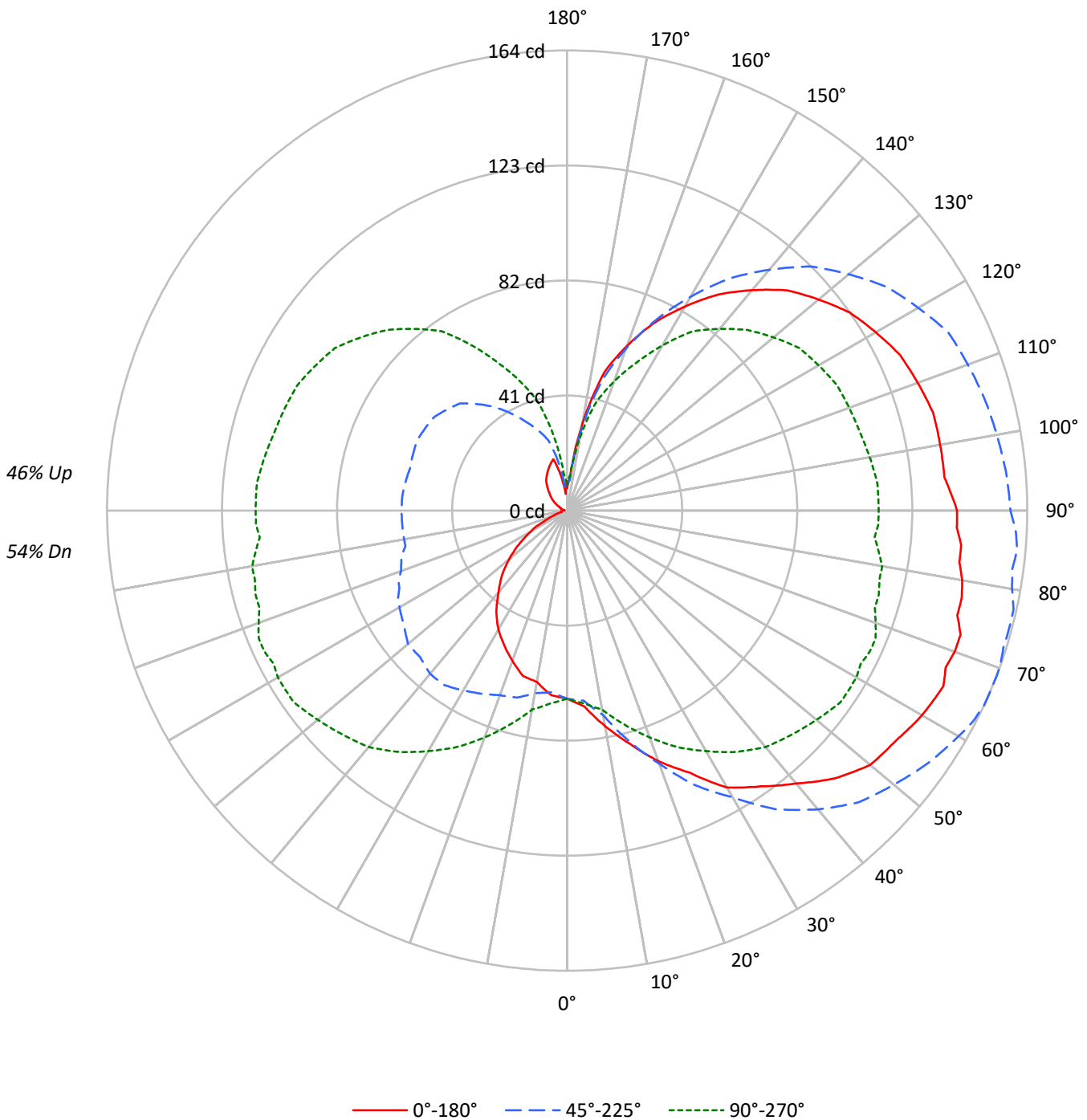
Summary

Lumens per Lamp: 1750 (1 lamp)
Luminaire Lumens: 1164.7 lumens
Efficiency: 66.6%
Efficacy: 11.6 lumens/watt
Spacing Criteria (0/90/45): 1.83 / 2.26 / 2.32
Luminous Opening: Rectangular w/ Sides (W: 0.75' x L: 0.5' x H: 0.25')
CIE Type: General Diffuse

Input Watts (W): 100
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

TEST NUMBER: 4122.0
CATALOG NUMBER: IBO-100

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 | 50 | 30 | 10 | 0 | |
| RCR | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 72 | 72 | 72 | 72 | 67 | 67 | 67 | 67 | 57 | 57 | 57 | 48 | 48 | 48 | 40 | 40 | 40 | 36 | | | | 36 |
| 1 | 62 | 58 | 54 | 51 | 57 | 54 | 50 | 47 | 45 | 43 | 40 | 38 | 36 | 34 | 30 | 29 | 28 | 24 | | | | 24 |
| 2 | 56 | 49 | 44 | 39 | 51 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 | 25 | 23 | 21 | 18 | | | | 18 |
| 3 | 50 | 42 | 36 | 31 | 46 | 39 | 33 | 29 | 32 | 28 | 25 | 27 | 23 | 20 | 21 | 19 | 16 | 14 | | | | 14 |
| 4 | 45 | 37 | 30 | 26 | 41 | 34 | 28 | 24 | 28 | 24 | 20 | 23 | 20 | 17 | 18 | 16 | 13 | 11 | | | | 11 |
| 5 | 41 | 32 | 26 | 21 | 38 | 30 | 24 | 20 | 25 | 20 | 17 | 20 | 17 | 14 | 16 | 13 | 11 | 9 | | | | 9 |
| 6 | 38 | 29 | 22 | 18 | 35 | 26 | 21 | 17 | 22 | 18 | 14 | 18 | 15 | 12 | 14 | 12 | 9 | 7 | | | | 7 |
| 7 | 35 | 26 | 20 | 15 | 32 | 24 | 18 | 14 | 20 | 15 | 12 | 16 | 13 | 10 | 13 | 10 | 8 | 6 | | | | 6 |
| 8 | 32 | 23 | 17 | 13 | 29 | 21 | 16 | 12 | 18 | 14 | 11 | 15 | 11 | 9 | 12 | 9 | 7 | 5 | | | | 5 |
| 9 | 30 | 21 | 15 | 12 | 27 | 19 | 14 | 11 | 16 | 12 | 9 | 14 | 10 | 8 | 11 | 8 | 6 | 5 | | | | 5 |
| 10 | 28 | 19 | 14 | 10 | 26 | 18 | 13 | 10 | 15 | 11 | 8 | 12 | 9 | 7 | 10 | 7 | 5 | 4 | | | | 4 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 90° | 180° |
|-----|------|------|------|
| 0° | 1923 | 1923 | 1923 |
| 5° | 1932 | 1932 | 1822 |
| 10° | 2089 | 1982 | 1661 |
| 15° | 2254 | 2155 | 1599 |
| 20° | 2455 | 2343 | 1473 |
| 25° | 2645 | 2549 | 1361 |
| 30° | 2932 | 2752 | 1260 |
| 35° | 3115 | 2983 | 1142 |
| 40° | 3352 | 3221 | 1003 |
| 45° | 3653 | 3440 | 893 |
| 50° | 3945 | 3707 | 756 |
| 55° | 4175 | 4035 | 613 |
| 60° | 4492 | 4331 | 461 |
| 65° | 4851 | 4713 | 295 |
| 70° | 5197 | 5125 | 177 |
| 75° | 5572 | 5683 | 77 |
| 80° | 6163 | 6519 | 86 |
| 85° | 6915 | 7532 | 98 |



TEST NUMBER: 4122.0
 CATALOG NUMBER: IBO-100

ZONAL LUMENS:

CANDELA DISTRIBUTION:

| Zone | Lumens | % Fixture | % Lamp | | 0° | 45° | 90° | 135° | 180° | Flux |
|-----------|--------|-----------|--------|------|-----|-----|-----|------|------|------|
| 0°-10° | 6.5 | 0.6 | 0.4 | 0° | 67 | 67 | 67 | 67 | 67 | |
| 10°-20° | 21.7 | 1.9 | 1.2 | 5° | 70 | 68 | 69 | 65 | 66 | 7 |
| 20°-30° | 40.7 | 3.5 | 2.3 | 15° | 86 | 85 | 79 | 69 | 61 | 25 |
| 30°-40° | 61.5 | 5.3 | 3.5 | 25° | 103 | 108 | 93 | 72 | 53 | 48 |
| 40°-50° | 80.9 | 6.9 | 4.6 | 35° | 120 | 130 | 105 | 76 | 44 | 76 |
| 50°-60° | 96.2 | 8.3 | 5.5 | 45° | 135 | 147 | 113 | 74 | 33 | 104 |
| 60°-70° | 106.1 | 9.1 | 6.1 | 55° | 143 | 157 | 119 | 71 | 21 | 129 |
| 70°-80° | 109.6 | 9.4 | 6.3 | 65° | 148 | 164 | 119 | 66 | 9 | 146 |
| 80°-90° | 110.3 | 9.5 | 6.3 | 75° | 144 | 163 | 115 | 61 | 2 | 153 |
| 90°-100° | 108.1 | 9.3 | 6.2 | 85° | 141 | 161 | 110 | 59 | 2 | 115 |
| 100°-110° | 103.5 | 8.9 | 5.9 | 90° | 139 | 158 | 111 | 59 | 2 | 76 |
| 110°-120° | 94.6 | 8.1 | 5.4 | 95° | 135 | 157 | 111 | 59 | 1 | 111 |
| 120°-130° | 80.8 | 6.9 | 4.6 | 105° | 135 | 154 | 108 | 58 | 2 | 142 |
| 130°-140° | 62.9 | 5.4 | 3.6 | 115° | 131 | 150 | 106 | 59 | 3 | 129 |
| 140°-150° | 43.2 | 3.7 | 2.5 | 125° | 123 | 139 | 101 | 58 | 6 | 109 |
| 150°-160° | 24.9 | 2.1 | 1.4 | 135° | 111 | 123 | 91 | 54 | 9 | 85 |
| 160°-170° | 9.8 | 0.8 | 0.6 | 145° | 94 | 101 | 78 | 45 | 13 | 59 |
| 170°-180° | 1.5 | 0.1 | 0.1 | 155° | 74 | 75 | 58 | 35 | 16 | 34 |
| 0°-30° | 68.9 | 5.9 | 3.9 | 165° | 51 | 48 | 40 | 26 | 19 | 13 |
| 0°-40° | 130.5 | 11.2 | 7.5 | 175° | 12 | 11 | 13 | 8 | 6 | 2 |
| 0°-60° | 307.5 | 26.4 | 17.6 | 180° | 8 | 9 | 9 | 10 | 11 | |
| 0°-90° | 633.6 | 54.4 | 36.2 | | | | | | | |
| 90°-120° | 306.3 | 26.3 | 17.5 | | | | | | | |
| 90°-150° | 493.3 | 42.4 | 28.2 | | | | | | | |
| 90°-180° | 529.0 | 45.4 | 30.2 | | | | | | | |
| 0°-180° | 1164.7 | 100.0 | 66.6 | | | | | | | |



TEST NUMBER: 4122.0
 CATALOG NUMBER: IBO-100

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0° | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| 5° | 70 | 71 | 70 | 69 | 69 | 68 | 68 | 67 | 69 | 67 | 69 |
| 10° | 78 | 80 | 77 | 75 | 75 | 74 | 74 | 73 | 73 | 72 | 72 |
| 15° | 86 | 89 | 86 | 85 | 87 | 85 | 83 | 81 | 80 | 78 | 79 |
| 20° | 95 | 98 | 97 | 97 | 97 | 96 | 94 | 90 | 90 | 86 | 86 |
| 25° | 103 | 107 | 107 | 109 | 109 | 108 | 104 | 101 | 96 | 93 | 93 |
| 30° | 114 | 115 | 117 | 118 | 122 | 118 | 118 | 111 | 106 | 101 | 99 |
| 35° | 120 | 124 | 126 | 131 | 131 | 130 | 127 | 120 | 115 | 107 | 105 |
| 40° | 127 | 130 | 134 | 137 | 139 | 139 | 135 | 128 | 121 | 112 | 110 |
| 45° | 135 | 137 | 141 | 147 | 148 | 147 | 142 | 134 | 127 | 118 | 113 |
| 50° | 141 | 143 | 145 | 152 | 154 | 152 | 149 | 140 | 131 | 120 | 116 |
| 55° | 143 | 144 | 149 | 157 | 159 | 157 | 152 | 146 | 135 | 123 | 119 |
| 60° | 146 | 147 | 152 | 159 | 163 | 161 | 156 | 148 | 135 | 124 | 119 |
| 62.5° | 147 | 148 | 152 | 160 | 165 | 163 | 159 | 150 | 135 | 125 | 118 |
| 65° | 148 | 146 | 153 | 161 | 166 | 164 | 158 | 151 | 138 | 124 | 119 |
| 67.5° | 146 | 148 | 153 | 163 | 166 | 164 | 160 | 151 | 138 | 124 | 119 |
| 70° | 147 | 147 | 153 | 160 | 166 | 164 | 158 | 151 | 136 | 123 | 117 |
| 72.5° | 147 | 146 | 155 | 162 | 166 | 163 | 159 | 150 | 135 | 123 | 115 |
| 75° | 144 | 144 | 153 | 161 | 166 | 163 | 158 | 149 | 135 | 122 | 115 |
| 77.5° | 144 | 146 | 151 | 159 | 166 | 163 | 159 | 150 | 134 | 120 | 114 |
| 80° | 143 | 143 | 151 | 160 | 164 | 161 | 156 | 148 | 134 | 120 | 114 |
| 82.5° | 141 | 143 | 151 | 159 | 166 | 160 | 156 | 146 | 134 | 118 | 112 |
| 85° | 141 | 141 | 149 | 157 | 163 | 161 | 154 | 147 | 132 | 118 | 110 |
| 87.5° | 139 | 140 | 148 | 156 | 162 | 160 | 156 | 144 | 131 | 116 | 111 |
| 90° | 139 | 138 | 146 | 155 | 160 | 158 | 153 | 143 | 130 | 116 | 111 |
| 95° | 135 | 140 | 143 | 153 | 158 | 157 | 152 | 144 | 132 | 115 | 111 |
| 105° | 135 | 137 | 143 | 152 | 156 | 154 | 151 | 142 | 128 | 115 | 108 |
| 115° | 131 | 133 | 138 | 148 | 150 | 150 | 146 | 138 | 127 | 112 | 106 |
| 125° | 123 | 124 | 130 | 138 | 141 | 139 | 134 | 127 | 115 | 105 | 101 |
| 135° | 111 | 112 | 116 | 122 | 124 | 123 | 120 | 114 | 104 | 96 | 91 |
| 145° | 94 | 95 | 97 | 101 | 102 | 101 | 96 | 94 | 87 | 80 | 78 |
| 155° | 74 | 74 | 75 | 77 | 96 | 75 | 73 | 68 | 64 | 59 | 58 |
| 165° | 51 | 51 | 51 | 51 | 51 | 48 | 45 | 45 | 43 | 41 | 40 |
| 175° | 12 | 9 | 13 | 11 | 13 | 11 | 10 | 11 | 12 | 12 | 13 |
| 180° | 8 | 8 | 8 | 9 | 9 | 9 | 8 | 7 | 9 | 8 | 9 |



TEST NUMBER: 4122.0
 CATALOG NUMBER: IBO-100

CANDELA DISTRIBUTION (continued):

| | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-----|------|------|------|------|------|------|------|------|------|
| 0° | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| 5° | 66 | 67 | 66 | 66 | 65 | 66 | 66 | 65 | 66 | 66 |
| 10° | 70 | 71 | 69 | 67 | 66 | 66 | 64 | 62 | 63 | 62 |
| 15° | 77 | 77 | 74 | 71 | 69 | 66 | 62 | 61 | 60 | 61 |
| 20° | 85 | 83 | 79 | 75 | 70 | 65 | 60 | 58 | 58 | 57 |
| 25° | 91 | 89 | 82 | 77 | 72 | 65 | 58 | 54 | 53 | 53 |
| 30° | 97 | 94 | 87 | 81 | 74 | 65 | 57 | 50 | 48 | 49 |
| 35° | 103 | 98 | 91 | 84 | 76 | 64 | 53 | 45 | 44 | 44 |
| 40° | 106 | 101 | 94 | 86 | 76 | 62 | 50 | 40 | 38 | 38 |
| 45° | 110 | 104 | 96 | 86 | 74 | 60 | 46 | 36 | 32 | 33 |
| 50° | 115 | 107 | 98 | 86 | 74 | 58 | 42 | 30 | 27 | 27 |
| 55° | 113 | 106 | 97 | 84 | 71 | 55 | 37 | 24 | 21 | 21 |
| 60° | 115 | 107 | 96 | 84 | 69 | 52 | 33 | 18 | 16 | 15 |
| 62.5° | 115 | 107 | 96 | 83 | 68 | 50 | 32 | 16 | 13 | 13 |
| 65° | 115 | 107 | 96 | 82 | 66 | 48 | 29 | 13 | 10 | 9 |
| 67.5° | 115 | 106 | 95 | 81 | 65 | 46 | 27 | 11 | 7 | 7 |
| 70° | 113 | 104 | 93 | 79 | 63 | 44 | 24 | 8 | 5 | 5 |
| 72.5° | 112 | 104 | 93 | 78 | 62 | 43 | 23 | 7 | 4 | 4 |
| 75° | 111 | 103 | 92 | 77 | 61 | 41 | 21 | 5 | 2 | 2 |
| 77.5° | 109 | 101 | 91 | 76 | 59 | 41 | 21 | 5 | 2 | 2 |
| 80° | 107 | 101 | 89 | 75 | 59 | 41 | 21 | 5 | 2 | 2 |
| 82.5° | 107 | 99 | 90 | 77 | 59 | 41 | 21 | 5 | 2 | 2 |
| 85° | 106 | 99 | 90 | 77 | 59 | 41 | 21 | 5 | 2 | 2 |
| 87.5° | 107 | 99 | 88 | 76 | 59 | 41 | 21 | 5 | 2 | 2 |
| 90° | 105 | 98 | 89 | 76 | 59 | 41 | 21 | 5 | 2 | 2 |
| 95° | 106 | 98 | 87 | 74 | 59 | 40 | 21 | 4 | 1 | 1 |
| 105° | 105 | 98 | 87 | 74 | 58 | 40 | 20 | 5 | 2 | 2 |
| 115° | 103 | 96 | 86 | 74 | 59 | 41 | 22 | 7 | 3 | 3 |
| 125° | 97 | 92 | 83 | 71 | 58 | 42 | 25 | 10 | 5 | 6 |
| 135° | 88 | 84 | 76 | 66 | 54 | 40 | 24 | 12 | 9 | 9 |
| 145° | 77 | 71 | 64 | 55 | 45 | 34 | 22 | 13 | 13 | 13 |
| 155° | 58 | 53 | 47 | 41 | 35 | 28 | 21 | 17 | 16 | 16 |
| 165° | 38 | 35 | 32 | 29 | 26 | 23 | 21 | 19 | 18 | 19 |
| 175° | 13 | 8 | 8 | 8 | 8 | 7 | 7 | 5 | 6 | 6 |
| 180° | 7 | 9 | 9 | 8 | 10 | 9 | 10 | 9 | 9 | 11 |

(END OF REPORT)