

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: P925270

Luminaire Tested: DFN2DIP-PN4F0-120D070US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925270  
REPORT IS A COMBINATION OF REPORTS P899680 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-120D070US950-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

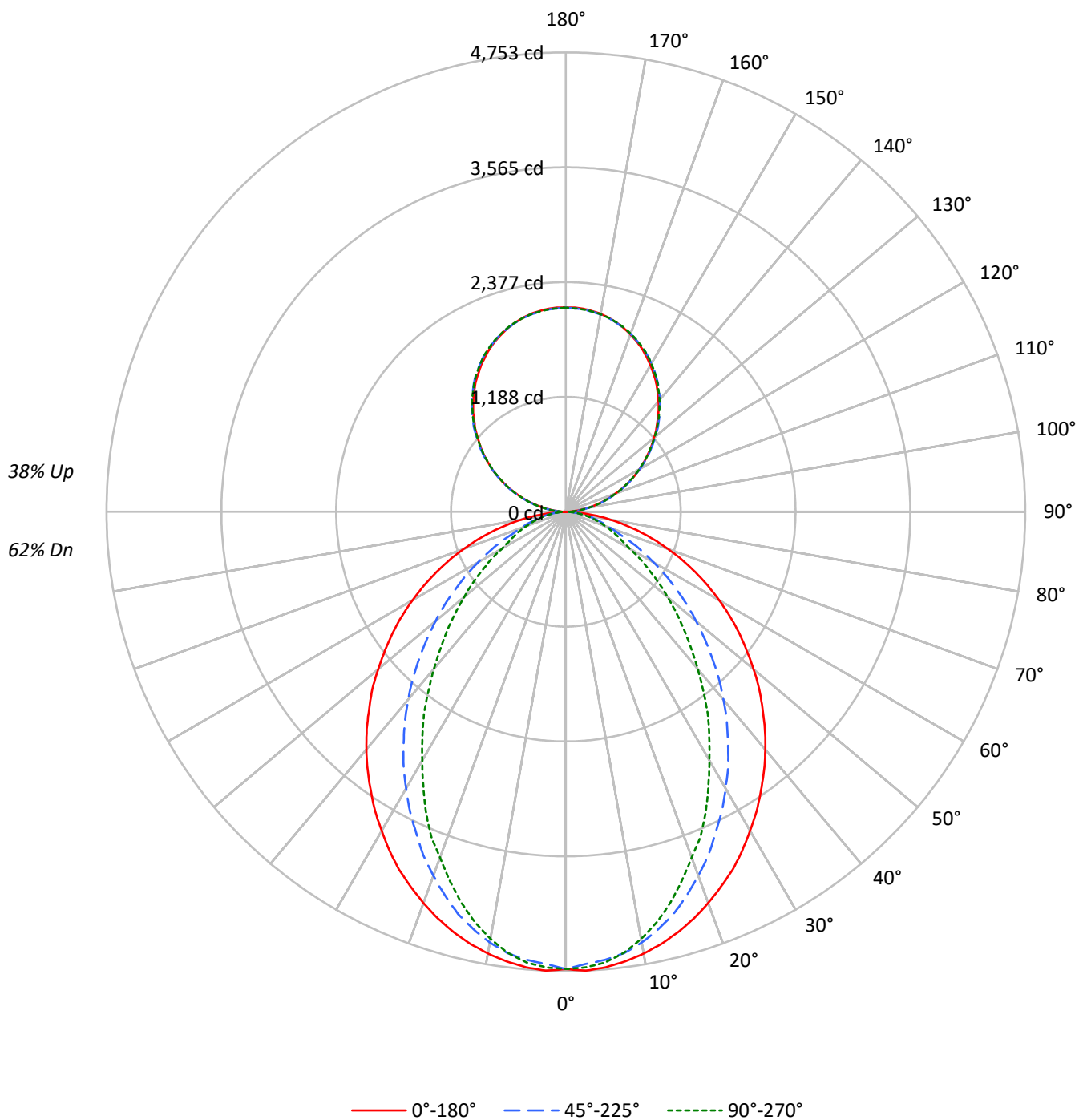
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 15640.9 lumens  
Efficiency: N/A  
Efficacy: 87.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: Semi-Direct  
  
Input Watts (W): 178.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot



TEST NUMBER: P925270

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**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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 67 | 67 | 67 |
| 1   | 101 | 97  | 93  | 90  | 95  | 91  | 88  | 85  | 80 | 78 | 75 | 70 | 68 | 66 | 60 | 59 | 58 |
| 2   | 93  | 85  | 79  | 74  | 87  | 80  | 75  | 71  | 71 | 67 | 63 | 62 | 59 | 56 | 54 | 52 | 50 |
| 3   | 85  | 76  | 68  | 63  | 79  | 71  | 65  | 60  | 63 | 58 | 54 | 55 | 52 | 48 | 48 | 46 | 43 |
| 4   | 78  | 67  | 60  | 54  | 73  | 64  | 57  | 51  | 56 | 51 | 47 | 50 | 46 | 42 | 44 | 40 | 38 |
| 5   | 72  | 60  | 52  | 47  | 67  | 57  | 50  | 45  | 51 | 45 | 41 | 45 | 41 | 37 | 40 | 36 | 33 |
| 6   | 66  | 55  | 47  | 41  | 62  | 52  | 44  | 39  | 46 | 40 | 36 | 41 | 36 | 33 | 36 | 32 | 30 |
| 7   | 62  | 49  | 42  | 36  | 58  | 47  | 40  | 35  | 42 | 36 | 32 | 38 | 33 | 29 | 33 | 29 | 27 |
| 8   | 57  | 45  | 37  | 32  | 54  | 43  | 36  | 31  | 39 | 33 | 29 | 34 | 30 | 26 | 31 | 27 | 24 |
| 9   | 54  | 41  | 34  | 29  | 50  | 39  | 33  | 28  | 36 | 30 | 26 | 32 | 27 | 24 | 28 | 25 | 22 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 30  | 25  | 33 | 27 | 24 | 30 | 25 | 22 | 26 | 23 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3454 | 3454 | 3454 |
| 5°  | 3459 | 3399 | 3421 |
| 10° | 3425 | 3333 | 3311 |
| 15° | 3378 | 3223 | 3139 |
| 20° | 3316 | 3072 | 2928 |
| 25° | 3252 | 2902 | 2725 |
| 30° | 3166 | 2728 | 2467 |
| 35° | 3082 | 2541 | 2240 |
| 40° | 2996 | 2347 | 1979 |
| 45° | 2897 | 2132 | 1743 |
| 50° | 2794 | 1915 | 1513 |
| 55° | 2687 | 1682 | 1291 |
| 60° | 2563 | 1439 | 1064 |
| 65° | 2420 | 1193 | 958  |
| 70° | 2247 | 962  | 868  |
| 75° | 2029 | 849  | 791  |
| 80° | 1714 | 714  | 688  |
| 85° | 1194 | 479  | 522  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2897 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 443.4   | 2.8       |
| 10°-20°   | 1217.3  | 7.8       |
| 20°-30°   | 1709.1  | 10.9      |
| 30°-40°   | 1863.0  | 11.9      |
| 40°-50°   | 1712.3  | 10.9      |
| 50°-60°   | 1344.7  | 8.6       |
| 60°-70°   | 875.3   | 5.6       |
| 70°-80°   | 450.6   | 2.9       |
| 80°-90°   | 121.0   | 0.8       |
| 90°-100°  | 130.7   | 0.8       |
| 100°-110° | 415.3   | 2.7       |
| 110°-120° | 710.6   | 4.5       |
| 120°-130° | 934.6   | 6.0       |
| 130°-140° | 1049.0  | 6.7       |
| 140°-150° | 1028.7  | 6.6       |
| 150°-160° | 862.9   | 5.5       |
| 160°-170° | 572.3   | 3.7       |
| 170°-180° | 200.0   | 1.3       |
| 0°-30°    | 3369.8  | 21.5      |
| 0°-40°    | 5232.8  | 33.5      |
| 0°-60°    | 8289.9  | 53.0      |
| 0°-90°    | 9736.8  | 62.3      |
| 90°-120°  | 1256.6  | 8.0       |
| 90°-150°  | 4268.9  | 27.3      |
| 90°-180°  | 5904.0  | 37.7      |
| 0°-180°   | 15640.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4732 | 4732  | 4732 | 4732  | 4732 |      |
| 5°   | 4732 | 4710  | 4654 | 4693  | 4680 | 449  |
| 15°  | 4500 | 4453  | 4308 | 4226  | 4184 | 1268 |
| 25°  | 4085 | 3948  | 3665 | 3490  | 3425 | 1879 |
| 35°  | 3520 | 3301  | 2925 | 2655  | 2560 | 2203 |
| 45°  | 2878 | 2590  | 2141 | 1837  | 1734 | 2222 |
| 55°  | 2188 | 1854  | 1392 | 1135  | 1054 | 1955 |
| 65°  | 1477 | 1130  | 745  | 600   | 586  | 1465 |
| 75°  | 788  | 488   | 343  | 312   | 308  | 833  |
| 85°  | 184  | 94    | 81   | 81    | 81   | 211  |
| 90°  | 2    | 23    | 62   | 59    | 60   | 15   |
| 95°  | 93   | 111   | 114  | 114   | 111  | 103  |
| 105° | 383  | 388   | 392  | 395   | 395  | 405  |
| 115° | 713  | 723   | 720  | 718   | 713  | 705  |
| 125° | 1037 | 1053  | 1048 | 1042  | 1040 | 927  |
| 135° | 1342 | 1361  | 1365 | 1363  | 1358 | 1037 |
| 145° | 1629 | 1642  | 1652 | 1654  | 1647 | 1018 |
| 155° | 1862 | 1868  | 1873 | 1882  | 1876 | 857  |
| 165° | 2026 | 2024  | 2024 | 2037  | 2028 | 572  |
| 175° | 2108 | 2103  | 2099 | 2112  | 2101 | 200  |
| 180° | 2112 | 2112  | 2112 | 2112  | 2112 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4731.5 | 4731.5 | 4731.5 | 4731.5 | 4731.5 |
| 2.5°   | 4752.8 | 4731.5 | 4684.2 | 4727.4 | 4718.7 |
| 5°     | 4731.5 | 4710.1 | 4654.2 | 4692.8 | 4680.1 |
| 7.5°   | 4692.8 | 4667.3 | 4607.4 | 4624.2 | 4602.9 |
| 10°    | 4641.5 | 4611.5 | 4526.1 | 4512.9 | 4487.5 |
| 12.5°  | 4577.4 | 4538.8 | 4422.9 | 4397.6 | 4350.3 |
| 15°    | 4500.2 | 4453.0 | 4307.6 | 4226.2 | 4183.6 |
| 17.5°  | 4410.2 | 4341.7 | 4161.7 | 4067.8 | 3999.2 |
| 20°    | 4307.6 | 4221.7 | 4007.8 | 3901.0 | 3806.5 |
| 22.5°  | 4196.3 | 4097.7 | 3849.2 | 3703.8 | 3639.8 |
| 25°    | 4085.0 | 3947.7 | 3665.2 | 3489.8 | 3425.3 |
| 27.5°  | 3952.3 | 3806.5 | 3493.9 | 3292.7 | 3194.1 |
| 30°    | 3811.0 | 3648.0 | 3305.4 | 3087.3 | 2971.5 |
| 32.5°  | 3673.9 | 3476.7 | 3126.0 | 2868.9 | 2761.6 |
| 35°    | 3519.9 | 3301.3 | 2924.7 | 2654.9 | 2560.3 |
| 37.5°  | 3369.9 | 3134.2 | 2736.2 | 2440.4 | 2333.7 |
| 40°    | 3211.4 | 2954.7 | 2539.1 | 2235.1 | 2123.8 |
| 42.5°  | 3048.7 | 2774.8 | 2342.4 | 2025.2 | 1918.5 |
| 45°    | 2877.5 | 2590.4 | 2141.1 | 1836.7 | 1734.0 |
| 47.5°  | 2714.8 | 2410.9 | 1948.4 | 1644.1 | 1550.1 |
| 50°    | 2535.0 | 2231.0 | 1759.9 | 1464.2 | 1374.7 |
| 52.5°  | 2359.1 | 2037.9 | 1580.0 | 1297.4 | 1216.2 |
| 55°    | 2187.9 | 1854.0 | 1391.5 | 1134.8 | 1053.5 |
| 57.5°  | 2012.5 | 1670.0 | 1224.7 | 984.9  | 916.3  |
| 60°    | 1832.6 | 1490.1 | 1048.9 | 830.9  | 762.3  |
| 62.5°  | 1657.3 | 1314.7 | 899.0  | 693.7  | 659.6  |
| 65°    | 1477.4 | 1130.3 | 745.1  | 599.7  | 586.5  |
| 67.5°  | 1306.1 | 959.0  | 599.7  | 526.5  | 513.8  |
| 70°    | 1126.2 | 792.3  | 496.6  | 453.8  | 436.6  |
| 72.5°  | 955.0  | 637.8  | 415.2  | 381.1  | 372.5  |
| 75°    | 787.7  | 487.9  | 342.6  | 312.5  | 308.4  |
| 77.5°  | 621.1  | 346.6  | 269.9  | 252.6  | 243.9  |
| 80°    | 466.6  | 248.5  | 205.3  | 188.5  | 188.5  |
| 82.5°  | 325.3  | 167.1  | 141.3  | 132.6  | 132.6  |
| 85°    | 184.0  | 94.1   | 81.3   | 81.3   | 81.3   |
| 87.5°  | 68.6   | 34.1   | 34.1   | 30.0   | 30.0   |
| 90°    | 1.9    | 22.9   | 62.4   | 58.6   | 60.5   |
| 92.5°  | 39.5   | 53.5   | 55.4   | 57.3   | 57.3   |
| 95°    | 92.9   | 110.8  | 114.0  | 114.0  | 110.8  |
| 97.5°  | 154.7  | 171.2  | 178.3  | 178.3  | 178.3  |
| 100°   | 226.0  | 240.7  | 245.8  | 245.8  | 243.8  |
| 102.5° | 301.2  | 312.0  | 319.0  | 320.9  | 319.0  |
| 105°   | 383.3  | 388.4  | 392.2  | 395.4  | 395.4  |
| 107.5° | 464.8  | 472.4  | 472.4  | 473.8  | 464.8  |
| 110°   | 543.8  | 554.0  | 554.0  | 554.0  | 548.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 629.1  | 639.9  | 638.0  | 632.9  | 629.1  |
| 115°   | 713.1  | 723.3  | 720.2  | 718.3  | 713.1  |
| 117.5° | 796.5  | 810.5  | 801.6  | 796.5  | 791.4  |
| 120°   | 880.5  | 894.6  | 880.5  | 880.5  | 874.8  |
| 122.5° | 957.0  | 974.8  | 965.9  | 960.8  | 957.0  |
| 125°   | 1037.2 | 1053.1 | 1048.1 | 1042.3 | 1040.4 |
| 127.5° | 1115.5 | 1135.3 | 1128.3 | 1120.7 | 1115.5 |
| 130°   | 1188.8 | 1211.7 | 1208.5 | 1204.7 | 1197.7 |
| 132.5° | 1270.9 | 1288.8 | 1290.0 | 1281.1 | 1276.0 |
| 135°   | 1341.6 | 1361.3 | 1365.2 | 1363.2 | 1358.1 |
| 137.5° | 1420.5 | 1436.4 | 1439.6 | 1438.3 | 1430.7 |
| 140°   | 1490.0 | 1505.9 | 1514.8 | 1514.8 | 1507.8 |
| 142.5° | 1561.2 | 1577.2 | 1582.2 | 1584.1 | 1577.2 |
| 145°   | 1628.8 | 1641.5 | 1651.7 | 1653.6 | 1646.6 |
| 147.5° | 1689.2 | 1705.2 | 1712.8 | 1716.0 | 1709.0 |
| 150°   | 1751.6 | 1762.4 | 1769.5 | 1775.2 | 1769.5 |
| 152.5° | 1807.0 | 1817.8 | 1826.7 | 1833.8 | 1826.7 |
| 155°   | 1862.4 | 1867.5 | 1873.3 | 1882.1 | 1876.4 |
| 157.5° | 1910.2 | 1914.0 | 1917.2 | 1929.9 | 1921.0 |
| 160°   | 1952.8 | 1956.7 | 1958.6 | 1969.3 | 1961.7 |
| 162.5° | 1992.3 | 1992.3 | 1994.2 | 2006.3 | 1997.4 |
| 165°   | 2026.0 | 2024.1 | 2024.1 | 2036.9 | 2027.9 |
| 167.5° | 2056.6 | 2050.9 | 2050.9 | 2063.6 | 2054.7 |
| 170°   | 2079.5 | 2074.5 | 2072.6 | 2085.3 | 2074.5 |
| 172.5° | 2095.5 | 2090.3 | 2088.4 | 2101.2 | 2090.3 |
| 175°   | 2108.1 | 2103.1 | 2099.3 | 2112.0 | 2101.2 |
| 177.5° | 2115.2 | 2110.1 | 2106.2 | 2117.1 | 2106.2 |
| 180°   | 2112.0 | 2112.0 | 2112.0 | 2112.0 | 2112.0 |

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**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 | 12.53            | 13.47 | 13.38 | 14.34 | 15.43 | 8.50           | 9.44  | 9.35  | 10.31 | 11.39 |
|                 | 3H   | 14.22            | 15.06 | 15.09 | 15.94 | 17.06 | 9.70           | 10.54 | 10.56 | 11.41 | 12.53 |
|                 | 4H   | 14.84            | 15.63 | 15.72 | 16.52 | 17.64 | 10.15          | 10.95 | 11.03 | 11.83 | 12.95 |
|                 | 6H   | 15.27            | 16.00 | 16.16 | 16.89 | 18.03 | 10.48          | 11.21 | 11.37 | 12.10 | 13.24 |
|                 | 8H   | 15.40            | 16.09 | 16.30 | 17.00 | 18.14 | 10.57          | 11.27 | 11.47 | 12.18 | 13.31 |
|                 | 12H  | 15.46            | 16.13 | 16.37 | 17.03 | 18.19 | 10.62          | 11.28 | 11.53 | 12.18 | 13.35 |
| 4H              | 2H   | 12.56            | 13.36 | 13.45 | 14.24 | 15.37 | 9.11           | 9.90  | 9.99  | 10.79 | 11.91 |
|                 | 3H   | 14.41            | 15.07 | 15.30 | 15.98 | 17.12 | 10.47          | 11.13 | 11.37 | 12.05 | 13.19 |
|                 | 4H   | 15.11            | 15.71 | 16.01 | 16.62 | 17.78 | 11.02          | 11.62 | 11.93 | 12.53 | 13.70 |
|                 | 6H   | 15.63            | 16.15 | 16.55 | 17.08 | 18.25 | 11.45          | 11.97 | 12.37 | 12.90 | 14.07 |
|                 | 8H   | 15.81            | 16.29 | 16.73 | 17.22 | 18.40 | 11.58          | 12.06 | 12.50 | 12.99 | 14.17 |
|                 | 12H  | 15.91            | 16.34 | 16.85 | 17.29 | 18.48 | 11.65          | 12.09 | 12.59 | 13.03 | 14.22 |
| 8H              | 4H   | 15.08            | 15.56 | 16.01 | 16.49 | 17.68 | 11.31          | 11.80 | 12.24 | 12.73 | 13.91 |
|                 | 6H   | 15.65            | 16.05 | 16.61 | 17.03 | 18.21 | 11.84          | 12.23 | 12.79 | 13.21 | 14.39 |
|                 | 8H   | 15.87            | 16.23 | 16.83 | 17.19 | 18.39 | 12.03          | 12.38 | 12.99 | 13.34 | 14.54 |
|                 | 12H  | 16.02            | 16.33 | 16.98 | 17.29 | 18.53 | 12.15          | 12.46 | 13.11 | 13.42 | 14.67 |
| 12H             | 4H   | 15.04            | 15.47 | 15.98 | 16.42 | 17.61 | 11.32          | 11.76 | 12.27 | 12.71 | 13.89 |
|                 | 6H   | 15.63            | 15.98 | 16.59 | 16.95 | 18.14 | 11.89          | 12.24 | 12.85 | 13.20 | 14.40 |
|                 | 8H   | 15.86            | 16.17 | 16.82 | 17.12 | 18.37 | 12.10          | 12.41 | 13.06 | 13.37 | 14.62 |