

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: P29161

Luminaire Tested: **H12-LD4-10W-40-OPL-EDC1**

Test Date: 12/21/16



Test Information

Test Method: LM-79-08
Report Number: P29161
Test Lab: INNOVATION CENTER-P2
Test Date: 12/21/16
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: H12-LD4-10W-40-OPL-EDC1
Description: H12 LED FIXTURE WITH OPAL LENS
Light Source: (56) NICHIA 4000K LEDS
1FS402256M8404
Ballast/Driver: (1) OSRAM ELECTRONIC DRIVER (200mA)
OT25W-UNV-1250C

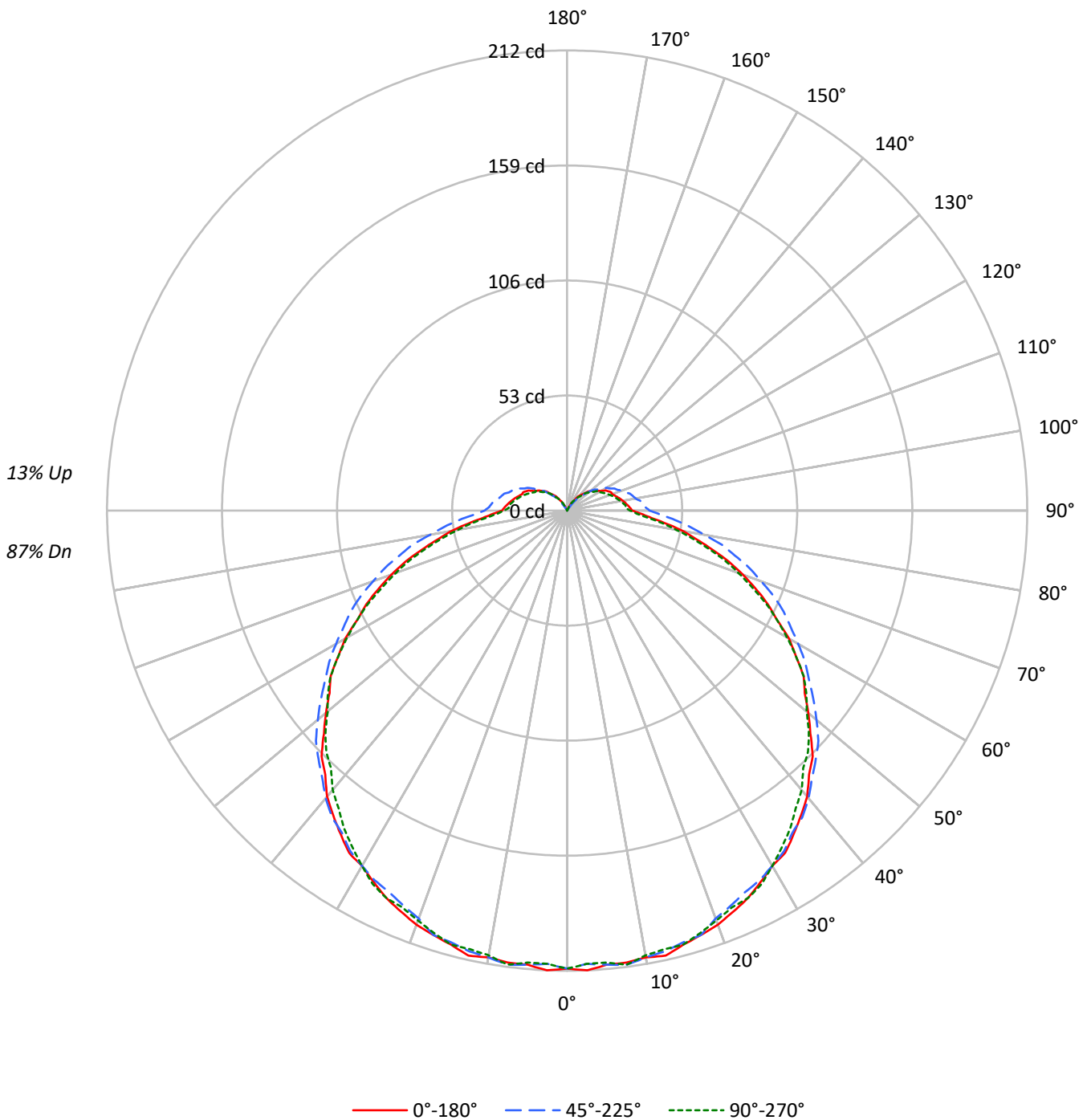
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 869.3 lumens
Efficiency: N/A
Efficacy: 86.1 lumens/watt
Spacing Criteria (0/90/45): 1.34 / 1.32 / 1.48
Luminous Opening: Rectangular w/ Sides (W: 0.83' x L: 0.83' x H: 0.42')
CIE Type: Semi-Direct

Input Watts (W): 10.1
Input Voltage (V): 120.1
Input Current (A_{in}): 0.0850
Voltage Rise (V): NR
Power Factor: 0.9931
Total Harmonic Distortion (THDi): 7.30%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): 25.1
Test Distance: 25 FT

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Luminous Intensity Polar Plot





TEST NUMBER: P29161

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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 | 116 | 116 | 116 | 116 | 112 | 112 | 112 | 112 | 104 | 104 | 104 | 97 | 97 | 97 | 90 | 90 | 90 | 87 |
| 1 | 104 | 98 | 93 | 88 | 99 | 94 | 90 | 86 | 88 | 84 | 81 | 82 | 79 | 76 | 76 | 74 | 71 | 68 |
| 2 | 93 | 84 | 76 | 70 | 89 | 81 | 74 | 68 | 75 | 70 | 65 | 70 | 65 | 61 | 65 | 61 | 58 | 55 |
| 3 | 84 | 73 | 64 | 57 | 81 | 70 | 62 | 56 | 66 | 59 | 53 | 61 | 55 | 51 | 57 | 52 | 48 | 45 |
| 4 | 77 | 64 | 55 | 48 | 74 | 62 | 53 | 47 | 58 | 50 | 45 | 54 | 48 | 43 | 50 | 45 | 41 | 38 |
| 5 | 70 | 57 | 47 | 41 | 67 | 55 | 46 | 40 | 51 | 44 | 38 | 48 | 42 | 37 | 45 | 39 | 35 | 32 |
| 6 | 65 | 51 | 42 | 35 | 62 | 49 | 41 | 34 | 46 | 39 | 33 | 43 | 37 | 32 | 41 | 35 | 30 | 28 |
| 7 | 60 | 46 | 37 | 31 | 57 | 45 | 36 | 30 | 42 | 34 | 29 | 39 | 33 | 28 | 37 | 31 | 27 | 25 |
| 8 | 56 | 42 | 33 | 27 | 53 | 41 | 32 | 27 | 38 | 31 | 26 | 36 | 30 | 25 | 34 | 28 | 24 | 22 |
| 9 | 52 | 38 | 30 | 24 | 50 | 37 | 29 | 24 | 35 | 28 | 23 | 33 | 27 | 22 | 31 | 26 | 21 | 19 |
| 10 | 49 | 35 | 27 | 22 | 47 | 34 | 27 | 21 | 32 | 25 | 21 | 31 | 24 | 20 | 29 | 23 | 19 | 18 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 3271 | 3271 | 3271 |
| 5° | 3131 | 3077 | 3116 |
| 10° | 3023 | 2925 | 3009 |
| 15° | 2929 | 2779 | 2929 |
| 20° | 2833 | 2624 | 2805 |
| 25° | 2732 | 2495 | 2732 |
| 30° | 2625 | 2402 | 2625 |
| 35° | 2551 | 2291 | 2509 |
| 40° | 2452 | 2197 | 2395 |
| 45° | 2338 | 2080 | 2294 |
| 50° | 2191 | 1963 | 2176 |
| 55° | 2097 | 1829 | 2097 |
| 60° | 1960 | 1714 | 1944 |
| 65° | 1805 | 1603 | 1788 |
| 70° | 1642 | 1463 | 1604 |
| 75° | 1442 | 1317 | 1400 |
| 80° | 1257 | 1140 | 1187 |
| 85° | 1033 | 979 | 980 |



TEST NUMBER: P29161

CATALOG NUMBER: H12-LD4-10W-40-OPL-EDC1

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 20.1 | 2.3 |
| 10°-20° | 58.1 | 6.7 |
| 20°-30° | 90.0 | 10.3 |
| 30°-40° | 113.0 | 13.0 |
| 40°-50° | 123.6 | 14.2 |
| 50°-60° | 120.5 | 13.9 |
| 60°-70° | 104.8 | 12.1 |
| 70°-80° | 79.2 | 9.1 |
| 80°-90° | 50.2 | 5.8 |
| 90°-100° | 34.5 | 4.0 |
| 100°-110° | 28.4 | 3.3 |
| 110°-120° | 21.4 | 2.5 |
| 120°-130° | 14.3 | 1.7 |
| 130°-140° | 8.0 | 0.9 |
| 140°-150° | 3.1 | 0.4 |
| 150°-160° | 0.3 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-30° | 168.2 | 19.3 |
| 0°-40° | 281.2 | 32.3 |
| 0°-60° | 525.2 | 60.4 |
| 0°-90° | 759.3 | 87.3 |
| 90°-120° | 84.3 | 9.7 |
| 90°-150° | 109.6 | 12.6 |
| 90°-180° | 110.0 | 12.7 |
| 0°-180° | 869.3 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|-----|-------|-----|-------|-----|------|
| 0° | 211 | 211 | 211 | 211 | 211 | |
| 5° | 210 | 211 | 210 | 212 | 209 | 20 |
| 15° | 207 | 206 | 206 | 207 | 207 | 59 |
| 25° | 197 | 195 | 194 | 196 | 197 | 91 |
| 35° | 182 | 180 | 181 | 180 | 179 | 114 |
| 45° | 160 | 161 | 162 | 160 | 157 | 123 |
| 55° | 133 | 136 | 136 | 135 | 133 | 118 |
| 65° | 102 | 106 | 110 | 106 | 101 | 101 |
| 75° | 69 | 76 | 80 | 75 | 67 | 73 |
| 85° | 39 | 47 | 50 | 46 | 37 | 35 |
| 90° | 30 | 36 | 38 | 34 | 29 | 17 |
| 95° | 28 | 32 | 35 | 31 | 27 | 22 |
| 105° | 24 | 28 | 30 | 26 | 23 | 25 |
| 115° | 21 | 22 | 24 | 22 | 19 | 21 |
| 125° | 16 | 16 | 17 | 16 | 15 | 14 |
| 135° | 11 | 10 | 10 | 9 | 11 | 9 |
| 145° | 6 | 5 | 3 | 5 | 6 | 4 |
| 155° | 1 | 0 | 0 | 0 | 1 | 1 |
| 165° | 0 | 0 | 0 | 0 | 0 | 0 |
| 175° | 0 | 0 | 0 | 0 | 0 | 0 |
| 180° | 0 | 0 | 0 | 0 | 0 | 0 |



TEST NUMBER: P29161

CATALOG NUMBER: H12-LD4-10W-40-OPL-EDC1

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0° | 211 | 211 | 211 | 211 | 211 | 211 | 211 | 211 | 211 | 211 | 211 |
| 2.5° | 212 | 212 | 211 | 212 | 210 | 209 | 211 | 212 | 211 | 211 | 209 |
| 5° | 210 | 211 | 211 | 211 | 209 | 210 | 212 | 212 | 212 | 210 | 209 |
| 7.5° | 210 | 211 | 210 | 209 | 210 | 211 | 212 | 211 | 211 | 211 | 211 |
| 10° | 209 | 208 | 208 | 208 | 210 | 209 | 209 | 210 | 209 | 209 | 208 |
| 12.5° | 210 | 206 | 207 | 207 | 207 | 208 | 207 | 209 | 206 | 206 | 207 |
| 15° | 207 | 205 | 205 | 207 | 206 | 206 | 206 | 208 | 205 | 205 | 207 |
| 17.5° | 205 | 204 | 204 | 205 | 203 | 205 | 205 | 205 | 203 | 203 | 204 |
| 20° | 203 | 201 | 201 | 201 | 199 | 200 | 201 | 200 | 199 | 202 | 201 |
| 22.5° | 200 | 198 | 197 | 199 | 197 | 197 | 196 | 198 | 197 | 199 | 198 |
| 25° | 197 | 195 | 195 | 195 | 195 | 194 | 194 | 196 | 195 | 196 | 197 |
| 27.5° | 193 | 192 | 192 | 191 | 192 | 192 | 190 | 191 | 191 | 192 | 194 |
| 30° | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 188 | 188 | 189 | 189 |
| 32.5° | 187 | 185 | 185 | 184 | 185 | 186 | 186 | 184 | 183 | 185 | 184 |
| 35° | 182 | 181 | 182 | 180 | 180 | 181 | 181 | 180 | 179 | 180 | 179 |
| 37.5° | 177 | 176 | 176 | 176 | 176 | 178 | 177 | 175 | 174 | 175 | 173 |
| 40° | 172 | 171 | 170 | 172 | 171 | 173 | 173 | 170 | 170 | 170 | 168 |
| 42.5° | 165 | 165 | 165 | 167 | 166 | 167 | 167 | 165 | 165 | 164 | 161 |
| 45° | 160 | 159 | 159 | 162 | 162 | 162 | 161 | 160 | 160 | 158 | 157 |
| 47.5° | 152 | 153 | 154 | 155 | 157 | 157 | 155 | 154 | 151 | 151 | 151 |
| 50° | 145 | 147 | 148 | 149 | 151 | 150 | 148 | 148 | 145 | 145 | 144 |
| 52.5° | 138 | 140 | 141 | 143 | 144 | 143 | 142 | 142 | 139 | 138 | 139 |
| 55° | 133 | 132 | 134 | 137 | 137 | 136 | 136 | 136 | 132 | 132 | 133 |
| 57.5° | 125 | 125 | 127 | 130 | 130 | 130 | 130 | 129 | 126 | 124 | 125 |
| 60° | 118 | 119 | 119 | 122 | 123 | 123 | 123 | 122 | 119 | 116 | 117 |
| 62.5° | 109 | 111 | 112 | 114 | 116 | 116 | 116 | 115 | 111 | 108 | 109 |
| 65° | 102 | 102 | 105 | 107 | 109 | 110 | 109 | 107 | 103 | 100 | 101 |
| 67.5° | 94 | 94 | 98 | 100 | 101 | 103 | 102 | 99 | 96 | 92 | 92 |
| 70° | 86 | 86 | 90 | 93 | 94 | 95 | 94 | 91 | 88 | 84 | 84 |
| 72.5° | 78 | 77 | 81 | 85 | 87 | 88 | 86 | 84 | 80 | 75 | 76 |
| 75° | 69 | 69 | 74 | 77 | 79 | 80 | 78 | 76 | 72 | 67 | 67 |
| 77.5° | 61 | 62 | 66 | 69 | 71 | 73 | 71 | 69 | 65 | 60 | 59 |
| 80° | 54 | 55 | 59 | 62 | 64 | 64 | 64 | 61 | 57 | 53 | 51 |
| 82.5° | 46 | 47 | 52 | 55 | 57 | 57 | 56 | 54 | 50 | 45 | 44 |
| 85° | 39 | 40 | 44 | 48 | 50 | 50 | 49 | 47 | 43 | 39 | 37 |
| 87.5° | 34 | 35 | 38 | 41 | 43 | 43 | 42 | 40 | 36 | 33 | 32 |
| 90° | 30 | 31 | 34 | 36 | 38 | 38 | 38 | 35 | 32 | 29 | 29 |
| 92.5° | 29 | 29 | 32 | 34 | 36 | 36 | 35 | 33 | 30 | 28 | 27 |
| 95° | 28 | 28 | 31 | 33 | 35 | 35 | 34 | 32 | 29 | 27 | 27 |
| 97.5° | 27 | 27 | 29 | 32 | 33 | 34 | 33 | 31 | 28 | 26 | 26 |
| 100° | 26 | 26 | 28 | 31 | 32 | 32 | 32 | 30 | 27 | 25 | 25 |
| 102.5° | 25 | 25 | 27 | 29 | 31 | 31 | 31 | 28 | 26 | 24 | 24 |
| 105° | 24 | 24 | 26 | 28 | 30 | 30 | 29 | 27 | 25 | 23 | 23 |
| 107.5° | 23 | 24 | 25 | 26 | 28 | 28 | 28 | 26 | 24 | 22 | 22 |
| 110° | 22 | 23 | 23 | 25 | 26 | 27 | 26 | 25 | 22 | 21 | 21 |



TEST NUMBER: P29161

CATALOG NUMBER: H12-LD4-10W-40-OPL-EDC1

CANDELA DISTRIBUTION (continued):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° | 90° |
|--------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 112.5° | 22 | 22 | 22 | 24 | 25 | 25 | 25 | 23 | 21 | 20 | 20 |
| 115° | 21 | 20 | 21 | 22 | 24 | 24 | 23 | 22 | 20 | 19 | 19 |
| 117.5° | 20 | 19 | 19 | 21 | 22 | 22 | 21 | 20 | 18 | 18 | 18 |
| 120° | 18 | 18 | 18 | 19 | 20 | 21 | 20 | 19 | 17 | 17 | 17 |
| 122.5° | 17 | 17 | 17 | 18 | 19 | 19 | 18 | 17 | 16 | 16 | 17 |
| 125° | 16 | 16 | 15 | 16 | 17 | 17 | 17 | 16 | 14 | 15 | 15 |
| 127.5° | 15 | 15 | 14 | 14 | 15 | 16 | 15 | 14 | 13 | 14 | 14 |
| 130° | 14 | 14 | 13 | 13 | 14 | 14 | 13 | 12 | 12 | 13 | 13 |
| 132.5° | 13 | 12 | 12 | 11 | 12 | 12 | 12 | 11 | 11 | 12 | 12 |
| 135° | 11 | 11 | 11 | 9 | 10 | 10 | 10 | 9 | 10 | 11 | 11 |
| 137.5° | 10 | 10 | 9 | 8 | 8 | 9 | 8 | 8 | 9 | 9 | 9 |
| 140° | 9 | 9 | 8 | 7 | 7 | 7 | 6 | 7 | 8 | 8 | 8 |
| 142.5° | 8 | 8 | 7 | 6 | 5 | 5 | 5 | 6 | 7 | 7 | 7 |
| 145° | 6 | 6 | 6 | 5 | 3 | 3 | 3 | 5 | 5 | 6 | 6 |
| 147.5° | 5 | 5 | 5 | 4 | 2 | 1 | 2 | 3 | 4 | 5 | 5 |
| 150° | 4 | 4 | 3 | 3 | 1 | 0 | 1 | 2 | 3 | 4 | 4 |
| 152.5° | 2 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 2 | 2 |
| 155° | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 157.5° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 160° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 162.5° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 165° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 167.5° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 170° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 172.5° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 175° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 177.5° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 180° | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

(END OF REPORT)