

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: P912626

Luminaire Tested: DFN2DIP-TR3F0-060D040US850-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912626  
REPORT IS A COMBINATION OF REPORTS P900291 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-060D040US850-FLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

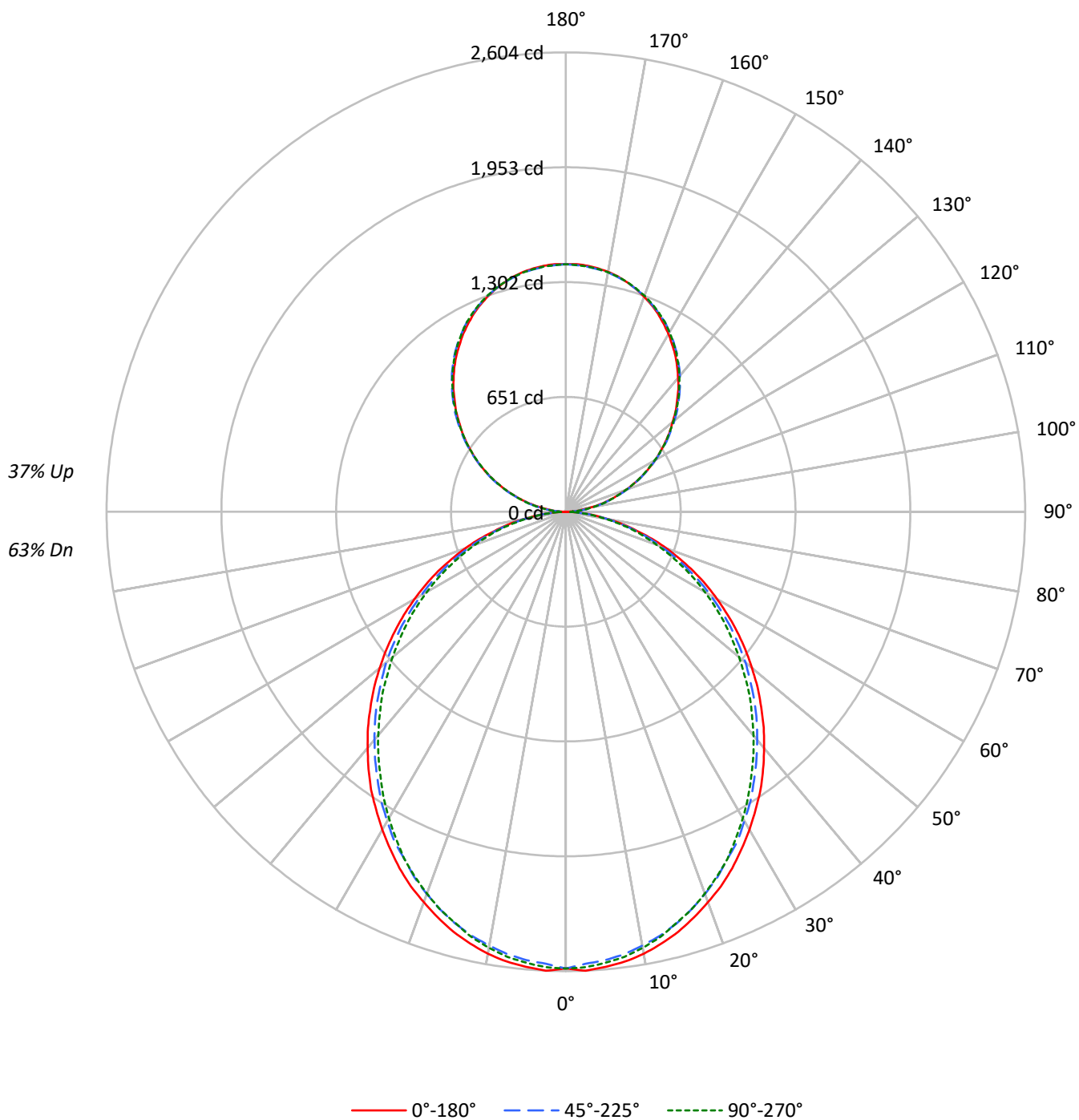
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10513.2 lumens  
Efficiency: N/A  
Efficacy: 121.0 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: Semi-Direct  
  
Input Watts (W): 86.9  
Input Voltage (V): 120  
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: P912626

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### Luminous Intensity Polar Plot



TEST NUMBER: P912626

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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 | 79 | 79 | 79 | 68 | 68 | 68 |
| 1   | 101 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 79 | 77 | 74 | 69 | 67 | 66 | 60 | 59 | 57 |
| 2   | 92  | 84  | 78  | 72  | 86  | 79  | 73  | 69  | 70 | 65 | 62 | 61 | 58 | 55 | 53 | 50 | 48 |
| 3   | 84  | 74  | 66  | 60  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 54 | 50 | 46 | 47 | 44 | 41 |
| 4   | 77  | 66  | 57  | 51  | 71  | 62  | 54  | 49  | 55 | 49 | 44 | 48 | 43 | 40 | 42 | 38 | 35 |
| 5   | 70  | 58  | 50  | 44  | 66  | 55  | 48  | 42  | 49 | 43 | 38 | 43 | 38 | 35 | 38 | 34 | 31 |
| 6   | 65  | 53  | 44  | 38  | 61  | 50  | 42  | 37  | 44 | 38 | 33 | 39 | 34 | 30 | 34 | 30 | 27 |
| 7   | 60  | 48  | 39  | 34  | 56  | 45  | 38  | 32  | 40 | 34 | 30 | 36 | 31 | 27 | 31 | 27 | 24 |
| 8   | 56  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 26 | 33 | 28 | 24 | 29 | 25 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 38  | 30  | 26  | 34 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |
| 10  | 49  | 36  | 29  | 24  | 46  | 35  | 28  | 23  | 31 | 25 | 21 | 28 | 23 | 20 | 25 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3226 | 3226 | 3226 |
| 5°  | 3230 | 3179 | 3201 |
| 10° | 3202 | 3133 | 3155 |
| 15° | 3153 | 3079 | 3085 |
| 20° | 3087 | 3004 | 3014 |
| 25° | 3022 | 2916 | 2932 |
| 30° | 2941 | 2834 | 2828 |
| 35° | 2864 | 2737 | 2718 |
| 40° | 2770 | 2639 | 2613 |
| 45° | 2675 | 2540 | 2506 |
| 50° | 2572 | 2437 | 2382 |
| 55° | 2463 | 2318 | 2267 |
| 60° | 2341 | 2176 | 2136 |
| 65° | 2207 | 2029 | 1981 |
| 70° | 2036 | 1850 | 1814 |
| 75° | 1800 | 1635 | 1656 |
| 80° | 1515 | 1360 | 1361 |
| 85° | 1070 | 895  | 879  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2675 cd/sqm

TEST NUMBER: P912626

CATALOG NUMBER: DFN2DIP-TR3F0-060D040US850-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 243.7   | 2.3       |
| 10°-20°   | 685.6   | 6.5       |
| 20°-30°   | 1007.6  | 9.6       |
| 30°-40°   | 1170.3  | 11.1      |
| 40°-50°   | 1168.8  | 11.1      |
| 50°-60°   | 1019.2  | 9.7       |
| 60°-70°   | 753.4   | 7.2       |
| 70°-80°   | 426.3   | 4.1       |
| 80°-90°   | 116.5   | 1.1       |
| 90°-100°  | 86.8    | 0.8       |
| 100°-110° | 275.8   | 2.6       |
| 110°-120° | 472.0   | 4.5       |
| 120°-130° | 620.8   | 5.9       |
| 130°-140° | 696.8   | 6.6       |
| 140°-150° | 683.3   | 6.5       |
| 150°-160° | 573.2   | 5.5       |
| 160°-170° | 380.1   | 3.6       |
| 170°-180° | 132.9   | 1.3       |
| 0°-30°    | 1937.0  | 18.4      |
| 0°-40°    | 3107.2  | 29.6      |
| 0°-60°    | 5295.3  | 50.4      |
| 0°-90°    | 6591.4  | 62.7      |
| 90°-120°  | 834.7   | 7.9       |
| 90°-150°  | 2835.6  | 27.0      |
| 90°-180°  | 3922.0  | 37.3      |
| 0°-180°   | 10513.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2589 | 2589  | 2589 | 2589  | 2589 |      |
| 5°   | 2589 | 2579  | 2552 | 2572  | 2567 | 246  |
| 15°  | 2465 | 2450  | 2417 | 2428  | 2415 | 694  |
| 25°  | 2231 | 2211  | 2168 | 2173  | 2168 | 1026 |
| 35°  | 1925 | 1900  | 1860 | 1845  | 1832 | 1202 |
| 45°  | 1566 | 1549  | 1511 | 1484  | 1474 | 1209 |
| 55°  | 1185 | 1170  | 1140 | 1110  | 1098 | 1060 |
| 65°  | 799  | 784   | 759  | 737   | 724  | 790  |
| 75°  | 418  | 413   | 401  | 386   | 391  | 446  |
| 85°  | 102  | 100   | 97   | 90    | 87   | 114  |
| 90°  | 1    | 15    | 42   | 39    | 40   | 10   |
| 95°  | 62   | 74    | 76   | 76    | 74   | 69   |
| 105° | 255  | 258   | 260  | 263   | 263  | 269  |
| 115° | 474  | 480   | 478  | 477   | 474  | 469  |
| 125° | 689  | 700   | 696  | 692   | 691  | 616  |
| 135° | 891  | 904   | 907  | 906   | 902  | 689  |
| 145° | 1082 | 1090  | 1097 | 1098  | 1094 | 676  |
| 155° | 1237 | 1240  | 1244 | 1250  | 1246 | 569  |
| 165° | 1346 | 1345  | 1345 | 1353  | 1347 | 380  |
| 175° | 1400 | 1397  | 1394 | 1403  | 1396 | 133  |
| 180° | 1403 | 1403  | 1403 | 1403  | 1403 |      |

TEST NUMBER: P912626

CATALOG NUMBER: DFN2DIP-TR3F0-060D040US850-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2589.1 | 2589.1 | 2589.1 | 2589.1 | 2589.1 |
| 2.5°   | 2604.2 | 2591.7 | 2564.2 | 2589.1 | 2584.3 |
| 5°     | 2589.1 | 2579.3 | 2551.8 | 2571.7 | 2566.9 |
| 7.5°   | 2571.7 | 2556.9 | 2529.4 | 2549.5 | 2544.5 |
| 10°    | 2544.5 | 2527.1 | 2497.1 | 2517.0 | 2509.6 |
| 12.5°  | 2507.0 | 2492.1 | 2462.3 | 2474.7 | 2469.7 |
| 15°    | 2464.6 | 2449.9 | 2417.4 | 2427.5 | 2415.1 |
| 17.5°  | 2412.4 | 2397.7 | 2365.2 | 2377.5 | 2365.2 |
| 20°    | 2355.1 | 2340.3 | 2305.4 | 2312.8 | 2303.1 |
| 22.5°  | 2298.1 | 2275.6 | 2243.1 | 2243.1 | 2238.1 |
| 25°    | 2230.6 | 2210.9 | 2168.5 | 2173.3 | 2168.5 |
| 27.5°  | 2155.9 | 2138.5 | 2106.2 | 2098.9 | 2086.5 |
| 30°    | 2081.5 | 2061.3 | 2024.1 | 2016.7 | 2006.6 |
| 32.5°  | 2001.6 | 1986.9 | 1947.0 | 1931.9 | 1921.9 |
| 35°    | 1924.6 | 1899.7 | 1859.8 | 1844.7 | 1832.3 |
| 37.5°  | 1837.4 | 1814.9 | 1775.1 | 1757.5 | 1745.1 |
| 40°    | 1747.8 | 1727.7 | 1687.9 | 1665.7 | 1655.6 |
| 42.5°  | 1660.6 | 1640.5 | 1601.0 | 1575.9 | 1561.0 |
| 45°    | 1566.1 | 1548.6 | 1511.1 | 1484.0 | 1473.9 |
| 47.5°  | 1473.9 | 1456.4 | 1416.6 | 1389.1 | 1374.3 |
| 50°    | 1376.7 | 1364.3 | 1329.5 | 1294.5 | 1282.1 |
| 52.5°  | 1282.1 | 1264.7 | 1232.4 | 1205.0 | 1187.6 |
| 55°    | 1185.2 | 1170.1 | 1140.3 | 1110.4 | 1098.0 |
| 57.5°  | 1088.0 | 1075.6 | 1043.1 | 1013.3 | 1003.2 |
| 60°    | 990.8  | 981.0  | 946.2  | 918.7  | 911.3  |
| 62.5°  | 896.2  | 878.8  | 853.9  | 829.1  | 819.1  |
| 65°    | 799.3  | 784.3  | 759.4  | 736.9  | 724.5  |
| 67.5°  | 699.7  | 687.0  | 664.8  | 647.4  | 637.3  |
| 70°    | 607.5  | 597.5  | 575.0  | 557.6  | 547.8  |
| 72.5°  | 512.9  | 502.9  | 490.5  | 473.1  | 465.7  |
| 75°    | 418.1  | 413.4  | 400.7  | 385.9  | 390.9  |
| 77.5°  | 333.6  | 323.6  | 318.5  | 311.2  | 303.8  |
| 80°    | 249.1  | 246.4  | 241.4  | 234.0  | 229.0  |
| 82.5°  | 169.3  | 169.3  | 166.9  | 156.9  | 156.9  |
| 85°    | 101.9  | 99.6   | 97.1   | 89.5   | 87.2   |
| 87.5°  | 44.9   | 39.9   | 34.8   | 27.5   | 24.8   |
| 90°    | 1.2    | 15.2   | 41.5   | 38.9   | 40.1   |
| 92.5°  | 26.2   | 35.5   | 36.8   | 38.0   | 38.0   |
| 95°    | 61.8   | 73.6   | 75.7   | 75.7   | 73.6   |
| 97.5°  | 102.8  | 113.8  | 118.4  | 118.4  | 118.4  |
| 100°   | 150.2  | 159.9  | 163.2  | 163.2  | 162.0  |
| 102.5° | 200.1  | 207.3  | 211.9  | 213.1  | 211.9  |
| 105°   | 254.6  | 258.0  | 260.5  | 262.6  | 262.6  |
| 107.5° | 308.7  | 313.8  | 313.8  | 314.6  | 308.7  |
| 110°   | 361.2  | 368.0  | 368.0  | 368.0  | 364.6  |



TEST NUMBER: P912626

CATALOG NUMBER: DFN2DIP-TR3F0-060D040US850-FLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 417.9  | 425.1  | 423.7  | 420.4  | 417.9  |
| 115°   | 473.7  | 480.5  | 478.3  | 477.1  | 473.7  |
| 117.5° | 529.1  | 538.4  | 532.5  | 529.1  | 525.8  |
| 120°   | 585.0  | 594.2  | 585.0  | 585.0  | 581.1  |
| 122.5° | 635.7  | 647.5  | 641.7  | 638.2  | 635.7  |
| 125°   | 689.0  | 699.6  | 696.2  | 692.3  | 691.1  |
| 127.5° | 741.0  | 754.1  | 749.5  | 744.4  | 741.0  |
| 130°   | 789.6  | 804.9  | 802.8  | 800.3  | 795.6  |
| 132.5° | 844.2  | 856.0  | 856.9  | 850.9  | 847.6  |
| 135°   | 891.2  | 904.3  | 906.8  | 905.5  | 902.2  |
| 137.5° | 943.6  | 954.2  | 956.3  | 955.4  | 950.4  |
| 140°   | 989.7  | 1000.3 | 1006.2 | 1006.2 | 1001.5 |
| 142.5° | 1037.1 | 1047.7 | 1051.0 | 1052.3 | 1047.7 |
| 145°   | 1081.9 | 1090.4 | 1097.1 | 1098.5 | 1093.8 |
| 147.5° | 1122.1 | 1132.6 | 1137.7 | 1139.8 | 1135.2 |
| 150°   | 1163.6 | 1170.8 | 1175.4 | 1179.2 | 1175.4 |
| 152.5° | 1200.4 | 1207.5 | 1213.5 | 1218.1 | 1213.5 |
| 155°   | 1237.1 | 1240.5 | 1244.3 | 1250.3 | 1246.4 |
| 157.5° | 1268.9 | 1271.4 | 1273.5 | 1282.0 | 1276.0 |
| 160°   | 1297.2 | 1299.7 | 1301.0 | 1308.2 | 1303.1 |
| 162.5° | 1323.4 | 1323.4 | 1324.7 | 1332.7 | 1326.8 |
| 165°   | 1345.9 | 1344.6 | 1344.6 | 1353.0 | 1347.1 |
| 167.5° | 1366.2 | 1362.3 | 1362.3 | 1370.8 | 1364.8 |
| 170°   | 1381.4 | 1377.9 | 1376.7 | 1385.1 | 1377.9 |
| 172.5° | 1391.9 | 1388.6 | 1387.2 | 1395.8 | 1388.6 |
| 175°   | 1400.4 | 1397.0 | 1394.5 | 1402.9 | 1395.8 |
| 177.5° | 1405.1 | 1401.7 | 1399.1 | 1406.3 | 1399.1 |
| 180°   | 1402.9 | 1402.9 | 1402.9 | 1402.9 | 1402.9 |

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CATALOG NUMBER: DFN2DIP-TR3F0-060D040US850-FLLFLL

**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 | 12.38            | 13.37 | 13.22 | 14.24 | 15.31 | 11.96          | 12.94 | 12.80 | 13.81 | 14.88 |
|                 | 3H   | 14.04            | 14.93 | 14.90 | 15.80 | 16.91 | 13.58          | 14.46 | 14.43 | 15.34 | 16.44 |
|                 | 4H   | 14.63            | 15.47 | 15.50 | 16.35 | 17.46 | 14.16          | 15.00 | 15.03 | 15.88 | 17.00 |
|                 | 6H   | 15.03            | 15.80 | 15.91 | 16.69 | 17.82 | 14.56          | 15.34 | 15.44 | 16.22 | 17.35 |
|                 | 8H   | 15.14            | 15.87 | 16.02 | 16.78 | 17.90 | 14.67          | 15.40 | 15.56 | 16.31 | 17.44 |
|                 | 12H  | 15.18            | 15.89 | 16.08 | 16.78 | 17.94 | 14.71          | 15.41 | 15.61 | 16.31 | 17.46 |
| 4H              | 2H   | 12.86            | 13.70 | 13.73 | 14.57 | 15.69 | 12.52          | 13.35 | 13.39 | 14.23 | 15.35 |
|                 | 3H   | 14.72            | 15.42 | 15.61 | 16.33 | 17.47 | 14.34          | 15.04 | 15.22 | 15.95 | 17.08 |
|                 | 4H   | 15.44            | 16.07 | 16.33 | 16.98 | 18.14 | 15.04          | 15.67 | 15.93 | 16.58 | 17.74 |
|                 | 6H   | 15.95            | 16.50 | 16.86 | 17.43 | 18.59 | 15.55          | 16.10 | 16.46 | 17.03 | 18.19 |
|                 | 8H   | 16.10            | 16.61 | 17.01 | 17.54 | 18.71 | 15.69          | 16.21 | 16.61 | 17.13 | 18.30 |
|                 | 12H  | 16.17            | 16.64 | 17.11 | 17.58 | 18.76 | 15.76          | 16.22 | 16.69 | 17.17 | 18.34 |
| 8H              | 4H   | 15.64            | 16.15 | 16.55 | 17.08 | 18.25 | 15.28          | 15.80 | 16.20 | 16.72 | 17.89 |
|                 | 6H   | 16.26            | 16.69 | 17.21 | 17.66 | 18.83 | 15.91          | 16.33 | 16.85 | 17.30 | 18.47 |
|                 | 8H   | 16.48            | 16.86 | 17.43 | 17.82 | 19.00 | 16.12          | 16.49 | 17.07 | 17.45 | 18.64 |
|                 | 12H  | 16.61            | 16.94 | 17.57 | 17.89 | 19.13 | 16.23          | 16.57 | 17.19 | 17.52 | 18.75 |
| 12H             | 4H   | 15.63            | 16.09 | 16.56 | 17.04 | 18.22 | 15.28          | 15.75 | 16.21 | 16.69 | 17.87 |
|                 | 6H   | 16.29            | 16.67 | 17.24 | 17.63 | 18.82 | 15.95          | 16.32 | 16.90 | 17.28 | 18.47 |
|                 | 8H   | 16.53            | 16.87 | 17.49 | 17.82 | 19.06 | 16.18          | 16.52 | 17.14 | 17.47 | 18.70 |