

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: P903763

Luminaire Tested: DFN2DIP-SQ3F0-080D050US830-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903763  
REPORT IS A COMBINATION OF REPORTS P901408 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-080D050US830-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

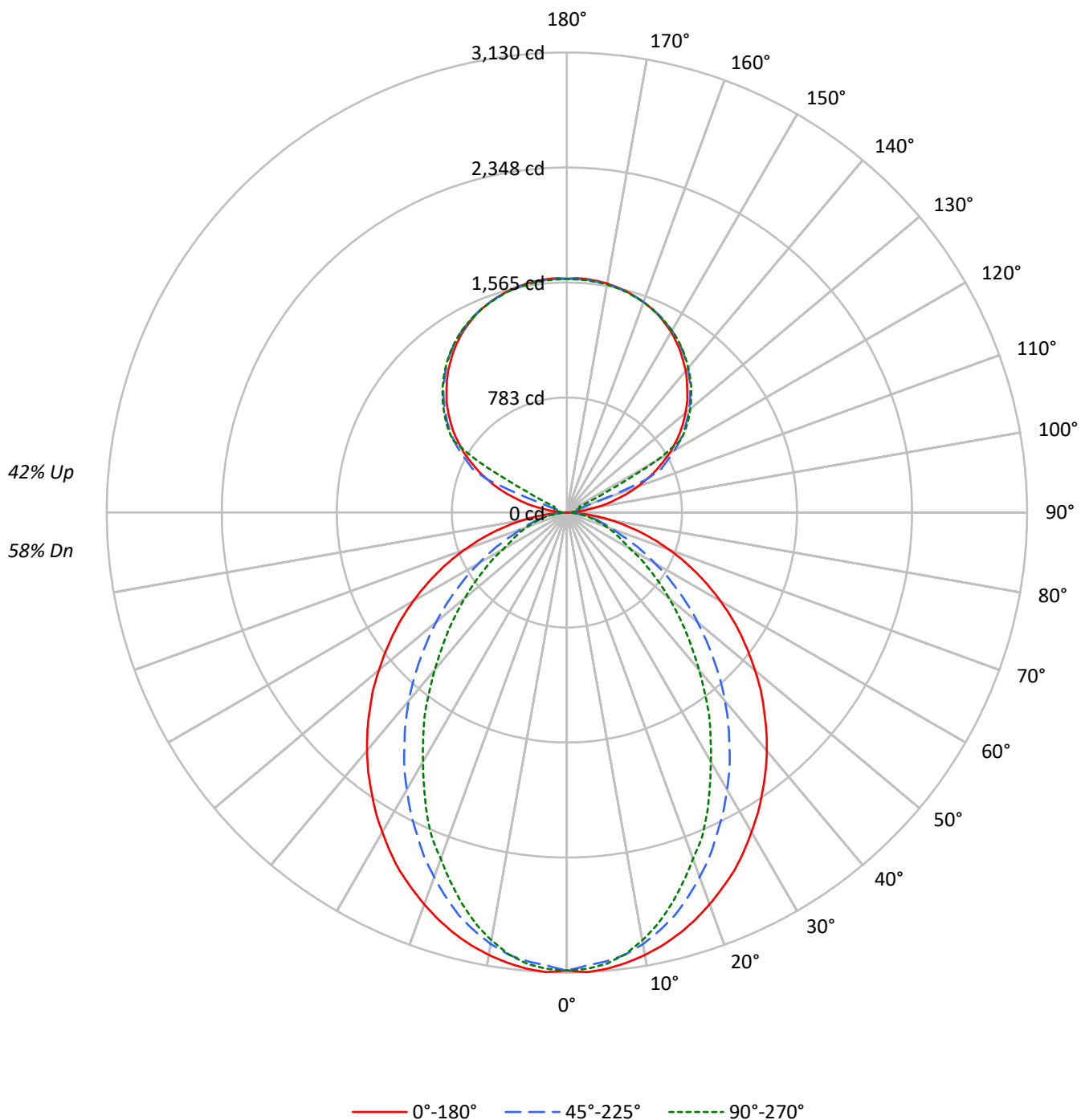
Lumens per Lamp: N/A  
Luminaire Lumens: 11074.9 lumens  
Efficiency: N/A  
Efficacy: 97.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 113.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 96  | 92  | 89  | 93  | 90  | 86  | 83  | 78 | 75 | 73 | 67 | 65 | 64 | 57 | 56 | 55 |
| 2   | 92  | 84  | 79  | 74  | 85  | 79  | 74  | 69  | 69 | 65 | 62 | 59 | 57 | 54 | 51 | 49 | 47 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 43 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 62  | 56  | 50  | 55 | 49 | 45 | 48 | 44 | 40 | 41 | 38 | 35 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 43  | 38  | 45 | 39 | 35 | 39 | 35 | 31 | 34 | 31 | 28 |
| 7   | 61  | 49  | 41  | 35  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 28 | 25 |
| 8   | 57  | 44  | 37  | 32  | 53  | 42  | 35  | 30  | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 23 |
| 9   | 53  | 41  | 33  | 28  | 49  | 39  | 32  | 27  | 34 | 29 | 25 | 30 | 26 | 23 | 27 | 23 | 20 |
| 10  | 49  | 38  | 30  | 26  | 46  | 36  | 29  | 25  | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3571 | 3571 | 3571 |
| 5°  | 3574 | 3512 | 3535 |
| 10° | 3537 | 3441 | 3419 |
| 15° | 3486 | 3324 | 3240 |
| 20° | 3419 | 3166 | 3021 |
| 25° | 3351 | 2988 | 2810 |
| 30° | 3260 | 2806 | 2542 |
| 35° | 3170 | 2610 | 2306 |
| 40° | 3080 | 2408 | 2036 |
| 45° | 2974 | 2184 | 1792 |
| 50° | 2865 | 1959 | 1554 |
| 55° | 2751 | 1718 | 1324 |
| 60° | 2618 | 1466 | 1089 |
| 65° | 2466 | 1211 | 979  |
| 70° | 2281 | 973  | 884  |
| 75° | 2048 | 852  | 802  |
| 80° | 1711 | 708  | 691  |
| 85° | 1161 | 460  | 512  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2974 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 292.1   | 2.6       |
| 10°-20°   | 801.8   | 7.2       |
| 20°-30°   | 1125.7  | 10.2      |
| 30°-40°   | 1227.1  | 11.1      |
| 40°-50°   | 1127.8  | 10.2      |
| 50°-60°   | 885.7   | 8.0       |
| 60°-70°   | 576.5   | 5.2       |
| 70°-80°   | 296.8   | 2.7       |
| 80°-90°   | 78.5    | 0.7       |
| 90°-100°  | 52.5    | 0.5       |
| 100°-110° | 195.5   | 1.8       |
| 110°-120° | 518.5   | 4.7       |
| 120°-130° | 860.0   | 7.8       |
| 130°-140° | 913.5   | 8.2       |
| 140°-150° | 849.0   | 7.7       |
| 150°-160° | 682.6   | 6.2       |
| 160°-170° | 439.8   | 4.0       |
| 170°-180° | 151.4   | 1.4       |
| 0°-30°    | 2219.6  | 20.0      |
| 0°-40°    | 3446.7  | 31.1      |
| 0°-60°    | 5460.2  | 49.3      |
| 0°-90°    | 6412.1  | 57.9      |
| 90°-120°  | 766.5   | 6.9       |
| 90°-150°  | 3389.0  | 30.6      |
| 90°-180°  | 4663.0  | 42.1      |
| 0°-180°   | 11074.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3116 | 3116  | 3116 | 3116  | 3116 |      |
| 5°   | 3116 | 3102  | 3066 | 3091  | 3083 | 296  |
| 15°  | 2964 | 2933  | 2837 | 2784  | 2756 | 835  |
| 25°  | 2691 | 2600  | 2414 | 2299  | 2256 | 1237 |
| 35°  | 2318 | 2174  | 1926 | 1749  | 1686 | 1451 |
| 45°  | 1895 | 1706  | 1410 | 1210  | 1142 | 1464 |
| 55°  | 1441 | 1221  | 916  | 747   | 694  | 1288 |
| 65°  | 973  | 744   | 491  | 395   | 386  | 965  |
| 75°  | 519  | 321   | 226  | 206   | 203  | 549  |
| 85°  | 121  | 62    | 54   | 54    | 54   | 139  |
| 90°  | 1    | 14    | 23   | 29    | 31   | 10   |
| 95°  | 75   | 37    | 45   | 51    | 50   | 89   |
| 105° | 350  | 384   | 70   | 83    | 88   | 374  |
| 115° | 662  | 681   | 710  | 177   | 94   | 651  |
| 125° | 936  | 951   | 972  | 980   | 984  | 834  |
| 135° | 1158 | 1176  | 1186 | 1198  | 1196 | 894  |
| 145° | 1343 | 1342  | 1361 | 1370  | 1364 | 840  |
| 155° | 1479 | 1469  | 1482 | 1489  | 1480 | 681  |
| 165° | 1558 | 1551  | 1555 | 1563  | 1555 | 440  |
| 175° | 1594 | 1586  | 1588 | 1596  | 1585 | 152  |
| 180° | 1590 | 1590  | 1590 | 1590  | 1590 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3116.4 | 3116.4 | 3116.4 | 3116.4 | 3116.4 |
| 2.5°   | 3130.5 | 3116.4 | 3085.3 | 3113.7 | 3108.0 |
| 5°     | 3116.4 | 3102.4 | 3065.5 | 3091.0 | 3082.6 |
| 7.5°   | 3091.0 | 3074.2 | 3034.7 | 3045.8 | 3031.7 |
| 10°    | 3057.1 | 3037.4 | 2981.2 | 2972.5 | 2955.7 |
| 12.5°  | 3015.0 | 2989.6 | 2913.2 | 2896.4 | 2865.3 |
| 15°    | 2964.1 | 2933.0 | 2837.2 | 2783.7 | 2755.5 |
| 17.5°  | 2904.8 | 2859.7 | 2741.2 | 2679.3 | 2634.0 |
| 20°    | 2837.2 | 2780.7 | 2639.8 | 2569.5 | 2507.2 |
| 22.5°  | 2763.9 | 2699.0 | 2535.3 | 2439.6 | 2397.4 |
| 25°    | 2690.6 | 2600.3 | 2414.1 | 2298.7 | 2256.2 |
| 27.5°  | 2603.2 | 2507.2 | 2301.3 | 2168.8 | 2103.8 |
| 30°    | 2510.2 | 2402.7 | 2177.2 | 2033.5 | 1957.2 |
| 32.5°  | 2419.8 | 2290.0 | 2059.0 | 1889.6 | 1819.0 |
| 35°    | 2318.4 | 2174.4 | 1926.4 | 1748.7 | 1686.4 |
| 37.5°  | 2219.6 | 2064.4 | 1802.2 | 1607.4 | 1537.1 |
| 40°    | 2115.3 | 1946.2 | 1672.4 | 1472.2 | 1398.8 |
| 42.5°  | 2008.1 | 1827.7 | 1542.8 | 1334.0 | 1263.6 |
| 45°    | 1895.3 | 1706.2 | 1410.2 | 1209.8 | 1142.2 |
| 47.5°  | 1788.2 | 1588.0 | 1283.4 | 1082.9 | 1021.0 |
| 50°    | 1669.6 | 1469.5 | 1159.2 | 964.4  | 905.4  |
| 52.5°  | 1553.9 | 1342.3 | 1040.7 | 854.6  | 801.1  |
| 55°    | 1441.1 | 1221.2 | 916.5  | 747.4  | 693.9  |
| 57.5°  | 1325.6 | 1099.9 | 806.7  | 648.8  | 603.5  |
| 60°    | 1207.0 | 981.5  | 690.9  | 547.2  | 502.1  |
| 62.5°  | 1091.6 | 865.9  | 592.2  | 456.9  | 434.5  |
| 65°    | 973.1  | 744.4  | 490.7  | 395.0  | 386.3  |
| 67.5°  | 860.3  | 631.7  | 395.0  | 346.8  | 338.5  |
| 70°    | 741.8  | 521.9  | 327.1  | 298.9  | 287.6  |
| 72.5°  | 629.0  | 420.1  | 273.5  | 251.1  | 245.3  |
| 75°    | 518.9  | 321.4  | 225.6  | 205.9  | 203.2  |
| 77.5°  | 409.1  | 228.3  | 177.8  | 166.4  | 160.7  |
| 80°    | 307.3  | 163.7  | 135.3  | 124.1  | 124.1  |
| 82.5°  | 214.2  | 110.1  | 93.0   | 87.4   | 87.4   |
| 85°    | 121.2  | 61.9   | 53.5   | 53.5   | 53.5   |
| 87.5°  | 45.1   | 22.4   | 22.4   | 19.8   | 19.8   |
| 90°    | 1.1    | 13.8   | 23.0   | 28.8   | 31.0   |
| 92.5°  | 28.8   | 24.2   | 27.6   | 30.0   | 31.0   |
| 95°    | 74.7   | 36.8   | 44.9   | 50.7   | 49.5   |
| 97.5°  | 134.6  | 40.3   | 58.6   | 62.2   | 63.2   |
| 100°   | 203.8  | 46.1   | 65.6   | 74.7   | 77.1   |
| 102.5° | 279.7  | 277.4  | 68.0   | 80.5   | 84.1   |
| 105°   | 349.9  | 384.5  | 70.2   | 82.8   | 87.5   |
| 107.5° | 431.6  | 460.2  | 72.6   | 85.1   | 89.8   |
| 110°   | 509.9  | 534.0  | 201.4  | 86.3   | 90.9   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 583.5  | 604.2  | 584.7  | 88.6   | 92.1   |
| 115°   | 661.8  | 681.3  | 710.1  | 177.3  | 94.4   |
| 117.5° | 729.6  | 752.6  | 772.3  | 607.6  | 306.1  |
| 120°   | 805.6  | 822.8  | 843.6  | 857.4  | 702.0  |
| 122.5° | 870.0  | 888.4  | 911.5  | 918.4  | 919.6  |
| 125°   | 935.6  | 950.6  | 972.5  | 980.5  | 984.0  |
| 127.5° | 995.4  | 1011.5 | 1029.0 | 1040.4 | 1041.5 |
| 130°   | 1051.9 | 1070.4 | 1082.9 | 1095.6 | 1094.6 |
| 132.5° | 1109.5 | 1124.5 | 1137.0 | 1147.5 | 1146.3 |
| 135°   | 1157.8 | 1176.3 | 1186.5 | 1198.2 | 1195.8 |
| 137.5° | 1208.3 | 1222.2 | 1233.8 | 1245.3 | 1241.9 |
| 140°   | 1257.8 | 1267.2 | 1279.7 | 1290.1 | 1284.4 |
| 142.5° | 1299.4 | 1307.5 | 1322.4 | 1331.5 | 1325.8 |
| 145°   | 1343.1 | 1341.9 | 1361.4 | 1369.5 | 1363.8 |
| 147.5° | 1381.0 | 1377.5 | 1397.1 | 1402.9 | 1398.4 |
| 150°   | 1417.9 | 1409.9 | 1428.2 | 1435.1 | 1429.4 |
| 152.5° | 1448.9 | 1439.7 | 1457.0 | 1464.0 | 1455.9 |
| 155°   | 1478.8 | 1468.6 | 1482.3 | 1489.2 | 1480.1 |
| 157.5° | 1503.0 | 1493.8 | 1504.2 | 1512.3 | 1503.0 |
| 160°   | 1523.8 | 1516.8 | 1523.8 | 1530.6 | 1522.6 |
| 162.5° | 1542.1 | 1535.3 | 1541.0 | 1549.1 | 1538.7 |
| 165°   | 1558.2 | 1551.4 | 1554.8 | 1562.8 | 1554.8 |
| 167.5° | 1570.9 | 1564.0 | 1567.5 | 1575.6 | 1565.2 |
| 170°   | 1581.3 | 1574.3 | 1576.7 | 1584.7 | 1574.3 |
| 172.5° | 1588.2 | 1581.3 | 1583.7 | 1591.7 | 1581.3 |
| 175°   | 1593.9 | 1585.8 | 1588.2 | 1596.2 | 1584.7 |
| 177.5° | 1596.2 | 1588.2 | 1589.4 | 1597.4 | 1587.1 |
| 180°   | 1590.4 | 1590.4 | 1590.4 | 1590.4 | 1590.4 |

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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 | 12.24            | 13.14 | 13.14 | 14.05 | 15.21 | 8.20           | 9.10  | 9.10  | 10.01 | 11.17 |
|                 | 3H   | 13.92            | 14.72 | 14.83 | 15.64 | 16.82 | 9.39           | 10.20 | 10.30 | 11.11 | 12.30 |
|                 | 4H   | 14.53            | 15.29 | 15.45 | 16.21 | 17.40 | 9.84           | 10.60 | 10.76 | 11.52 | 12.71 |
|                 | 6H   | 14.95            | 15.65 | 15.88 | 16.58 | 17.78 | 10.16          | 10.86 | 11.09 | 11.79 | 12.99 |
|                 | 8H   | 15.08            | 15.74 | 16.02 | 16.69 | 17.89 | 10.25          | 10.91 | 11.19 | 11.86 | 13.06 |
|                 | 12H  | 15.14            | 15.77 | 16.08 | 16.71 | 17.94 | 10.29          | 10.92 | 11.24 | 11.86 | 13.09 |
| 4H              | 2H   | 12.27            | 13.03 | 13.19 | 13.95 | 15.14 | 8.80           | 9.56  | 9.73  | 10.49 | 11.68 |
|                 | 3H   | 14.10            | 14.73 | 15.03 | 15.68 | 16.89 | 10.15          | 10.78 | 11.09 | 11.74 | 12.94 |
|                 | 4H   | 14.79            | 15.36 | 15.74 | 16.31 | 17.54 | 10.70          | 11.27 | 11.65 | 12.22 | 13.45 |
|                 | 6H   | 15.30            | 15.80 | 16.26 | 16.77 | 18.00 | 11.12          | 11.61 | 12.07 | 12.58 | 13.81 |
|                 | 8H   | 15.48            | 15.94 | 16.44 | 16.90 | 18.15 | 11.24          | 11.70 | 12.20 | 12.67 | 13.91 |
|                 | 12H  | 15.57            | 15.99 | 16.55 | 16.97 | 18.22 | 11.31          | 11.72 | 12.29 | 12.71 | 13.96 |
| 8H              | 4H   | 14.76            | 15.22 | 15.72 | 16.19 | 17.43 | 10.98          | 11.44 | 11.94 | 12.41 | 13.65 |
|                 | 6H   | 15.32            | 15.70 | 16.31 | 16.71 | 17.96 | 11.49          | 11.88 | 12.48 | 12.88 | 14.13 |
|                 | 8H   | 15.54            | 15.87 | 16.53 | 16.87 | 18.13 | 11.68          | 12.02 | 12.68 | 13.01 | 14.28 |
|                 | 12H  | 15.67            | 15.97 | 16.67 | 16.96 | 18.27 | 11.80          | 12.09 | 12.79 | 13.08 | 14.39 |
| 12H             | 4H   | 14.71            | 15.13 | 15.69 | 16.11 | 17.36 | 10.99          | 11.40 | 11.97 | 12.39 | 13.64 |
|                 | 6H   | 15.30            | 15.64 | 16.29 | 16.63 | 17.89 | 11.54          | 11.88 | 12.54 | 12.88 | 14.14 |
|                 | 8H   | 15.52            | 15.81 | 16.52 | 16.80 | 18.11 | 11.75          | 12.05 | 12.75 | 13.04 | 14.35 |