

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: P907085

Luminaire Tested: DFN2DIP-TR2F0-060D060US835-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907085  
REPORT IS A COMBINATION OF REPORTS P901789 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-060D060US835-FLLONL  
Description: 2 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

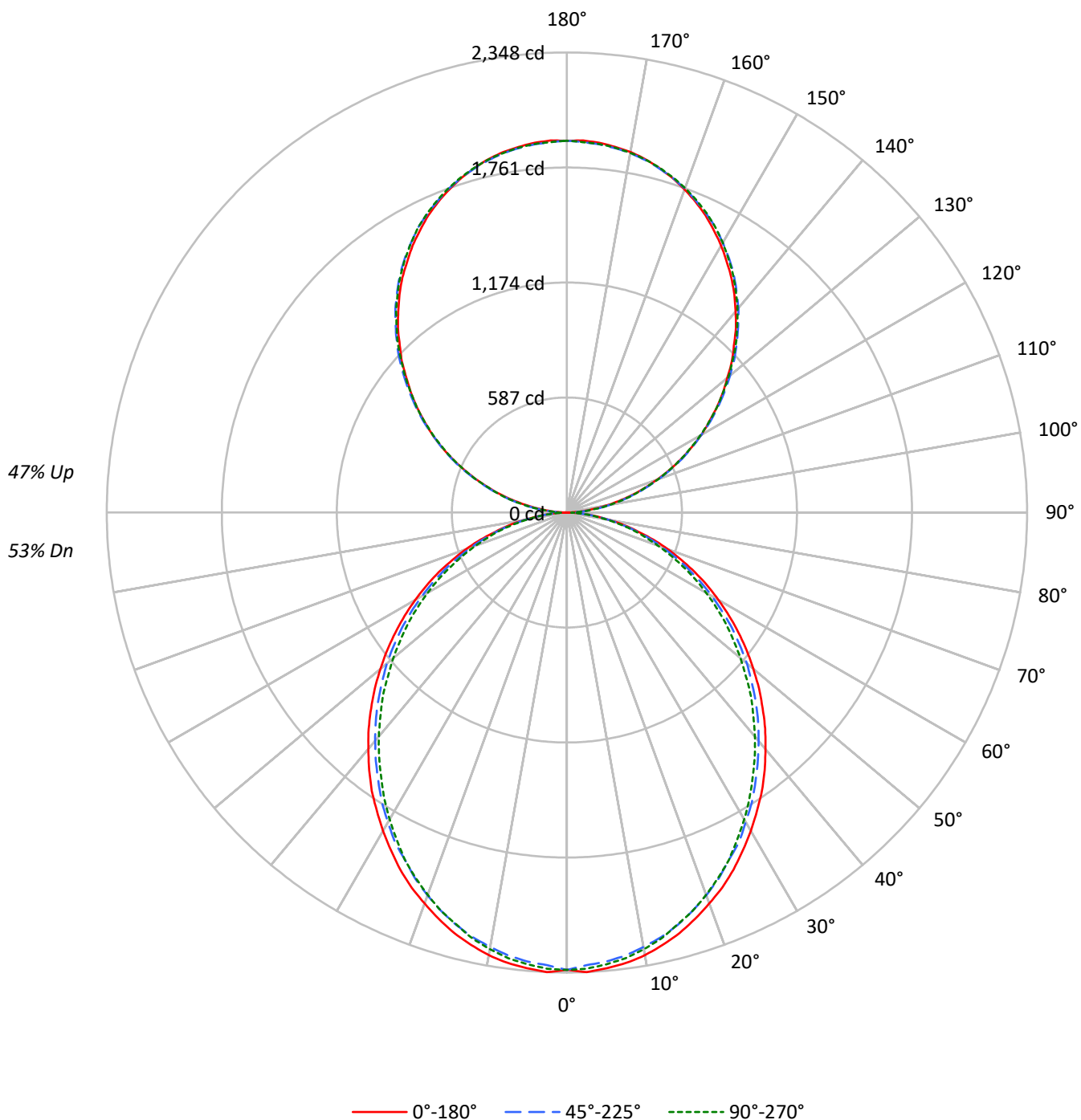
Lumens per Lamp: N/A  
Luminaire Lumens: 11250.0 lumens  
Efficiency: N/A  
Efficacy: 104.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 107.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9971  
Total Harmonic Distortion (THDi): 0.049  
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



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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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 71 | 71 | 71 | 59 | 59 | 59 |
| 1   | 98  | 94  | 90  | 87  | 91  | 87  | 84  | 81  | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 51 | 50 |
| 2   | 90  | 82  | 76  | 71  | 83  | 76  | 71  | 66  | 65 | 61 | 58 | 55 | 52 | 50 | 46 | 44 | 42 |
| 3   | 82  | 72  | 65  | 59  | 75  | 67  | 61  | 55  | 58 | 53 | 49 | 49 | 45 | 42 | 41 | 38 | 36 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 52  | 47  | 51 | 46 | 41 | 43 | 39 | 36 | 36 | 33 | 31 |
| 5   | 69  | 57  | 49  | 43  | 63  | 53  | 46  | 40  | 46 | 40 | 36 | 39 | 35 | 31 | 33 | 29 | 27 |
| 6   | 63  | 51  | 43  | 37  | 58  | 48  | 40  | 35  | 41 | 36 | 31 | 35 | 31 | 27 | 30 | 26 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 37 | 32 | 28 | 32 | 28 | 24 | 27 | 24 | 21 |
| 8   | 54  | 42  | 34  | 29  | 50  | 39  | 32  | 27  | 34 | 29 | 24 | 29 | 25 | 22 | 25 | 21 | 19 |
| 9   | 51  | 38  | 31  | 26  | 47  | 36  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 19 | 23 | 20 | 17 |
| 10  | 47  | 35  | 28  | 23  | 44  | 33  | 26  | 22  | 29 | 23 | 20 | 25 | 21 | 18 | 21 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 5207 | 5207 | 5207 |
| 5°  | 5208 | 5123 | 5160 |
| 10° | 5158 | 5042 | 5081 |
| 15° | 5074 | 4948 | 4963 |
| 20° | 4964 | 4821 | 4843 |
| 25° | 4854 | 4672 | 4705 |
| 30° | 4719 | 4532 | 4532 |
| 35° | 4589 | 4369 | 4350 |
| 40° | 4431 | 4204 | 4175 |
| 45° | 4273 | 4037 | 3997 |
| 50° | 4101 | 3863 | 3791 |
| 55° | 3919 | 3661 | 3599 |
| 60° | 3713 | 3423 | 3379 |
| 65° | 3487 | 3175 | 3121 |
| 70° | 3200 | 2872 | 2840 |
| 75° | 2805 | 2509 | 2569 |
| 80° | 2326 | 2047 | 2076 |
| 85° | 1585 | 1290 | 1290 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4273 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 219.7   | 2.0       |
| 10°-20°   | 618.3   | 5.5       |
| 20°-30°   | 908.6   | 8.1       |
| 30°-40°   | 1055.3  | 9.4       |
| 40°-50°   | 1054.0  | 9.4       |
| 50°-60°   | 919.0   | 8.2       |
| 60°-70°   | 679.4   | 6.0       |
| 70°-80°   | 384.4   | 3.4       |
| 80°-90°   | 106.8   | 0.9       |
| 90°-100°  | 117.4   | 1.0       |
| 100°-110° | 373.1   | 3.3       |
| 110°-120° | 638.5   | 5.7       |
| 120°-130° | 839.7   | 7.5       |
| 130°-140° | 942.5   | 8.4       |
| 140°-150° | 924.2   | 8.2       |
| 150°-160° | 775.3   | 6.9       |
| 160°-170° | 514.2   | 4.6       |
| 170°-180° | 179.7   | 1.6       |
| 0°-30°    | 1746.6  | 15.5      |
| 0°-40°    | 2801.8  | 24.9      |
| 0°-60°    | 4774.8  | 42.4      |
| 0°-90°    | 5945.4  | 52.8      |
| 90°-120°  | 1129.0  | 10.0      |
| 90°-150°  | 3835.4  | 34.1      |
| 90°-180°  | 5305.0  | 47.2      |
| 0°-180°   | 11250.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2335 | 2335  | 2335 | 2335  | 2335 |      |
| 5°   | 2335 | 2326  | 2301 | 2319  | 2315 | 222  |
| 15°  | 2222 | 2209  | 2180 | 2189  | 2178 | 626  |
| 25°  | 2011 | 1994  | 1955 | 1960  | 1955 | 926  |
| 35°  | 1735 | 1713  | 1677 | 1663  | 1652 | 1084 |
| 45°  | 1412 | 1396  | 1363 | 1338  | 1329 | 1090 |
| 55°  | 1069 | 1055  | 1028 | 1001  | 990  | 955  |
| 65°  | 721  | 707   | 685  | 664   | 653  | 713  |
| 75°  | 377  | 373   | 361  | 348   | 352  | 402  |
| 85°  | 92   | 90    | 88   | 81    | 79   | 103  |
| 90°  | 2    | 21    | 56   | 53    | 54   | 11   |
| 95°  | 84   | 100   | 102  | 102   | 100  | 93   |
| 105° | 344  | 349   | 352  | 355   | 355  | 363  |
| 115° | 641  | 650   | 647  | 645   | 641  | 634  |
| 125° | 932  | 946   | 942  | 936   | 935  | 833  |
| 135° | 1205 | 1223  | 1226 | 1225  | 1220 | 932  |
| 145° | 1463 | 1475  | 1484 | 1486  | 1479 | 914  |
| 155° | 1673 | 1678  | 1683 | 1691  | 1686 | 770  |
| 165° | 1820 | 1819  | 1819 | 1830  | 1822 | 514  |
| 175° | 1894 | 1890  | 1886 | 1898  | 1888 | 180  |
| 180° | 1898 | 1898  | 1898 | 1898  | 1898 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2334.6 | 2334.6 | 2334.6 | 2334.6 | 2334.6 |
| 2.5°   | 2348.2 | 2337.0 | 2312.2 | 2334.6 | 2330.3 |
| 5°     | 2334.6 | 2325.8 | 2301.0 | 2318.9 | 2314.6 |
| 7.5°   | 2318.9 | 2305.6 | 2280.8 | 2298.9 | 2294.4 |
| 10°    | 2294.4 | 2278.7 | 2251.7 | 2269.6 | 2262.9 |
| 12.5°  | 2260.6 | 2247.2 | 2220.3 | 2231.5 | 2227.0 |
| 15°    | 2222.4 | 2209.1 | 2179.8 | 2188.9 | 2177.7 |
| 17.5°  | 2175.3 | 2162.0 | 2132.7 | 2143.8 | 2132.7 |
| 20°    | 2123.6 | 2110.3 | 2078.8 | 2085.5 | 2076.7 |
| 22.5°  | 2072.2 | 2051.9 | 2022.6 | 2022.6 | 2018.1 |
| 25°    | 2011.4 | 1993.6 | 1955.4 | 1959.7 | 1955.4 |
| 27.5°  | 1944.0 | 1928.3 | 1899.2 | 1892.6 | 1881.4 |
| 30°    | 1876.9 | 1858.7 | 1825.2 | 1818.5 | 1809.4 |
| 32.5°  | 1804.9 | 1791.6 | 1755.6 | 1742.0 | 1733.0 |
| 35°    | 1735.4 | 1713.0 | 1677.0 | 1663.4 | 1652.2 |
| 37.5°  | 1656.8 | 1636.5 | 1600.6 | 1584.8 | 1573.6 |
| 40°    | 1576.0 | 1557.9 | 1522.0 | 1502.0 | 1492.9 |
| 42.5°  | 1497.4 | 1479.3 | 1443.6 | 1421.0 | 1407.6 |
| 45°    | 1412.2 | 1396.4 | 1362.6 | 1338.1 | 1329.0 |
| 47.5°  | 1329.0 | 1313.3 | 1277.4 | 1252.6 | 1239.2 |
| 50°    | 1241.4 | 1230.2 | 1198.8 | 1167.3 | 1156.1 |
| 52.5°  | 1156.1 | 1140.4 | 1111.3 | 1086.6 | 1070.9 |
| 55°    | 1068.7 | 1055.1 | 1028.2 | 1001.3 | 990.1  |
| 57.5°  | 981.1  | 969.9  | 940.6  | 913.7  | 904.6  |
| 60°    | 893.4  | 884.6  | 853.2  | 828.4  | 821.7  |
| 62.5°  | 808.1  | 792.4  | 770.0  | 747.6  | 738.6  |
| 65°    | 720.7  | 707.2  | 684.8  | 664.5  | 653.3  |
| 67.5°  | 630.9  | 619.5  | 599.5  | 583.8  | 574.7  |
| 70°    | 547.8  | 538.8  | 518.5  | 502.8  | 494.0  |
| 72.5°  | 462.5  | 453.5  | 442.3  | 426.6  | 419.9  |
| 75°    | 377.0  | 372.8  | 361.3  | 348.0  | 352.5  |
| 77.5°  | 300.8  | 291.8  | 287.2  | 280.6  | 273.9  |
| 80°    | 224.6  | 222.2  | 217.7  | 211.0  | 206.5  |
| 82.5°  | 152.7  | 152.7  | 150.5  | 141.5  | 141.5  |
| 85°    | 91.9   | 89.8   | 87.6   | 80.7   | 78.6   |
| 87.5°  | 40.5   | 36.0   | 31.4   | 24.8   | 22.4   |
| 90°    | 1.7    | 20.6   | 56.1   | 52.6   | 54.3   |
| 92.5°  | 35.5   | 48.1   | 49.8   | 51.5   | 51.5   |
| 95°    | 83.5   | 99.5   | 102.4  | 102.4  | 99.5   |
| 97.5°  | 139.0  | 153.9  | 160.2  | 160.2  | 160.2  |
| 100°   | 203.1  | 216.2  | 220.8  | 220.8  | 219.1  |
| 102.5° | 270.6  | 280.3  | 286.6  | 288.3  | 286.6  |
| 105°   | 344.4  | 349.0  | 352.4  | 355.3  | 355.3  |
| 107.5° | 417.6  | 424.5  | 424.5  | 425.6  | 417.6  |
| 110°   | 488.6  | 497.7  | 497.7  | 497.7  | 493.1  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 565.2  | 574.9  | 573.2  | 568.6  | 565.2  |
| 115°   | 640.7  | 649.9  | 647.0  | 645.3  | 640.7  |
| 117.5° | 715.7  | 728.3  | 720.2  | 715.7  | 711.1  |
| 120°   | 791.2  | 803.8  | 791.2  | 791.2  | 786.0  |
| 122.5° | 859.8  | 875.8  | 867.8  | 863.3  | 859.8  |
| 125°   | 931.9  | 946.2  | 941.6  | 936.5  | 934.8  |
| 127.5° | 1002.3 | 1020.0 | 1013.7 | 1006.9 | 1002.3 |
| 130°   | 1068.1 | 1088.7 | 1085.8 | 1082.4 | 1076.1 |
| 132.5° | 1141.9 | 1157.9 | 1159.0 | 1151.0 | 1146.4 |
| 135°   | 1205.4 | 1223.1 | 1226.5 | 1224.8 | 1220.2 |
| 137.5° | 1276.3 | 1290.6 | 1293.5 | 1292.3 | 1285.5 |
| 140°   | 1338.7 | 1353.0 | 1361.0 | 1361.0 | 1354.7 |
| 142.5° | 1402.7 | 1417.0 | 1421.6 | 1423.3 | 1417.0 |
| 145°   | 1463.4 | 1474.8 | 1484.0 | 1485.7 | 1479.4 |
| 147.5° | 1517.7 | 1532.0 | 1538.9 | 1541.7 | 1535.4 |
| 150°   | 1573.8 | 1583.5 | 1589.8 | 1594.9 | 1589.8 |
| 152.5° | 1623.5 | 1633.3 | 1641.3 | 1647.6 | 1641.3 |
| 155°   | 1673.3 | 1677.9 | 1683.0 | 1691.1 | 1685.9 |
| 157.5° | 1716.2 | 1719.7 | 1722.5 | 1734.0 | 1726.0 |
| 160°   | 1754.6 | 1758.0 | 1759.7 | 1769.4 | 1762.6 |
| 162.5° | 1790.0 | 1790.0 | 1791.7 | 1802.6 | 1794.6 |
| 165°   | 1820.3 | 1818.6 | 1818.6 | 1830.1 | 1822.1 |
| 167.5° | 1847.8 | 1842.7 | 1842.7 | 1854.1 | 1846.1 |
| 170°   | 1868.4 | 1863.8 | 1862.1 | 1873.5 | 1863.8 |
| 172.5° | 1882.7 | 1878.1 | 1876.4 | 1887.8 | 1878.1 |
| 175°   | 1894.1 | 1889.6 | 1886.1 | 1897.6 | 1887.8 |
| 177.5° | 1900.4 | 1895.9 | 1892.4 | 1902.1 | 1892.4 |
| 180°   | 1897.6 | 1897.6 | 1897.6 | 1897.6 | 1897.6 |

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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 | 13.13            | 14.02 | 14.07 | 14.97 | 16.20 | 12.71          | 13.60 | 13.64 | 14.55 | 15.78 |
|                 | 3H   | 14.77            | 15.57 | 15.72 | 16.53 | 17.78 | 14.31          | 15.11 | 15.26 | 16.07 | 17.32 |
|                 | 4H   | 15.35            | 16.10 | 16.30 | 17.06 | 18.33 | 14.89          | 15.64 | 15.84 | 16.60 | 17.87 |
|                 | 6H   | 15.73            | 16.42 | 16.70 | 17.39 | 18.67 | 15.27          | 15.96 | 16.24 | 16.93 | 18.21 |
|                 | 8H   | 15.83            | 16.49 | 16.80 | 17.47 | 18.75 | 15.37          | 16.03 | 16.34 | 17.01 | 18.29 |
|                 | 12H  | 15.87            | 16.50 | 16.85 | 17.48 | 18.77 | 15.40          | 16.03 | 16.38 | 17.01 | 18.31 |
| 4H              | 2H   | 13.59            | 14.34 | 14.55 | 15.31 | 16.57 | 13.25          | 14.00 | 14.21 | 14.97 | 16.23 |
|                 | 3H   | 15.43            | 16.06 | 16.40 | 17.05 | 18.33 | 15.05          | 15.68 | 16.02 | 16.67 | 17.95 |
|                 | 4H   | 16.13            | 16.70 | 17.11 | 17.69 | 18.99 | 15.73          | 16.31 | 16.72 | 17.29 | 18.59 |
|                 | 6H   | 16.62            | 17.12 | 17.62 | 18.13 | 19.43 | 16.23          | 16.72 | 17.22 | 17.73 | 19.03 |
|                 | 8H   | 16.76            | 17.22 | 17.76 | 18.23 | 19.54 | 16.36          | 16.83 | 17.36 | 17.83 | 19.14 |
|                 | 12H  | 16.82            | 17.24 | 17.84 | 18.26 | 19.58 | 16.42          | 16.84 | 17.43 | 17.86 | 19.17 |
| 8H              | 4H   | 16.32            | 16.78 | 17.31 | 17.78 | 19.10 | 15.96          | 16.43 | 16.96 | 17.43 | 18.74 |
|                 | 6H   | 16.92            | 17.30 | 17.94 | 18.35 | 19.66 | 16.57          | 16.95 | 17.59 | 18.00 | 19.31 |
|                 | 8H   | 17.13            | 17.46 | 18.16 | 18.50 | 19.83 | 16.77          | 17.11 | 17.80 | 18.14 | 19.47 |
|                 | 12H  | 17.24            | 17.54 | 18.28 | 18.57 | 19.94 | 16.87          | 17.17 | 17.91 | 18.20 | 19.57 |
| 12H             | 4H   | 16.30            | 16.72 | 17.32 | 17.74 | 19.06 | 15.96          | 16.37 | 16.97 | 17.39 | 18.71 |
|                 | 6H   | 16.95            | 17.28 | 17.98 | 18.32 | 19.65 | 16.60          | 16.94 | 17.63 | 17.97 | 19.30 |
|                 | 8H   | 17.17            | 17.47 | 18.21 | 18.50 | 19.87 | 16.83          | 17.12 | 17.86 | 18.15 | 19.52 |