

LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: LUMIERE

Report Number: P27781[_4000K

Luminaire Tested: 696-8LED4010-12-BK-DIFF

Issue Date: 3/3/2020

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

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Test Information

Test Method: LM-79-2019
 Report Number: P27781[_4000K
 Test Lab: INNOVATION CENTER(G2)
 Issue Date: 3/3/2020
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: LUMIERE
 Catalog Number: 696-8LED4010-12-BK-DIFF
 Description: BOCA 696, 8 WATT, 4000K CCT, 10 DEGREE SPOT OPTIC,
 FLUSH HOOD BLACK, DIFFUSED LENS
 Light Source: (1) SORAA 4000K 90 CRI LED
 SM16-07-10D-940-03
 Ballast/Driver: -

Summary

Lumens per Lamp: N/A
 Luminaire Lumens: 304.6 lumens
 Efficiency: N/A
 Efficacy: 38.1 lumens/watt
 N/A
 Luminous Opening: Circular (Dia: 0.17' x H: 0')
 CIE Type: Indirect

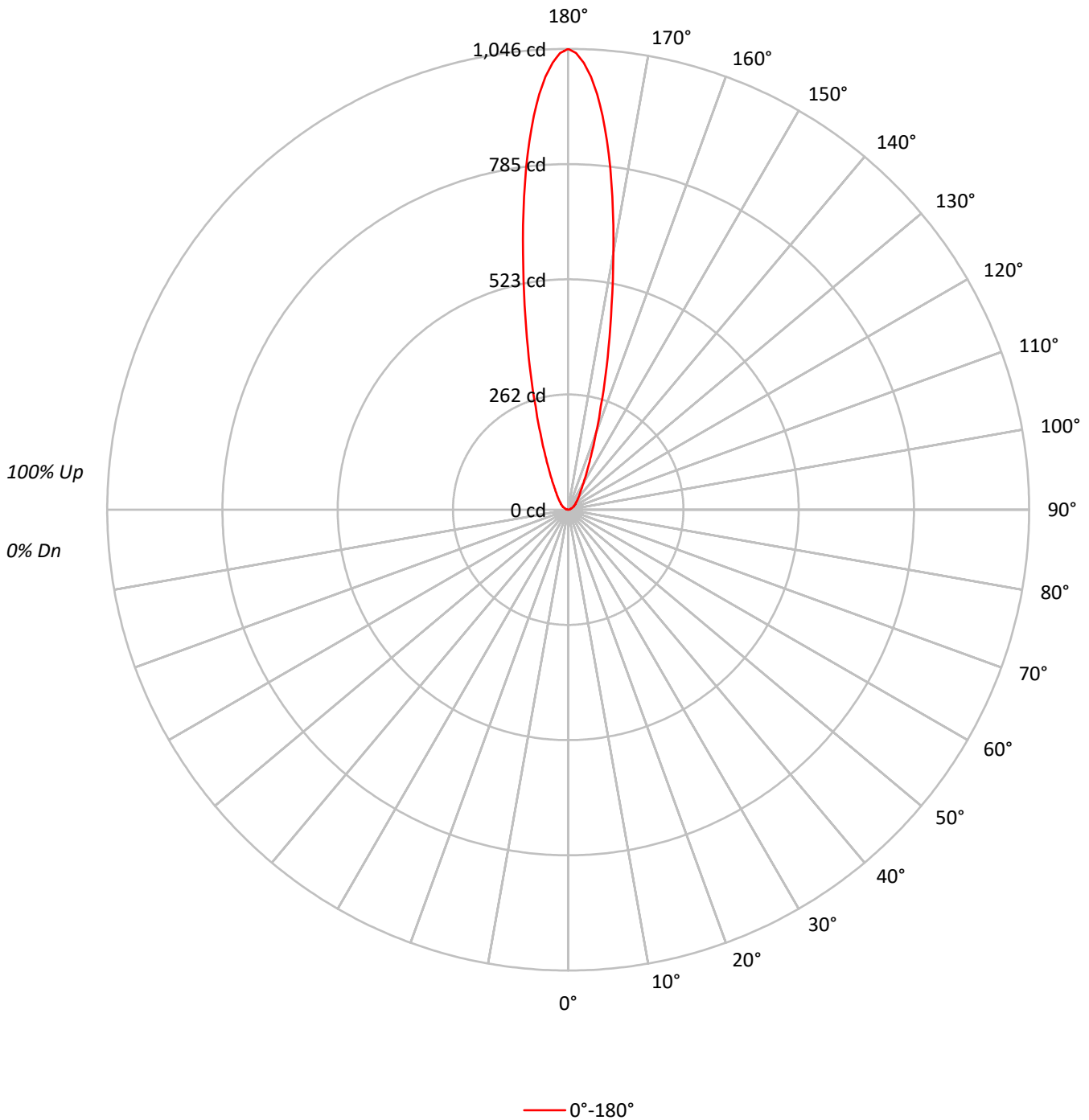
Input Watts (W): 8
 Input Voltage (V): NR
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 24 FT



| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | P3 | 10/30/2015 | 4/30/2016 |
| Power Meter | IN0214 | 1/12/2016 | 1/12/2017 |
| AC Power Source | IN0062 | 1/12/2016 | 1/12/2017 |
| DC Power Supply | -- | -- | -- |
| Room Thermometer | IN0145 | 1/13/2016 | 1/13/2017 |

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Luminous Intensity Polar Plot



TEST NUMBER: P27781_4000K
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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|--|--|--|--|--|--|----|--|--|--|--|--|--|--|--|----|
| RF | 20 | | | | | | | | | 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 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 | | | | | | | | | | | | | | | | |
| RCR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 95 | 95 | 95 | 95 | 81 | 81 | 81 | 81 | 56 | 56 | 56 | 32 | 32 | 32 | 10 | 10 | 10 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 87 | 83 | 79 | 76 | 74 | 71 | 68 | 65 | 48 | 47 | 45 | 28 | 27 | 26 | 9 | 9 | 8 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 79 | 72 | 66 | 62 | 67 | 62 | 57 | 53 | 42 | 40 | 37 | 24 | 23 | 22 | 8 | 7 | 7 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 72 | 63 | 57 | 51 | 61 | 54 | 49 | 44 | 37 | 34 | 31 | 21 | 20 | 18 | 7 | 6 | 6 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 65 | 56 | 48 | 43 | 56 | 48 | 42 | 37 | 33 | 29 | 26 | 19 | 17 | 16 | 6 | 6 | 5 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 60 | 49 | 42 | 36 | 51 | 42 | 36 | 32 | 29 | 25 | 22 | 17 | 15 | 13 | 5 | 5 | 4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 55 | 44 | 36 | 31 | 47 | 38 | 32 | 27 | 26 | 22 | 19 | 15 | 13 | 11 | 5 | 4 | 4 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 50 | 39 | 32 | 27 | 43 | 34 | 28 | 23 | 23 | 19 | 17 | 14 | 11 | 10 | 4 | 4 | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 47 | 35 | 28 | 23 | 40 | 30 | 24 | 20 | 21 | 17 | 14 | 12 | 10 | 9 | 4 | 3 | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 43 | 32 | 25 | 20 | 37 | 28 | 22 | 18 | 19 | 15 | 13 | 11 | 9 | 8 | 4 | 3 | 3 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 40 | 29 | 22 | 18 | 34 | 25 | 19 | 16 | 17 | 14 | 11 | 10 | 8 | 7 | 3 | 3 | 2 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

AVERAGE LUMINANCE (cd/sqm):

| | |
|------|--------|
| | 0° |
| 95° | 0 |
| 100° | 5950 |
| 105° | 8202 |
| 110° | 9228 |
| 115° | 12358 |
| 120° | 13662 |
| 125° | 15512 |
| 130° | 17145 |
| 135° | 19236 |
| 140° | 23225 |
| 145° | 28797 |
| 150° | 38705 |
| 155° | 58390 |
| 160° | 96445 |
| 165° | 171967 |
| 170° | 295840 |
| 175° | 444452 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 0°
 Luminance: 0 cd/sqm

TEST NUMBER: P27781[4000K

CATALOG NUMBER: 696-8LED4010-12-BK-DIFF

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 0.0 | 0.0 |
| 10°-20° | 0.0 | 0.0 |
| 20°-30° | 0.0 | 0.0 |
| 30°-40° | 0.0 | 0.0 |
| 40°-50° | 0.0 | 0.0 |
| 50°-60° | 0.0 | 0.0 |
| 60°-70° | 0.0 | 0.0 |
| 70°-80° | 0.0 | 0.0 |
| 80°-90° | 0.0 | 0.0 |
| 90°-100° | 0.9 | 0.3 |
| 100°-110° | 4.5 | 1.5 |
| 110°-120° | 10.1 | 3.3 |
| 120°-130° | 16.1 | 5.3 |
| 130°-140° | 21.7 | 7.1 |
| 140°-150° | 30.6 | 10.1 |
| 150°-160° | 51.3 | 16.8 |
| 160°-170° | 94.3 | 30.9 |
| 170°-180° | 75.5 | 24.8 |
| 0°-30° | 0.0 | 0.0 |
| 0°-40° | 0.0 | 0.0 |
| 0°-60° | 0.0 | 0.0 |
| 0°-90° | 0.0 | 0.0 |
| 90°-120° | 15.4 | 5.1 |
| 90°-150° | 83.9 | 27.6 |
| 90°-180° | 305.0 | 100.1 |
| 0°-180° | 304.6 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | Flux |
|------|------|------|
| 90° | 0 | |
| 95° | 0 | 1 |
| 105° | 4 | 4 |
| 115° | 11 | 10 |
| 125° | 18 | 16 |
| 135° | 28 | 22 |
| 145° | 48 | 31 |
| 155° | 107 | 51 |
| 165° | 337 | 94 |
| 175° | 897 | 75 |
| 180° | 1046 | |

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CANDELA DISTRIBUTION (FULL):

| | 0° |
|--------|--------|
| 90° | 0.0 |
| 92.5° | 0.0 |
| 95° | 0.0 |
| 97.5° | 1.0 |
| 100° | 2.1 |
| 102.5° | 3.1 |
| 105° | 4.3 |
| 107.5° | 5.4 |
| 110° | 6.4 |
| 112.5° | 8.5 |
| 115° | 10.6 |
| 117.5° | 11.6 |
| 120° | 13.8 |
| 122.5° | 15.9 |
| 125° | 18.0 |
| 127.5° | 20.1 |
| 130° | 22.3 |
| 132.5° | 24.4 |
| 135° | 27.6 |
| 137.5° | 31.9 |
| 140° | 36.1 |
| 142.5° | 41.4 |
| 145° | 47.8 |
| 147.5° | 56.3 |
| 150° | 67.9 |
| 152.5° | 84.9 |
| 155° | 107.3 |
| 157.5° | 138.1 |
| 160° | 183.7 |
| 162.5° | 246.4 |
| 165° | 336.7 |
| 166° | 378.1 |
| 167° | 424.9 |
| 168° | 474.8 |
| 169° | 529.9 |
| 170° | 590.5 |
| 171° | 654.1 |
| 172° | 717.9 |
| 173° | 782.7 |
| 174° | 842.1 |
| 175° | 897.4 |
| 176° | 945.2 |
| 177° | 984.4 |
| 178° | 1015.2 |
| 179° | 1036.5 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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CANDELA DISTRIBUTION (continued):

180° | $\frac{0^\circ}{1046.1}$

(END OF REPORT)