

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: P925788

Luminaire Tested: DFN2DIP-SQ4F0-060D140US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925788  
REPORT IS A COMBINATION OF REPORTS P900185 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-060D140US950-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

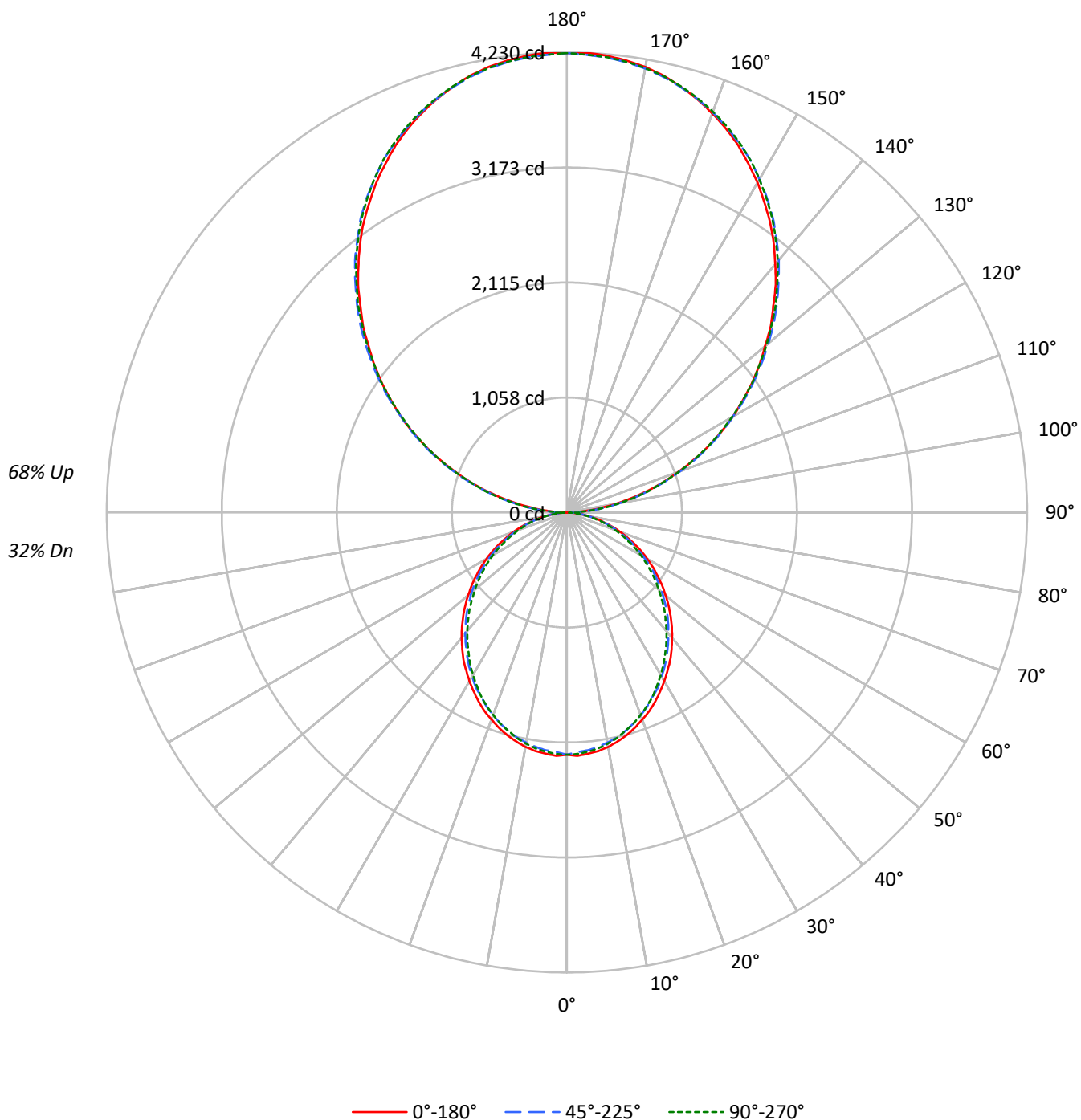
Lumens per Lamp: N/A  
Luminaire Lumens: 17486.8 lumens  
Efficiency: N/A  
Efficacy: 112.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 155.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P925788

CATALOG NUMBER: DFN2DIP-SQ4F0-060D140US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925788

CATALOG NUMBER: DFN2DIP-SQ4F0-060D140US950-FLLFL

**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 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 86  | 82  | 84 | 81 | 78 | 75 | 64 | 62 | 60 | 49 | 48 | 47 | 35 | 34 | 34 |
| 2   | 85  | 78  | 72  | 67  | 77 | 71 | 66 | 61 | 56 | 53 | 50 | 43 | 41 | 39 | 31 | 30 | 28 |
| 3   | 78  | 69  | 62  | 56  | 70 | 62 | 56 | 51 | 50 | 45 | 42 | 38 | 35 | 33 | 28 | 26 | 24 |
| 4   | 71  | 61  | 53  | 47  | 64 | 55 | 48 | 43 | 44 | 39 | 36 | 34 | 31 | 28 | 25 | 23 | 21 |
| 5   | 65  | 54  | 46  | 40  | 59 | 49 | 42 | 37 | 39 | 34 | 31 | 30 | 27 | 24 | 22 | 20 | 18 |
| 6   | 60  | 48  | 40  | 35  | 54 | 44 | 37 | 32 | 35 | 30 | 27 | 27 | 24 | 21 | 20 | 18 | 16 |
| 7   | 55  | 43  | 36  | 30  | 50 | 40 | 33 | 28 | 32 | 27 | 23 | 25 | 21 | 19 | 18 | 16 | 14 |
| 8   | 51  | 39  | 32  | 27  | 46 | 36 | 29 | 25 | 29 | 24 | 21 | 23 | 19 | 17 | 17 | 14 | 13 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 26 | 22 | 27 | 22 | 18 | 21 | 17 | 15 | 15 | 13 | 11 |
| 10  | 44  | 33  | 26  | 21  | 40 | 30 | 24 | 20 | 24 | 20 | 16 | 19 | 16 | 13 | 14 | 12 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1563 | 1563 | 1563 |
| 5°  | 1565 | 1541 | 1552 |
| 10° | 1553 | 1521 | 1531 |
| 15° | 1530 | 1496 | 1499 |
| 20° | 1499 | 1462 | 1466 |
| 25° | 1468 | 1420 | 1427 |
| 30° | 1430 | 1382 | 1378 |
| 35° | 1393 | 1337 | 1326 |
| 40° | 1348 | 1291 | 1277 |
| 45° | 1304 | 1245 | 1227 |
| 50° | 1255 | 1197 | 1168 |
| 55° | 1203 | 1141 | 1115 |
| 60° | 1145 | 1075 | 1054 |
| 65° | 1082 | 1007 | 981  |
| 70° | 1002 | 923  | 904  |
| 75° | 890  | 824  | 832  |
| 80° | 756  | 697  | 695  |
| 85° | 547  | 476  | 467  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3325 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 209.6   | 1.2       |
| 10°-20°   | 589.8   | 3.4       |
| 20°-30°   | 866.8   | 5.0       |
| 30°-40°   | 1006.7  | 5.8       |
| 40°-50°   | 1005.5  | 5.7       |
| 50°-60°   | 876.7   | 5.0       |
| 60°-70°   | 648.1   | 3.7       |
| 70°-80°   | 366.7   | 2.1       |
| 80°-90°   | 108.8   | 0.6       |
| 90°-100°  | 261.4   | 1.5       |
| 100°-110° | 830.5   | 4.7       |
| 110°-120° | 1421.2  | 8.1       |
| 120°-130° | 1869.1  | 10.7      |
| 130°-140° | 2098.0  | 12.0      |
| 140°-150° | 2057.4  | 11.8      |
| 150°-160° | 1725.8  | 9.9       |
| 160°-170° | 1144.5  | 6.5       |
| 170°-180° | 400.0   | 2.3       |
| 0°-30°    | 1666.2  | 9.5       |
| 0°-40°    | 2673.0  | 15.3      |
| 0°-60°    | 4555.2  | 26.0      |
| 0°-90°    | 5678.8  | 32.5      |
| 90°-120°  | 2513.1  | 14.4      |
| 90°-150°  | 8537.6  | 48.8      |
| 90°-180°  | 11808.0 | 67.5      |
| 0°-180°   | 17486.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2227 | 2227  | 2227 | 2227  | 2227 |      |
| 5°   | 2227 | 2219  | 2195 | 2212  | 2208 | 211  |
| 15°  | 2120 | 2108  | 2080 | 2088  | 2078 | 597  |
| 25°  | 1919 | 1902  | 1866 | 1870  | 1866 | 883  |
| 35°  | 1656 | 1634  | 1600 | 1587  | 1576 | 1034 |
| 45°  | 1347 | 1332  | 1300 | 1276  | 1268 | 1040 |
| 55°  | 1020 | 1007  | 981  | 955   | 945  | 912  |
| 65°  | 688  | 675   | 653  | 634   | 623  | 680  |
| 75°  | 360  | 356   | 345  | 332   | 336  | 384  |
| 85°  | 88   | 86    | 84   | 77    | 75   | 98   |
| 90°  | 4    | 46    | 125  | 117   | 121  | 17   |
| 95°  | 186  | 222   | 228  | 228   | 222  | 207  |
| 105° | 767  | 777   | 784  | 791   | 791  | 809  |
| 115° | 1426 | 1447  | 1440 | 1436  | 1426 | 1411 |
| 125° | 2074 | 2106  | 2096 | 2085  | 2081 | 1854 |
| 135° | 2683 | 2723  | 2730 | 2726  | 2716 | 2074 |
| 145° | 3257 | 3283  | 3303 | 3307  | 3293 | 2035 |
| 155° | 3725 | 3735  | 3746 | 3764  | 3753 | 1714 |
| 165° | 4052 | 4048  | 4048 | 4074  | 4056 | 1143 |
| 175° | 4216 | 4206  | 4199 | 4224  | 4202 | 401  |
| 180° | 4224 | 4224  | 4224 | 4224  | 4224 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2227.2 | 2227.2 | 2227.2 | 2227.2 | 2227.2 |
| 2.5°   | 2240.2 | 2229.5 | 2205.8 | 2227.2 | 2223.1 |
| 5°     | 2227.2 | 2218.8 | 2195.2 | 2212.2 | 2208.1 |
| 7.5°   | 2212.2 | 2199.5 | 2175.9 | 2193.2 | 2188.9 |
| 10°    | 2188.9 | 2173.9 | 2148.1 | 2165.2 | 2158.8 |
| 12.5°  | 2156.6 | 2143.8 | 2118.2 | 2128.9 | 2124.6 |
| 15°    | 2120.2 | 2107.5 | 2079.5 | 2088.2 | 2077.5 |
| 17.5°  | 2075.2 | 2062.5 | 2034.6 | 2045.2 | 2034.6 |
| 20°    | 2025.9 | 2013.2 | 1983.2 | 1989.6 | 1981.2 |
| 22.5°  | 1976.9 | 1957.5 | 1929.6 | 1929.6 | 1925.3 |
| 25°    | 1918.9 | 1901.9 | 1865.5 | 1869.6 | 1865.5 |
| 27.5°  | 1854.6 | 1839.6 | 1811.8 | 1805.5 | 1794.9 |
| 30°    | 1790.6 | 1773.2 | 1741.2 | 1734.8 | 1726.2 |
| 32.5°  | 1721.9 | 1709.2 | 1674.8 | 1661.9 | 1653.3 |
| 35°    | 1655.6 | 1634.2 | 1599.9 | 1586.9 | 1576.2 |
| 37.5°  | 1580.6 | 1561.2 | 1527.0 | 1511.9 | 1501.2 |
| 40°    | 1503.5 | 1486.2 | 1452.0 | 1432.9 | 1424.2 |
| 42.5°  | 1428.5 | 1411.3 | 1377.2 | 1355.6 | 1342.9 |
| 45°    | 1347.2 | 1332.2 | 1299.9 | 1276.5 | 1267.9 |
| 47.5°  | 1267.9 | 1252.9 | 1218.6 | 1195.0 | 1182.2 |
| 50°    | 1184.3 | 1173.6 | 1143.7 | 1113.6 | 1102.9 |
| 52.5°  | 1102.9 | 1087.9 | 1060.2 | 1036.6 | 1021.6 |
| 55°    | 1019.5 | 1006.6 | 980.9  | 955.2  | 944.6  |
| 57.5°  | 936.0  | 925.3  | 897.3  | 871.7  | 863.0  |
| 60°    | 852.3  | 843.9  | 814.0  | 790.3  | 783.9  |
| 62.5°  | 770.9  | 755.9  | 734.6  | 713.2  | 704.6  |
| 65°    | 687.5  | 674.7  | 653.3  | 633.9  | 623.2  |
| 67.5°  | 601.9  | 591.0  | 571.9  | 556.9  | 548.3  |
| 70°    | 522.6  | 514.0  | 494.6  | 479.7  | 471.3  |
| 72.5°  | 441.2  | 432.6  | 422.0  | 407.0  | 400.6  |
| 75°    | 359.7  | 355.7  | 344.7  | 332.0  | 336.3  |
| 77.5°  | 287.0  | 278.4  | 274.0  | 267.7  | 261.3  |
| 80°    | 214.3  | 212.0  | 207.7  | 201.3  | 197.0  |
| 82.5°  | 145.7  | 145.7  | 143.6  | 135.0  | 135.0  |
| 85°    | 87.7   | 85.7   | 83.6   | 77.0   | 75.0   |
| 87.5°  | 38.6   | 34.3   | 30.0   | 23.7   | 21.4   |
| 90°    | 3.8    | 45.9   | 124.8  | 117.2  | 121.0  |
| 92.5°  | 79.0   | 106.9  | 110.8  | 114.6  | 114.6  |
| 95°    | 185.9  | 221.6  | 227.9  | 227.9  | 221.6  |
| 97.5°  | 309.5  | 342.6  | 356.6  | 356.6  | 356.6  |
| 100°   | 452.1  | 481.4  | 491.5  | 491.5  | 487.7  |
| 102.5° | 602.4  | 624.0  | 638.0  | 641.9  | 638.0  |
| 105°   | 766.6  | 776.8  | 784.5  | 790.8  | 790.8  |
| 107.5° | 929.6  | 944.9  | 944.9  | 947.4  | 929.6  |
| 110°   | 1087.6 | 1107.9 | 1107.9 | 1107.9 | 1097.7 |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1258.1 | 1279.8 | 1276.0 | 1265.8 | 1258.1 |
| 115°   | 1426.2 | 1446.6 | 1440.3 | 1436.4 | 1426.2 |
| 117.5° | 1593.1 | 1621.1 | 1603.3 | 1593.1 | 1582.9 |
| 120°   | 1761.2 | 1789.2 | 1761.2 | 1761.2 | 1749.7 |
| 122.5° | 1914.0 | 1949.6 | 1931.8 | 1921.6 | 1914.0 |
| 125°   | 2074.5 | 2106.2 | 2096.0 | 2084.6 | 2080.8 |
| 127.5° | 2231.0 | 2270.5 | 2256.5 | 2241.2 | 2231.0 |
| 130°   | 2377.5 | 2423.4 | 2417.0 | 2409.3 | 2395.3 |
| 132.5° | 2541.7 | 2577.4 | 2580.0 | 2562.2 | 2552.0 |
| 135°   | 2683.1 | 2722.6 | 2730.3 | 2726.4 | 2716.2 |
| 137.5° | 2841.0 | 2872.9 | 2879.3 | 2876.7 | 2861.4 |
| 140°   | 2979.8 | 3011.7 | 3029.5 | 3029.5 | 3015.5 |
| 142.5° | 3122.4 | 3154.3 | 3164.5 | 3168.3 | 3154.3 |
| 145°   | 3257.4 | 3282.9 | 3303.3 | 3307.1 | 3293.1 |
| 147.5° | 3378.4 | 3410.3 | 3425.5 | 3431.9 | 3417.9 |
| 150°   | 3503.2 | 3524.8 | 3538.9 | 3550.3 | 3538.9 |
| 152.5° | 3614.0 | 3635.7 | 3653.5 | 3667.5 | 3653.5 |
| 155°   | 3724.8 | 3735.0 | 3746.5 | 3764.3 | 3752.8 |
| 157.5° | 3820.3 | 3827.9 | 3834.3 | 3859.8 | 3841.9 |
| 160°   | 3905.7 | 3913.3 | 3917.1 | 3938.8 | 3923.4 |
| 162.5° | 3984.6 | 3984.6 | 3988.4 | 4012.6 | 3994.8 |
| 165°   | 4052.1 | 4048.3 | 4048.3 | 4073.8 | 4055.9 |
| 167.5° | 4113.2 | 4101.7 | 4101.7 | 4127.2 | 4109.4 |
| 170°   | 4159.1 | 4148.9 | 4145.0 | 4170.5 | 4148.9 |
| 172.5° | 4190.9 | 4180.7 | 4176.9 | 4202.4 | 4180.7 |
| 175°   | 4216.4 | 4206.2 | 4198.6 | 4224.0 | 4202.4 |
| 177.5° | 4230.3 | 4220.2 | 4212.6 | 4234.1 | 4212.6 |
| 180°   | 4224.0 | 4224.0 | 4224.0 | 4224.0 | 4224.0 |

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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 | 6.95             | 7.67  | 8.04  | 8.76  | 10.26 | 6.50           | 7.23  | 7.60  | 8.32  | 9.82  |
|                 | 3H   | 8.60             | 9.25  | 9.70  | 10.35 | 11.87 | 8.11           | 8.76  | 9.21  | 9.86  | 11.38 |
|                 | 4H   | 9.18             | 9.80  | 10.30 | 10.90 | 12.43 | 8.69           | 9.31  | 9.80  | 10.41 | 11.93 |
|                 | 6H   | 9.58             | 10.15 | 10.70 | 11.25 | 12.79 | 9.08           | 9.65  | 10.20 | 10.75 | 12.29 |
|                 | 8H   | 9.68             | 10.22 | 10.81 | 11.34 | 12.87 | 9.18           | 9.72  | 10.31 | 10.84 | 12.37 |
|                 | 12H  | 9.73             | 10.24 | 10.86 | 11.35 | 12.91 | 9.22           | 9.73  | 10.35 | 10.84 | 12.40 |
| 4H              | 2H   | 7.39             | 8.01  | 8.51  | 9.11  | 10.63 | 7.04           | 7.65  | 8.16  | 8.75  | 10.28 |
|                 | 3H   | 9.25             | 9.76  | 10.38 | 10.89 | 12.43 | 8.84           | 9.35  | 9.97  | 10.48 | 12.02 |
|                 | 4H   | 9.96             | 10.43 | 11.09 | 11.55 | 13.11 | 9.54           | 10.01 | 10.67 | 11.13 | 12.68 |
|                 | 6H   | 10.47            | 10.88 | 11.61 | 12.02 | 13.57 | 10.04          | 10.44 | 11.18 | 11.58 | 13.13 |
|                 | 8H   | 10.62            | 11.00 | 11.76 | 12.13 | 13.70 | 10.18          | 10.56 | 11.32 | 11.69 | 13.26 |
|                 | 12H  | 10.69            | 11.03 | 11.84 | 12.18 | 13.75 | 10.24          | 10.58 | 11.39 | 11.73 | 13.30 |
| 8H              | 4H   | 10.15            | 10.52 | 11.28 | 11.66 | 13.22 | 9.77           | 10.15 | 10.91 | 11.28 | 12.84 |
|                 | 6H   | 10.78            | 11.09 | 11.93 | 12.26 | 13.82 | 10.39          | 10.70 | 11.55 | 11.88 | 13.44 |
|                 | 8H   | 11.00            | 11.27 | 12.16 | 12.43 | 14.01 | 10.61          | 10.88 | 11.77 | 12.03 | 13.61 |
|                 | 12H  | 11.13            | 11.37 | 12.29 | 12.52 | 14.13 | 10.72          | 10.96 | 11.88 | 12.11 | 13.72 |
| 12H             | 4H   | 10.13            | 10.47 | 11.28 | 11.61 | 13.18 | 9.76           | 10.10 | 10.91 | 11.24 | 12.81 |
|                 | 6H   | 10.81            | 11.08 | 11.97 | 12.23 | 13.81 | 10.43          | 10.71 | 11.60 | 11.86 | 13.44 |
|                 | 8H   | 11.04            | 11.28 | 12.21 | 12.43 | 14.05 | 10.66          | 10.90 | 11.83 | 12.05 | 13.67 |