

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: P923572

Luminaire Tested: DFN2DIP-TR3F0-070D060US940-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P923572  
REPORT IS A COMBINATION OF REPORTS P900321 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-070D060US940-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

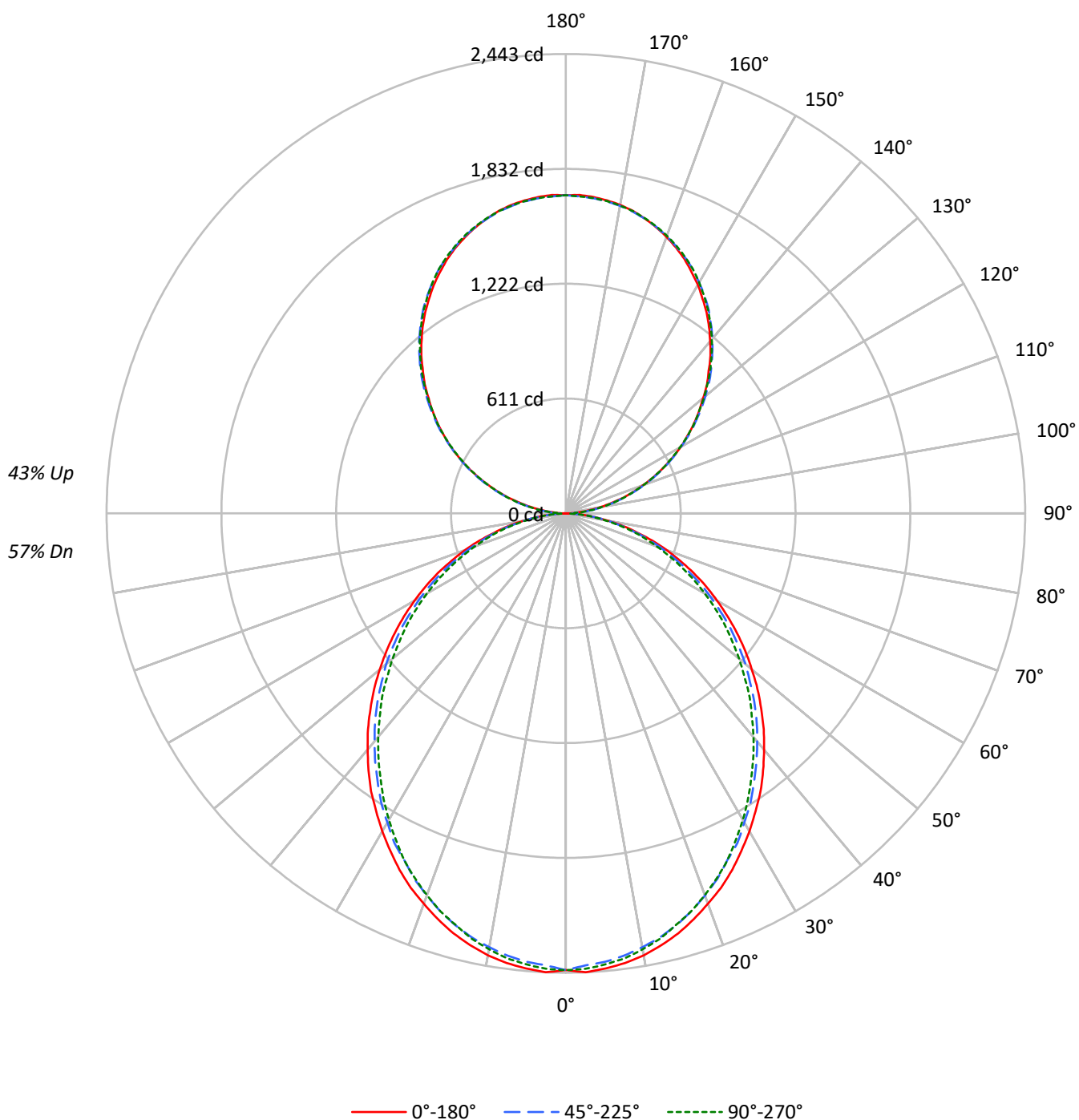
Lumens per Lamp: N/A  
Luminaire Lumens: 10914.6 lumens  
Efficiency: N/A  
Efficacy: 94.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 115.3  
Input Voltage (V):  
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



TEST NUMBER: P923572

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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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 99  | 95  | 91  | 87  | 92  | 88  | 85  | 82  | 76 | 74 | 72 | 65 | 63 | 62 | 55 | 54 | 53 |
| 2   | 90  | 83  | 77  | 71  | 84  | 77  | 72  | 67  | 67 | 63 | 59 | 57 | 54 | 52 | 48 | 46 | 44 |
| 3   | 82  | 73  | 65  | 60  | 76  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 75  | 65  | 57  | 50  | 70  | 60  | 53  | 48  | 53 | 47 | 43 | 45 | 41 | 37 | 38 | 35 | 33 |
| 5   | 69  | 58  | 49  | 43  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 41 | 36 | 32 | 35 | 31 | 28 |
| 6   | 64  | 52  | 43  | 38  | 59  | 48  | 41  | 36  | 42 | 36 | 32 | 37 | 32 | 28 | 31 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 31  | 38 | 33 | 28 | 33 | 29 | 25 | 29 | 25 | 22 |
| 8   | 55  | 42  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 31 | 26 | 23 | 26 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 24 | 21 | 18 |
| 10  | 48  | 36  | 28  | 23  | 45  | 34  | 27  | 22  | 30 | 24 | 20 | 26 | 22 | 18 | 23 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3027 | 3027 | 3027 |
| 5°  | 3030 | 2982 | 3002 |
| 10° | 3003 | 2939 | 2960 |
| 15° | 2958 | 2888 | 2894 |
| 20° | 2896 | 2818 | 2827 |
| 25° | 2835 | 2735 | 2750 |
| 30° | 2759 | 2658 | 2653 |
| 35° | 2687 | 2567 | 2550 |
| 40° | 2598 | 2475 | 2451 |
| 45° | 2509 | 2383 | 2351 |
| 50° | 2413 | 2286 | 2234 |
| 55° | 2311 | 2174 | 2127 |
| 60° | 2196 | 2042 | 2004 |
| 65° | 2070 | 1904 | 1858 |
| 70° | 1910 | 1735 | 1701 |
| 75° | 1689 | 1534 | 1554 |
| 80° | 1421 | 1276 | 1277 |
| 85° | 1005 | 840  | 825  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2509 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 228.6   | 2.1       |
| 10°-20°   | 643.2   | 5.9       |
| 20°-30°   | 945.2   | 8.7       |
| 30°-40°   | 1097.8  | 10.1      |
| 40°-50°   | 1096.5  | 10.0      |
| 50°-60°   | 956.1   | 8.8       |
| 60°-70°   | 706.8   | 6.5       |
| 70°-80°   | 399.9   | 3.7       |
| 80°-90°   | 110.4   | 1.0       |
| 90°-100°  | 104.7   | 1.0       |
| 100°-110° | 332.7   | 3.0       |
| 110°-120° | 569.3   | 5.2       |
| 120°-130° | 748.8   | 6.9       |
| 130°-140° | 840.5   | 7.7       |
| 140°-150° | 824.2   | 7.6       |
| 150°-160° | 691.4   | 6.3       |
| 160°-170° | 458.5   | 4.2       |
| 170°-180° | 160.3   | 1.5       |
| 0°-30°    | 1817.0  | 16.6      |
| 0°-40°    | 2914.9  | 26.7      |
| 0°-60°    | 4967.4  | 45.5      |
| 0°-90°    | 6184.4  | 56.7      |
| 90°-120°  | 1006.7  | 9.2       |
| 90°-150°  | 3420.1  | 31.3      |
| 90°-180°  | 4730.0  | 43.3      |
| 0°-180°   | 10914.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2429 | 2429  | 2429 | 2429  | 2429 |      |
| 5°   | 2429 | 2420  | 2394 | 2412  | 2408 | 231  |
| 15°  | 2312 | 2298  | 2268 | 2277  | 2266 | 651  |
| 25°  | 2093 | 2074  | 2034 | 2039  | 2034 | 963  |
| 35°  | 1805 | 1782  | 1745 | 1730  | 1719 | 1127 |
| 45°  | 1469 | 1453  | 1418 | 1392  | 1383 | 1134 |
| 55°  | 1112 | 1098  | 1070 | 1042  | 1030 | 994  |
| 65°  | 750  | 736   | 712  | 691   | 680  | 741  |
| 75°  | 392  | 388   | 376  | 362   | 367  | 419  |
| 85°  | 96   | 94    | 91   | 84    | 82   | 107  |
| 90°  | 2    | 18    | 50   | 47    | 48   | 11   |
| 95°  | 74   | 89    | 91   | 91    | 89   | 83   |
| 105° | 307  | 311   | 314  | 317   | 317  | 324  |
| 115° | 571  | 580   | 577  | 575   | 571  | 565  |
| 125° | 831  | 844   | 840  | 835   | 834  | 743  |
| 135° | 1075 | 1091  | 1094 | 1092  | 1088 | 831  |
| 145° | 1305 | 1315  | 1323 | 1325  | 1319 | 815  |
| 155° | 1492 | 1496  | 1501 | 1508  | 1503 | 687  |
| 165° | 1623 | 1622  | 1622 | 1632  | 1625 | 458  |
| 175° | 1689 | 1685  | 1682 | 1692  | 1683 | 160  |
| 180° | 1692 | 1692  | 1692 | 1692  | 1692 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2428.8 | 2428.8 | 2428.8 | 2428.8 | 2428.8 |
| 2.5°   | 2442.9 | 2431.2 | 2405.5 | 2428.8 | 2424.3 |
| 5°     | 2428.8 | 2419.7 | 2393.9 | 2412.4 | 2408.0 |
| 7.5°   | 2412.4 | 2398.5 | 2372.8 | 2391.7 | 2386.9 |
| 10°    | 2386.9 | 2370.5 | 2342.5 | 2361.2 | 2354.2 |
| 12.5°  | 2351.7 | 2337.9 | 2309.9 | 2321.5 | 2316.8 |
| 15°    | 2312.1 | 2298.2 | 2267.7 | 2277.2 | 2265.5 |
| 17.5°  | 2263.0 | 2249.2 | 2218.7 | 2230.3 | 2218.7 |
| 20°    | 2209.2 | 2195.4 | 2162.7 | 2169.6 | 2160.4 |
| 22.5°  | 2155.7 | 2134.7 | 2104.2 | 2104.2 | 2099.4 |
| 25°    | 2092.6 | 2073.9 | 2034.3 | 2038.8 | 2034.3 |
| 27.5°  | 2022.4 | 2006.1 | 1975.9 | 1968.9 | 1957.2 |
| 30°    | 1952.6 | 1933.7 | 1898.8 | 1891.9 | 1882.4 |
| 32.5°  | 1877.7 | 1863.9 | 1826.4 | 1812.3 | 1802.9 |
| 35°    | 1805.4 | 1782.1 | 1744.6 | 1730.5 | 1718.9 |
| 37.5°  | 1723.6 | 1702.5 | 1665.1 | 1648.8 | 1637.1 |
| 40°    | 1639.6 | 1620.8 | 1583.3 | 1562.5 | 1553.1 |
| 42.5°  | 1557.8 | 1539.0 | 1501.8 | 1478.3 | 1464.4 |
| 45°    | 1469.1 | 1452.8 | 1417.6 | 1392.0 | 1382.6 |
| 47.5°  | 1382.6 | 1366.3 | 1328.8 | 1303.1 | 1289.2 |
| 50°    | 1291.5 | 1279.8 | 1247.1 | 1214.4 | 1202.7 |
| 52.5°  | 1202.7 | 1186.4 | 1156.2 | 1130.4 | 1114.0 |
| 55°    | 1111.8 | 1097.7 | 1069.7 | 1041.7 | 1030.0 |
| 57.5°  | 1020.7 | 1009.0 | 978.5  | 950.5  | 941.1  |
| 60°    | 929.4  | 920.2  | 887.6  | 861.8  | 854.9  |
| 62.5°  | 840.7  | 824.4  | 801.1  | 777.8  | 768.4  |
| 65°    | 749.8  | 735.7  | 712.4  | 691.3  | 679.7  |
| 67.5°  | 656.4  | 644.5  | 623.7  | 607.3  | 597.9  |
| 70°    | 569.9  | 560.5  | 539.4  | 523.1  | 513.9  |
| 72.5°  | 481.2  | 471.8  | 460.1  | 443.8  | 436.8  |
| 75°    | 392.3  | 387.8  | 375.9  | 362.0  | 366.8  |
| 77.5°  | 313.0  | 303.5  | 298.8  | 291.9  | 285.0  |
| 80°    | 233.6  | 231.2  | 226.5  | 219.5  | 214.8  |
| 82.5°  | 158.8  | 158.8  | 156.6  | 147.2  | 147.2  |
| 85°    | 95.7   | 93.5   | 91.2   | 84.0   | 81.8   |
| 87.5°  | 42.1   | 37.5   | 32.7   | 25.8   | 23.3   |
| 90°    | 1.5    | 18.4   | 50.0   | 46.9   | 48.4   |
| 92.5°  | 31.7   | 42.9   | 44.4   | 45.9   | 45.9   |
| 95°    | 74.5   | 88.7   | 91.3   | 91.3   | 88.7   |
| 97.5°  | 123.9  | 137.2  | 142.9  | 142.9  | 142.9  |
| 100°   | 181.1  | 192.8  | 196.9  | 196.9  | 195.4  |
| 102.5° | 241.3  | 249.9  | 255.6  | 257.1  | 255.6  |
| 105°   | 307.1  | 311.2  | 314.2  | 316.8  | 316.8  |
| 107.5° | 372.4  | 378.5  | 378.5  | 379.5  | 372.4  |
| 110°   | 435.7  | 443.8  | 443.8  | 443.8  | 439.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 504.0  | 512.6  | 511.1  | 507.0  | 504.0  |
| 115°   | 571.3  | 579.5  | 576.9  | 575.4  | 571.3  |
| 117.5° | 638.2  | 649.4  | 642.2  | 638.2  | 634.1  |
| 120°   | 705.5  | 716.8  | 705.5  | 705.5  | 700.9  |
| 122.5° | 766.7  | 781.0  | 773.8  | 769.8  | 766.7  |
| 125°   | 831.0  | 843.7  | 839.6  | 835.1  | 833.6  |
| 127.5° | 893.8  | 909.5  | 903.9  | 897.9  | 893.8  |
| 130°   | 952.4  | 970.8  | 968.2  | 965.2  | 959.6  |
| 132.5° | 1018.2 | 1032.5 | 1033.5 | 1026.4 | 1022.3 |
| 135°   | 1074.9 | 1090.7 | 1093.7 | 1092.2 | 1088.1 |
| 137.5° | 1138.1 | 1150.8 | 1153.4 | 1152.4 | 1146.3 |
| 140°   | 1193.7 | 1206.5 | 1213.6 | 1213.6 | 1208.0 |
| 142.5° | 1250.8 | 1263.6 | 1267.7 | 1269.2 | 1263.6 |
| 145°   | 1304.9 | 1315.1 | 1323.3 | 1324.8 | 1319.2 |
| 147.5° | 1353.3 | 1366.1 | 1372.3 | 1374.7 | 1369.1 |
| 150°   | 1403.4 | 1412.0 | 1417.6 | 1422.2 | 1417.6 |
| 152.5° | 1447.7 | 1456.4 | 1463.6 | 1469.2 | 1463.6 |
| 155°   | 1492.1 | 1496.2 | 1500.7 | 1508.0 | 1503.3 |
| 157.5° | 1530.4 | 1533.5 | 1536.0 | 1546.2 | 1539.1 |
| 160°   | 1564.6 | 1567.6 | 1569.1 | 1577.8 | 1571.7 |
| 162.5° | 1596.2 | 1596.2 | 1597.7 | 1607.4 | 1600.3 |
| 165°   | 1623.2 | 1621.7 | 1621.7 | 1631.9 | 1624.8 |
| 167.5° | 1647.7 | 1643.2 | 1643.2 | 1653.3 | 1646.2 |
| 170°   | 1666.1 | 1662.0 | 1660.5 | 1670.6 | 1662.0 |
| 172.5° | 1678.8 | 1674.7 | 1673.2 | 1683.4 | 1674.7 |
| 175°   | 1689.0 | 1685.0 | 1681.9 | 1692.1 | 1683.4 |
| 177.5° | 1694.6 | 1690.6 | 1687.5 | 1696.1 | 1687.5 |
| 180°   | 1692.1 | 1692.1 | 1692.1 | 1692.1 | 1692.1 |

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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 | 11.66            | 12.58 | 12.56 | 13.50 | 14.68 | 11.23          | 12.16 | 12.13 | 13.07 | 14.25 |
|                 | 3H   | 13.32            | 14.15 | 14.23 | 15.07 | 16.27 | 12.85          | 13.68 | 13.76 | 14.60 | 15.80 |
|                 | 4H   | 13.90            | 14.68 | 14.83 | 15.62 | 16.82 | 13.43          | 14.22 | 14.36 | 15.15 | 16.36 |
|                 | 6H   | 14.30            | 15.02 | 15.23 | 15.96 | 17.18 | 13.83          | 14.55 | 14.76 | 15.49 | 16.71 |
|                 | 8H   | 14.40            | 15.09 | 15.34 | 16.04 | 17.26 | 13.93          | 14.62 | 14.87 | 15.58 | 16.79 |
|                 | 12H  | 14.45            | 15.10 | 15.40 | 16.05 | 17.29 | 13.97          | 14.63 | 14.92 | 15.58 | 16.82 |
| 4H              | 2H   | 12.13            | 12.91 | 13.06 | 13.84 | 15.05 | 11.78          | 12.57 | 12.71 | 13.50 | 14.71 |
|                 | 3H   | 13.99            | 14.64 | 14.93 | 15.60 | 16.83 | 13.60          | 14.25 | 14.54 | 15.22 | 16.44 |
|                 | 4H   | 14.70            | 15.29 | 15.65 | 16.25 | 17.50 | 14.30          | 14.89 | 15.25 | 15.85 | 17.10 |
|                 | 6H   | 15.21            | 15.72 | 16.17 | 16.70 | 17.95 | 14.80          | 15.32 | 15.77 | 16.30 | 17.54 |
|                 | 8H   | 15.35            | 15.83 | 16.32 | 16.81 | 18.07 | 14.95          | 15.43 | 15.91 | 16.40 | 17.66 |
|                 | 12H  | 15.42            | 15.86 | 16.41 | 16.85 | 18.12 | 15.01          | 15.44 | 15.99 | 16.44 | 17.70 |
| 8H              | 4H   | 14.89            | 15.38 | 15.86 | 16.35 | 17.61 | 14.54          | 15.02 | 15.50 | 15.99 | 17.25 |
|                 | 6H   | 15.52            | 15.92 | 16.51 | 16.93 | 18.19 | 15.16          | 15.56 | 16.15 | 16.57 | 17.83 |
|                 | 8H   | 15.73            | 16.08 | 16.73 | 17.09 | 18.37 | 15.37          | 15.72 | 16.37 | 16.72 | 18.00 |
|                 | 12H  | 15.86            | 16.17 | 16.86 | 17.17 | 18.49 | 15.48          | 15.79 | 16.49 | 16.79 | 18.11 |
| 12H             | 4H   | 14.88            | 15.32 | 15.87 | 16.31 | 17.57 | 14.53          | 14.97 | 15.52 | 15.96 | 17.22 |
|                 | 6H   | 15.55            | 15.90 | 16.55 | 16.90 | 18.18 | 15.20          | 15.55 | 16.20 | 16.56 | 17.83 |
|                 | 8H   | 15.78            | 16.09 | 16.79 | 17.09 | 18.42 | 15.43          | 15.74 | 16.43 | 16.74 | 18.06 |