

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P903677

Luminaire Tested: DFN2DIP-SQ3F0-050D110US830-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903677  
REPORT IS A COMBINATION OF REPORTS P901509 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-050D110US830-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

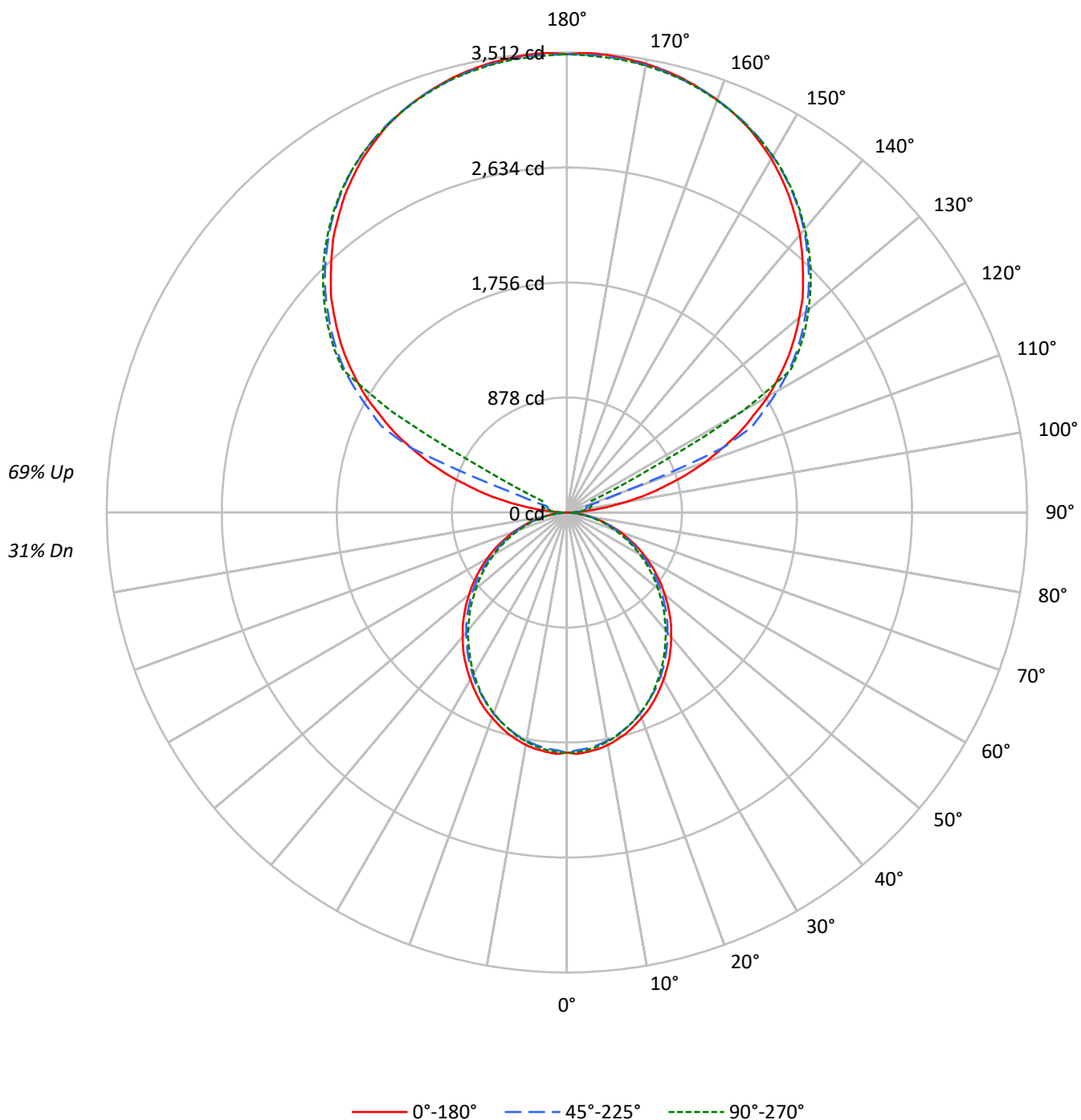
Lumens per Lamp: N/A  
Luminaire Lumens: 14929.8 lumens  
Efficiency: N/A  
Efficacy: 116.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 128.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P903677

CATALOG NUMBER: DFN2DIP-SQ3F0-050D110US830-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P903677

CATALOG NUMBER: DFN2DIP-SQ3F0-050D110US830-FLONL

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF  | 20  |     |     |     | 20 |    |    |    | 20 |    |    |    | 20 |    |    |    | 20 |
| RC  | 80  |     |     |     | 70 |    |    |    | 50 |    |    |    | 30 |    |    |    | 10 |
| RW  | 70  | 50  | 30  | 10  | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 103 | 103 | 103 | 103 | 92 | 92 | 92 | 92 | 73 | 73 | 73 | 55 | 55 | 55 | 39 | 39 | 39 |
| 1   | 94  | 89  | 86  | 82  | 84 | 80 | 77 | 74 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 34 | 33 |
| 2   | 85  | 78  | 72  | 67  | 76 | 70 | 65 | 61 | 56 | 52 | 49 | 43 | 40 | 38 | 30 | 29 | 28 |
| 3   | 78  | 69  | 61  | 56  | 70 | 62 | 56 | 51 | 49 | 45 | 41 | 38 | 35 | 32 | 27 | 25 | 24 |
| 4   | 71  | 61  | 53  | 47  | 64 | 55 | 48 | 43 | 44 | 39 | 35 | 33 | 30 | 28 | 24 | 22 | 20 |
| 5   | 65  | 54  | 46  | 40  | 58 | 49 | 42 | 37 | 39 | 34 | 30 | 30 | 27 | 24 | 22 | 19 | 18 |
| 6   | 60  | 48  | 40  | 35  | 54 | 44 | 37 | 32 | 35 | 30 | 26 | 27 | 24 | 21 | 20 | 17 | 15 |
| 7   | 55  | 43  | 36  | 30  | 50 | 39 | 33 | 28 | 32 | 27 | 23 | 25 | 21 | 18 | 18 | 15 | 14 |
| 8   | 51  | 39  | 32  | 27  | 46 | 36 | 29 | 24 | 29 | 24 | 20 | 22 | 19 | 16 | 16 | 14 | 12 |
| 9   | 48  | 36  | 28  | 24  | 43 | 32 | 26 | 22 | 26 | 22 | 18 | 21 | 17 | 15 | 15 | 13 | 11 |
| 10  | 44  | 33  | 26  | 21  | 40 | 30 | 24 | 19 | 24 | 19 | 16 | 19 | 16 | 13 | 14 | 12 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2101 | 2101 | 2101 |
| 5°  | 2103 | 2070 | 2085 |
| 10° | 2085 | 2041 | 2056 |
| 15° | 2053 | 2006 | 2011 |
| 20° | 2010 | 1958 | 1966 |
| 25° | 1967 | 1901 | 1913 |
| 30° | 1914 | 1848 | 1846 |
| 35° | 1864 | 1785 | 1775 |
| 40° | 1802 | 1721 | 1707 |
| 45° | 1741 | 1658 | 1638 |
| 50° | 1673 | 1591 | 1558 |
| 55° | 1602 | 1514 | 1484 |
| 60° | 1522 | 1422 | 1400 |
| 65° | 1434 | 1327 | 1300 |
| 70° | 1323 | 1211 | 1193 |
| 75° | 1169 | 1072 | 1093 |
| 80° | 982  | 894  | 903  |
| 85° | 691  | 592  | 591  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2395 cd/sqm

TEST NUMBER: P903677

CATALOG NUMBER: DFN2DIP-SQ3F0-050D110US830-FLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 172.6   | 1.2       |
| 10°-20°   | 485.6   | 3.3       |
| 20°-30°   | 713.7   | 4.8       |
| 30°-40°   | 828.9   | 5.6       |
| 40°-50°   | 827.8   | 5.5       |
| 50°-60°   | 721.8   | 4.8       |
| 60°-70°   | 533.6   | 3.6       |
| 70°-80°   | 301.9   | 2.0       |
| 80°-90°   | 85.8    | 0.6       |
| 90°-100°  | 115.4   | 0.8       |
| 100°-110° | 430.1   | 2.9       |
| 110°-120° | 1140.7  | 7.6       |
| 120°-130° | 1892.0  | 12.7      |
| 130°-140° | 2009.7  | 13.5      |
| 140°-150° | 1867.8  | 12.5      |
| 150°-160° | 1501.7  | 10.1      |
| 160°-170° | 967.6   | 6.5       |
| 170°-180° | 333.0   | 2.2       |
| 0°-30°    | 1371.9  | 9.2       |
| 0°-40°    | 2200.7  | 14.7      |
| 0°-60°    | 3750.4  | 25.1      |
| 0°-90°    | 4671.7  | 31.3      |
| 90°-120°  | 1686.2  | 11.3      |
| 90°-150°  | 7455.8  | 49.9      |
| 90°-180°  | 10258.0 | 68.7      |
| 0°-180°   | 14929.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1834 | 1834  | 1834 | 1834  | 1834 |      |
| 5°   | 1834 | 1827  | 1807 | 1821  | 1818 | 174  |
| 15°  | 1746 | 1735  | 1712 | 1719  | 1710 | 492  |
| 25°  | 1580 | 1566  | 1536 | 1539  | 1536 | 727  |
| 35°  | 1363 | 1346  | 1317 | 1307  | 1298 | 851  |
| 45°  | 1109 | 1097  | 1070 | 1051  | 1044 | 856  |
| 55°  | 839  | 829   | 808  | 786   | 778  | 750  |
| 65°  | 566  | 555   | 538  | 522   | 513  | 560  |
| 75°  | 296  | 293   | 284  | 273   | 277  | 316  |
| 85°  | 72   | 70    | 69   | 63    | 62   | 81   |
| 90°  | 2    | 30    | 50   | 63    | 68   | 14   |
| 95°  | 164  | 81    | 99   | 112   | 109  | 195  |
| 105° | 770  | 846   | 155  | 182   | 192  | 822  |
| 115° | 1456 | 1499  | 1562 | 390   | 208  | 1433 |
| 125° | 2058 | 2091  | 2140 | 2157  | 2165 | 1836 |
| 135° | 2547 | 2588  | 2610 | 2636  | 2631 | 1968 |
| 145° | 2955 | 2952  | 2995 | 3013  | 3000 | 1848 |
| 155° | 3254 | 3231  | 3261 | 3276  | 3256 | 1499 |
| 165° | 3428 | 3413  | 3421 | 3438  | 3421 | 969  |
| 175° | 3506 | 3489  | 3494 | 3512  | 3486 | 334  |
| 180° | 3499 | 3499  | 3499 | 3499  | 3499 |      |

TEST NUMBER: P903677

CATALOG NUMBER: DFN2DIP-SQ3F0-050D110US830-FLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.7 | 1833.7 | 1833.7 | 1833.7 | 1833.7 |
| 2.5°   | 1844.4 | 1835.6 | 1816.2 | 1833.7 | 1830.4 |
| 5°     | 1833.7 | 1826.8 | 1807.3 | 1821.4 | 1818.1 |
| 7.5°   | 1821.4 | 1810.9 | 1791.5 | 1805.7 | 1802.1 |
| 10°    | 1802.1 | 1789.8 | 1768.7 | 1782.6 | 1777.4 |
| 12.5°  | 1775.6 | 1765.1 | 1744.0 | 1752.8 | 1749.2 |
| 15°    | 1745.6 | 1735.1 | 1712.1 | 1719.3 | 1710.4 |
| 17.5°  | 1708.5 | 1698.1 | 1675.1 | 1683.9 | 1675.1 |
| 20°    | 1668.0 | 1657.6 | 1632.9 | 1638.0 | 1631.2 |
| 22.5°  | 1627.6 | 1611.7 | 1588.7 | 1588.7 | 1585.1 |
| 25°    | 1579.9 | 1565.8 | 1535.9 | 1539.3 | 1535.9 |
| 27.5°  | 1526.9 | 1514.6 | 1491.8 | 1486.5 | 1477.7 |
| 30°    | 1474.1 | 1460.0 | 1433.6 | 1428.3 | 1421.3 |
| 32.5°  | 1417.7 | 1407.2 | 1378.9 | 1368.3 | 1361.2 |
| 35°    | 1363.0 | 1345.5 | 1317.2 | 1306.6 | 1297.8 |
| 37.5°  | 1301.3 | 1285.4 | 1257.2 | 1244.8 | 1236.0 |
| 40°    | 1237.9 | 1223.7 | 1195.4 | 1179.7 | 1172.6 |
| 42.5°  | 1176.2 | 1162.0 | 1133.9 | 1116.1 | 1105.6 |
| 45°    | 1109.2 | 1096.8 | 1070.3 | 1051.0 | 1043.9 |
| 47.5°  | 1043.9 | 1031.5 | 1003.3 | 983.8  | 973.4  |
| 50°    | 975.1  | 966.3  | 941.6  | 916.9  | 908.0  |
| 52.5°  | 908.0  | 895.7  | 872.9  | 853.5  | 841.1  |
| 55°    | 839.4  | 828.8  | 807.6  | 786.5  | 777.7  |
| 57.5°  | 770.5  | 761.8  | 738.8  | 717.7  | 710.5  |
| 60°    | 701.7  | 694.8  | 670.1  | 650.6  | 645.5  |
| 62.5°  | 634.8  | 622.5  | 604.8  | 587.2  | 580.1  |
| 65°    | 566.1  | 555.4  | 537.8  | 522.0  | 513.1  |
| 67.5°  | 495.6  | 486.6  | 470.9  | 458.5  | 451.4  |
| 70°    | 430.3  | 423.2  | 407.3  | 394.9  | 388.0  |
| 72.5°  | 363.4  | 356.2  | 347.4  | 335.1  | 329.8  |
| 75°    | 296.1  | 292.8  | 283.8  | 273.3  | 276.9  |
| 77.5°  | 236.3  | 229.1  | 225.6  | 220.4  | 215.2  |
| 80°    | 176.4  | 174.6  | 171.0  | 165.8  | 162.2  |
| 82.5°  | 119.9  | 119.9  | 118.2  | 111.1  | 111.1  |
| 85°    | 72.2   | 70.5   | 68.8   | 63.4   | 61.7   |
| 87.5°  | 31.8   | 28.3   | 24.7   | 19.4   | 17.6   |
| 90°    | 2.5    | 30.3   | 50.5   | 63.4   | 68.2   |
| 92.5°  | 63.4   | 53.3   | 60.7   | 65.9   | 68.2   |
| 95°    | 164.5  | 80.9   | 98.6   | 111.5  | 108.9  |
| 97.5°  | 296.1  | 88.7   | 128.9  | 136.8  | 139.2  |
| 100°   | 448.3  | 101.3  | 144.3  | 164.5  | 169.6  |
| 102.5° | 615.1  | 610.3  | 149.4  | 177.1  | 184.9  |
| 105°   | 769.7  | 845.7  | 154.6  | 182.2  | 192.5  |
| 107.5° | 949.5  | 1012.6 | 159.7  | 187.3  | 197.6  |
| 110°   | 1121.7 | 1174.7 | 443.2  | 190.0  | 199.9  |

TEST NUMBER: P903677

CATALOG NUMBER: DFN2DIP-SQ3F0-050D110US830-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1283.8 | 1329.2 | 1286.2 | 194.8  | 202.6  |
| 115°   | 1455.8 | 1498.7 | 1562.3 | 389.9  | 207.7  |
| 117.5° | 1605.2 | 1655.8 | 1699.0 | 1336.7 | 673.4  |
| 120°   | 1772.4 | 1810.2 | 1856.0 | 1886.3 | 1544.4 |
| 122.5° | 1914.0 | 1954.5 | 2005.4 | 2020.4 | 2023.2 |
| 125°   | 2058.3 | 2091.4 | 2139.5 | 2157.2 | 2164.7 |
| 127.5° | 2190.0 | 2225.4 | 2263.6 | 2288.9 | 2291.3 |
| 130°   | 2314.1 | 2354.8 | 2382.4 | 2410.4 | 2408.0 |
| 132.5° | 2440.7 | 2473.8 | 2501.5 | 2524.3 | 2522.0 |
| 135°   | 2547.2 | 2587.7 | 2610.3 | 2635.9 | 2630.7 |
| 137.5° | 2658.4 | 2688.8 | 2714.3 | 2739.6 | 2732.1 |
| 140°   | 2767.3 | 2787.7 | 2815.4 | 2838.2 | 2825.6 |
| 142.5° | 2858.6 | 2876.4 | 2909.2 | 2929.3 | 2916.7 |
| 145°   | 2954.9 | 2952.1 | 2995.1 | 3012.9 | 3000.3 |
| 147.5° | 3038.2 | 3030.7 | 3073.6 | 3086.3 | 3076.4 |
| 150°   | 3119.3 | 3101.6 | 3142.2 | 3157.2 | 3144.6 |
| 152.5° | 3187.6 | 3167.4 | 3205.3 | 3220.7 | 3202.9 |
| 155°   | 3253.5 | 3230.8 | 3261.2 | 3276.3 | 3256.1 |
| 157.5° | 3306.6 | 3286.5 | 3309.4 | 3327.1 | 3306.6 |
| 160°   | 3352.3 | 3337.0 | 3352.3 | 3367.3 | 3349.6 |
| 162.5° | 3392.6 | 3377.6 | 3390.2 | 3408.0 | 3385.1 |
| 165°   | 3428.1 | 3413.0 | 3420.6 | 3438.3 | 3420.6 |
| 167.5° | 3456.0 | 3440.8 | 3448.6 | 3466.3 | 3443.5 |
| 170°   | 3478.9 | 3463.6 | 3468.6 | 3486.5 | 3463.6 |
| 172.5° | 3493.9 | 3478.9 | 3484.0 | 3501.7 | 3478.9 |
| 175°   | 3506.5 | 3488.8 | 3493.9 | 3511.7 | 3486.5 |
| 177.5° | 3511.7 | 3493.9 | 3496.6 | 3514.4 | 3491.6 |
| 180°   | 3499.1 | 3499.1 | 3499.1 | 3499.1 | 3499.1 |

TEST NUMBER: P903677

CATALOG NUMBER: DFN2DIP-SQ3F0-050D110US830-FLLONL

**CIE UGR TABLE:**

| Reflectances:   |      |                  |       |       |       |       |                |       |       |       |       |
|-----------------|------|------------------|-------|-------|-------|-------|----------------|-------|-------|-------|-------|
| Ceiling         |      | 0.7              | 0.7   | 0.5   | 0.5   | 0.3   | 0.7            | 0.7   | 0.5   | 0.5   | 0.3   |
| Wall            |      | 0.5              | 0.3   | 0.5   | 0.3   | 0.3   | 0.5            | 0.3   | 0.5   | 0.3   | 0.3   |
| Reference plane |      | 0.2              | 0.2   | 0.2   | 0.2   | 0.2   | 0.2            | 0.2   | 0.2   | 0.2   | 0.2   |
| Room dimensions |      | Viewed crosswise |       |       |       |       | Viewed endwise |       |       |       |       |
| X=2H            | Y=2H | 7.78             | 8.49  | 8.88  | 9.59  | 11.11 | 7.33           | 8.05  | 8.44  | 9.15  | 10.66 |
|                 | 3H   | 9.42             | 10.06 | 10.53 | 11.17 | 12.70 | 8.93           | 9.57  | 10.04 | 10.68 | 12.21 |
|                 | 4H   | 10.00            | 10.61 | 11.12 | 11.72 | 13.25 | 9.51           | 10.11 | 10.63 | 11.22 | 12.76 |
|                 | 6H   | 10.39            | 10.95 | 11.52 | 12.06 | 13.61 | 9.89           | 10.45 | 11.02 | 11.56 | 13.11 |
|                 | 8H   | 10.49            | 11.02 | 11.62 | 12.15 | 13.69 | 9.99           | 10.52 | 11.12 | 11.64 | 13.19 |
|                 | 12H  | 10.53            | 11.03 | 11.67 | 12.15 | 13.72 | 10.02          | 10.52 | 11.16 | 11.65 | 13.21 |
| 4H              | 2H   | 8.22             | 8.82  | 9.35  | 9.93  | 11.47 | 7.86           | 8.47  | 8.99  | 9.58  | 11.12 |
|                 | 3H   | 10.06            | 10.57 | 11.20 | 11.71 | 13.26 | 9.66           | 10.16 | 10.79 | 11.30 | 12.85 |
|                 | 4H   | 10.77            | 11.23 | 11.91 | 12.36 | 13.93 | 10.34          | 10.81 | 11.48 | 11.93 | 13.50 |
|                 | 6H   | 11.27            | 11.67 | 12.41 | 12.82 | 14.38 | 10.84          | 11.24 | 11.98 | 12.38 | 13.95 |
|                 | 8H   | 11.41            | 11.79 | 12.56 | 12.93 | 14.50 | 10.98          | 11.35 | 12.12 | 12.49 | 14.07 |
|                 | 12H  | 11.48            | 11.82 | 12.64 | 12.97 | 14.55 | 11.03          | 11.37 | 12.19 | 12.52 | 14.10 |
| 8H              | 4H   | 10.95            | 11.32 | 12.09 | 12.46 | 14.04 | 10.57          | 10.94 | 11.71 | 12.08 | 13.66 |
|                 | 6H   | 11.57            | 11.88 | 12.73 | 13.06 | 14.63 | 11.18          | 11.49 | 12.35 | 12.67 | 14.25 |
|                 | 8H   | 11.78            | 12.05 | 12.95 | 13.21 | 14.81 | 11.39          | 11.66 | 12.56 | 12.82 | 14.41 |
|                 | 12H  | 11.90            | 12.14 | 13.08 | 13.30 | 14.93 | 11.49          | 11.73 | 12.67 | 12.89 | 14.52 |
| 12H             | 4H   | 10.93            | 11.26 | 12.09 | 12.41 | 14.00 | 10.56          | 10.90 | 11.72 | 12.05 | 13.63 |
|                 | 6H   | 11.59            | 11.86 | 12.76 | 13.02 | 14.62 | 11.22          | 11.49 | 12.39 | 12.65 | 14.25 |
|                 | 8H   | 11.82            | 12.06 | 13.00 | 13.22 | 14.85 | 11.44          | 11.68 | 12.62 | 12.84 | 14.47 |