

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: P911746

Luminaire Tested: DFN2DIP-SQ2F0-060D080US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911746  
REPORT IS A COMBINATION OF REPORTS P899838 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-060D080US850-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

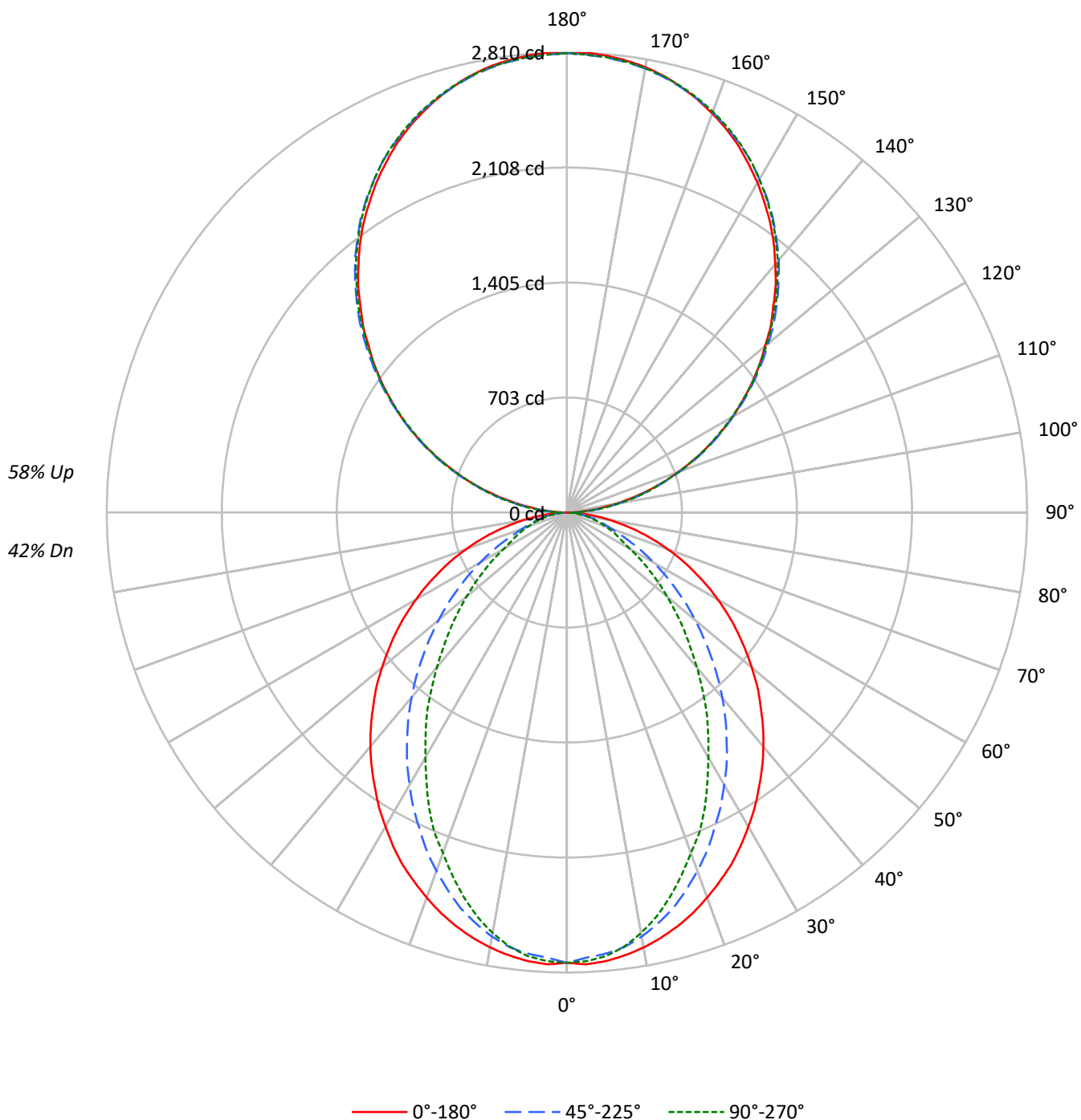
Lumens per Lamp: N/A  
Luminaire Lumens: 13507.6 lumens  
Efficiency: N/A  
Efficacy: 112.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 120  
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

TEST NUMBER: P911746

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### Luminous Intensity Polar Plot



TEST NUMBER: P911746

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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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 44 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 47 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 40 | 34 | 30 | 33 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 28 | 33 | 28 | 24 | 27 | 23 | 21 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 36 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 19 | 20 | 18 | 16 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6047 | 6047 | 6047 |
| 5°  | 6046 | 5938 | 5981 |
| 10° | 5976 | 5809 | 5778 |
| 15° | 5883 | 5604 | 5469 |
| 20° | 5764 | 5327 | 5093 |
| 25° | 5642 | 5019 | 4731 |
| 30° | 5481 | 4704 | 4274 |
| 35° | 5323 | 4368 | 3872 |
| 40° | 5162 | 4020 | 3414 |
| 45° | 4976 | 3638 | 2999 |
| 50° | 4783 | 3252 | 2594 |
| 55° | 4580 | 2841 | 2205 |
| 60° | 4344 | 2414 | 1807 |
| 65° | 4073 | 1982 | 1617 |
| 70° | 3743 | 1578 | 1451 |
| 75° | 3329 | 1366 | 1303 |
| 80° | 2734 | 1109 | 1105 |
| 85° | 1778 | 688  | 785  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 4976 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 257.7   | 1.9       |
| 10°-20°   | 707.6   | 5.2       |
| 20°-30°   | 993.4   | 7.4       |
| 30°-40°   | 1082.8  | 8.0       |
| 40°-50°   | 995.2   | 7.4       |
| 50°-60°   | 781.6   | 5.8       |
| 60°-70°   | 508.8   | 3.8       |
| 70°-80°   | 261.9   | 1.9       |
| 80°-90°   | 74.8    | 0.6       |
| 90°-100°  | 173.6   | 1.3       |
| 100°-110° | 551.7   | 4.1       |
| 110°-120° | 944.1   | 7.0       |
| 120°-130° | 1241.6  | 9.2       |
| 130°-140° | 1393.7  | 10.3      |
| 140°-150° | 1366.6  | 10.1      |
| 150°-160° | 1146.4  | 8.5       |
| 160°-170° | 760.3   | 5.6       |
| 170°-180° | 265.7   | 2.0       |
| 0°-30°    | 1958.7  | 14.5      |
| 0°-40°    | 3041.5  | 22.5      |
| 0°-60°    | 4818.4  | 35.7      |
| 0°-90°    | 5663.9  | 41.9      |
| 90°-120°  | 1669.4  | 12.4      |
| 90°-150°  | 5671.3  | 42.0      |
| 90°-180°  | 7844.0  | 58.1      |
| 0°-180°   | 13507.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2750 | 2750  | 2750 | 2750  | 2750 |      |
| 5°   | 2750 | 2738  | 2705 | 2728  | 2720 | 261  |
| 15°  | 2616 | 2588  | 2504 | 2456  | 2432 | 737  |
| 25°  | 2374 | 2295  | 2130 | 2028  | 1991 | 1092 |
| 35°  | 2046 | 1919  | 1700 | 1543  | 1488 | 1281 |
| 45°  | 1672 | 1506  | 1244 | 1068  | 1008 | 1292 |
| 55°  | 1272 | 1078  | 809  | 660   | 612  | 1136 |
| 65°  | 859  | 657   | 433  | 349   | 341  | 851  |
| 75°  | 458  | 284   | 199  | 182   | 179  | 484  |
| 85°  | 107  | 55    | 47   | 47    | 47   | 123  |
| 90°  | 3    | 30    | 83   | 78    | 80   | 13   |
| 95°  | 124  | 147   | 151  | 151   | 147  | 137  |
| 105° | 509  | 516   | 521  | 525   | 525  | 537  |
| 115° | 947  | 961   | 957  | 954   | 947  | 937  |
| 125° | 1378 | 1399  | 1392 | 1385  | 1382 | 1231 |
| 135° | 1782 | 1809  | 1814 | 1811  | 1804 | 1378 |
| 145° | 2164 | 2181  | 2194 | 2197  | 2188 | 1352 |
| 155° | 2474 | 2481  | 2489 | 2500  | 2493 | 1139 |
| 165° | 2692 | 2689  | 2689 | 2706  | 2694 | 759  |
| 175° | 2801 | 2794  | 2789 | 2806  | 2792 | 266  |
| 180° | 2806 | 2806  | 2806 | 2806  | 2806 |      |

TEST NUMBER: P911746

CATALOG NUMBER: DFN2DIP-SQ2F0-060D080US850-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2750.1 | 2750.1 | 2750.1 | 2750.1 | 2750.1 |
| 2.5°   | 2762.5 | 2750.1 | 2722.6 | 2747.7 | 2742.7 |
| 5°     | 2750.1 | 2737.7 | 2705.2 | 2727.7 | 2720.3 |
| 7.5°   | 2727.7 | 2712.8 | 2678.0 | 2687.8 | 2675.4 |
| 10°    | 2697.8 | 2680.3 | 2630.8 | 2623.1 | 2608.3 |
| 12.5°  | 2660.6 | 2638.1 | 2570.8 | 2556.0 | 2528.5 |
| 15°    | 2615.7 | 2588.2 | 2503.7 | 2456.4 | 2431.6 |
| 17.5°  | 2563.5 | 2523.5 | 2419.0 | 2364.3 | 2324.5 |
| 20°    | 2503.7 | 2453.8 | 2329.5 | 2267.4 | 2212.5 |
| 22.5°  | 2439.0 | 2381.7 | 2237.3 | 2152.8 | 2115.5 |
| 25°    | 2374.4 | 2294.6 | 2130.4 | 2028.5 | 1991.0 |
| 27.5°  | 2297.3 | 2212.5 | 2030.8 | 1913.8 | 1856.6 |
| 30°    | 2215.1 | 2120.3 | 1921.2 | 1794.5 | 1727.2 |
| 32.5°  | 2135.4 | 2020.8 | 1817.0 | 1667.5 | 1605.2 |
| 35°    | 2045.9 | 1918.9 | 1700.0 | 1543.1 | 1488.2 |
| 37.5°  | 1958.7 | 1821.6 | 1590.4 | 1418.5 | 1356.4 |
| 40°    | 1866.6 | 1717.4 | 1475.7 | 1299.1 | 1234.4 |
| 42.5°  | 1772.1 | 1612.8 | 1361.4 | 1177.1 | 1115.1 |
| 45°    | 1672.5 | 1505.6 | 1244.5 | 1067.5 | 1007.9 |
| 47.5°  | 1578.0 | 1401.3 | 1132.5 | 955.6  | 901.0  |
| 50°    | 1473.4 | 1296.8 | 1022.9 | 851.0  | 799.0  |
| 52.5°  | 1371.2 | 1184.5 | 918.4  | 754.1  | 706.9  |
| 55°    | 1271.7 | 1077.6 | 808.8  | 659.6  | 612.3  |
| 57.5°  | 1169.8 | 970.6  | 711.9  | 572.5  | 532.5  |
| 60°    | 1065.2 | 866.1  | 609.7  | 483.0  | 443.0  |
| 62.5°  | 963.3  | 764.2  | 522.6  | 403.2  | 383.4  |
| 65°    | 858.7  | 657.0  | 433.1  | 348.6  | 340.9  |
| 67.5°  | 759.1  | 557.4  | 348.6  | 306.1  | 298.7  |
| 70°    | 654.5  | 460.5  | 288.6  | 263.8  | 253.7  |
| 72.5°  | 555.1  | 370.7  | 241.3  | 221.6  | 216.5  |
| 75°    | 457.9  | 283.6  | 199.1  | 181.7  | 179.3  |
| 77.5°  | 361.0  | 201.5  | 156.8  | 146.8  | 141.8  |
| 80°    | 271.2  | 144.4  | 119.3  | 109.6  | 109.6  |
| 82.5°  | 189.1  | 97.1   | 82.1   | 77.1   | 77.1   |
| 85°    | 106.9  | 54.7   | 47.2   | 47.2   | 47.2   |
| 87.5°  | 39.9   | 19.9   | 19.9   | 17.4   | 17.4   |
| 90°    | 2.6    | 30.5   | 83.0   | 77.9   | 80.4   |
| 92.5°  | 52.5   | 71.1   | 73.6   | 76.1   | 76.1   |
| 95°    | 123.5  | 147.2  | 151.4  | 151.4  | 147.2  |
| 97.5°  | 205.6  | 227.6  | 236.9  | 236.9  | 236.9  |
| 100°   | 300.3  | 319.7  | 326.5  | 326.5  | 323.9  |
| 102.5° | 400.1  | 414.5  | 423.7  | 426.3  | 423.7  |
| 105°   | 509.3  | 516.0  | 521.1  | 525.3  | 525.3  |
| 107.5° | 617.5  | 627.7  | 627.7  | 629.4  | 617.5  |
| 110°   | 722.4  | 735.9  | 735.9  | 735.9  | 729.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 835.7  | 850.2  | 847.6  | 840.8  | 835.7  |
| 115°   | 947.4  | 960.9  | 956.7  | 954.2  | 947.4  |
| 117.5° | 1058.2 | 1076.8 | 1065.0 | 1058.2 | 1051.4 |
| 120°   | 1169.9 | 1188.5 | 1169.9 | 1169.9 | 1162.2 |
| 122.5° | 1271.4 | 1295.1 | 1283.2 | 1276.5 | 1271.4 |
| 125°   | 1377.9 | 1399.1 | 1392.3 | 1384.7 | 1382.3 |
| 127.5° | 1482.1 | 1508.2 | 1498.9 | 1488.8 | 1482.1 |
| 130°   | 1579.3 | 1609.7 | 1605.5 | 1600.5 | 1591.2 |
| 132.5° | 1688.5 | 1712.1 | 1713.8 | 1702.0 | 1695.2 |
| 135°   | 1782.3 | 1808.6 | 1813.7 | 1811.1 | 1804.3 |
| 137.5° | 1887.2 | 1908.4 | 1912.6 | 1910.9 | 1900.7 |
| 140°   | 1979.5 | 2000.5 | 2012.4 | 2012.4 | 2003.1 |
| 142.5° | 2074.2 | 2095.3 | 2102.1 | 2104.7 | 2095.3 |
| 145°   | 2163.9 | 2180.7 | 2194.3 | 2196.8 | 2187.5 |
| 147.5° | 2244.2 | 2265.4 | 2275.4 | 2279.8 | 2270.5 |
| 150°   | 2327.1 | 2341.4 | 2350.7 | 2358.4 | 2350.7 |
| 152.5° | 2400.7 | 2415.1 | 2426.9 | 2436.3 | 2426.9 |
| 155°   | 2474.3 | 2481.1 | 2488.7 | 2500.5 | 2492.9 |
| 157.5° | 2537.7 | 2542.8 | 2547.0 | 2563.9 | 2552.1 |
| 160°   | 2594.4 | 2599.5 | 2602.0 | 2616.4 | 2606.3 |
| 162.5° | 2646.9 | 2646.9 | 2649.4 | 2665.5 | 2653.6 |
| 165°   | 2691.7 | 2689.1 | 2689.1 | 2706.1 | 2694.2 |
| 167.5° | 2732.2 | 2724.7 | 2724.7 | 2741.6 | 2729.7 |
| 170°   | 2762.7 | 2756.0 | 2753.4 | 2770.4 | 2756.0 |
| 172.5° | 2783.9 | 2777.2 | 2774.6 | 2791.5 | 2777.2 |
| 175°   | 2800.8 | 2794.0 | 2788.9 | 2805.9 | 2791.5 |
| 177.5° | 2810.1 | 2803.3 | 2798.2 | 2812.6 | 2798.2 |
| 180°   | 2805.9 | 2805.9 | 2805.9 | 2805.9 | 2805.9 |

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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 | 12.48            | 13.25 | 13.51 | 14.28 | 15.67 | 8.44           | 9.21  | 9.47  | 10.24 | 11.63 |
|                 | 3H   | 14.13            | 14.82 | 15.17 | 15.86 | 17.27 | 9.61           | 10.29 | 10.65 | 11.33 | 12.74 |
|                 | 4H   | 14.73            | 15.38 | 15.78 | 16.42 | 17.83 | 10.04          | 10.69 | 11.09 | 11.74 | 13.15 |
|                 | 6H   | 15.13            | 15.73 | 16.19 | 16.77 | 18.20 | 10.34          | 10.94 | 11.40 | 11.99 | 13.41 |
|                 | 8H   | 15.24            | 15.81 | 16.31 | 16.88 | 18.30 | 10.42          | 10.99 | 11.49 | 12.06 | 13.47 |
|                 | 12H  | 15.30            | 15.84 | 16.37 | 16.89 | 18.34 | 10.46          | 11.00 | 11.53 | 12.05 | 13.50 |
| 4H              | 2H   | 12.49            | 13.14 | 13.54 | 14.18 | 15.59 | 9.02           | 9.67  | 10.08 | 10.71 | 12.12 |
|                 | 3H   | 14.29            | 14.83 | 15.35 | 15.90 | 17.32 | 10.34          | 10.88 | 11.41 | 11.95 | 13.38 |
|                 | 4H   | 14.96            | 15.46 | 16.03 | 16.52 | 17.97 | 10.87          | 11.37 | 11.94 | 12.43 | 13.88 |
|                 | 6H   | 15.45            | 15.88 | 16.53 | 16.96 | 18.41 | 11.27          | 11.69 | 12.35 | 12.78 | 14.22 |
|                 | 8H   | 15.62            | 16.01 | 16.70 | 17.09 | 18.55 | 11.38          | 11.78 | 12.47 | 12.86 | 14.32 |
|                 | 12H  | 15.70            | 16.06 | 16.80 | 17.15 | 18.61 | 11.44          | 11.79 | 12.53 | 12.89 | 14.35 |
| 8H              | 4H   | 14.92            | 15.32 | 16.00 | 16.39 | 17.85 | 11.14          | 11.53 | 12.22 | 12.61 | 14.07 |
|                 | 6H   | 15.46            | 15.79 | 16.56 | 16.91 | 18.36 | 11.63          | 11.95 | 12.73 | 13.07 | 14.53 |
|                 | 8H   | 15.66            | 15.95 | 16.77 | 17.05 | 18.53 | 11.80          | 12.09 | 12.91 | 13.19 | 14.67 |
|                 | 12H  | 15.79            | 16.04 | 16.90 | 17.14 | 18.65 | 11.90          | 12.16 | 13.02 | 13.26 | 14.77 |
| 12H             | 4H   | 14.87            | 15.23 | 15.97 | 16.32 | 17.78 | 11.13          | 11.49 | 12.23 | 12.58 | 14.04 |
|                 | 6H   | 15.44            | 15.72 | 16.54 | 16.83 | 18.30 | 11.67          | 11.96 | 12.78 | 13.06 | 14.53 |
|                 | 8H   | 15.64            | 15.89 | 16.75 | 16.99 | 18.50 | 11.86          | 12.11 | 12.97 | 13.21 | 14.72 |