

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: P922895

Luminaire Tested: DFN2DIP-SQ3F0-090D050US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922895  
REPORT IS A COMBINATION OF REPORTS P901410 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-090D050US940-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

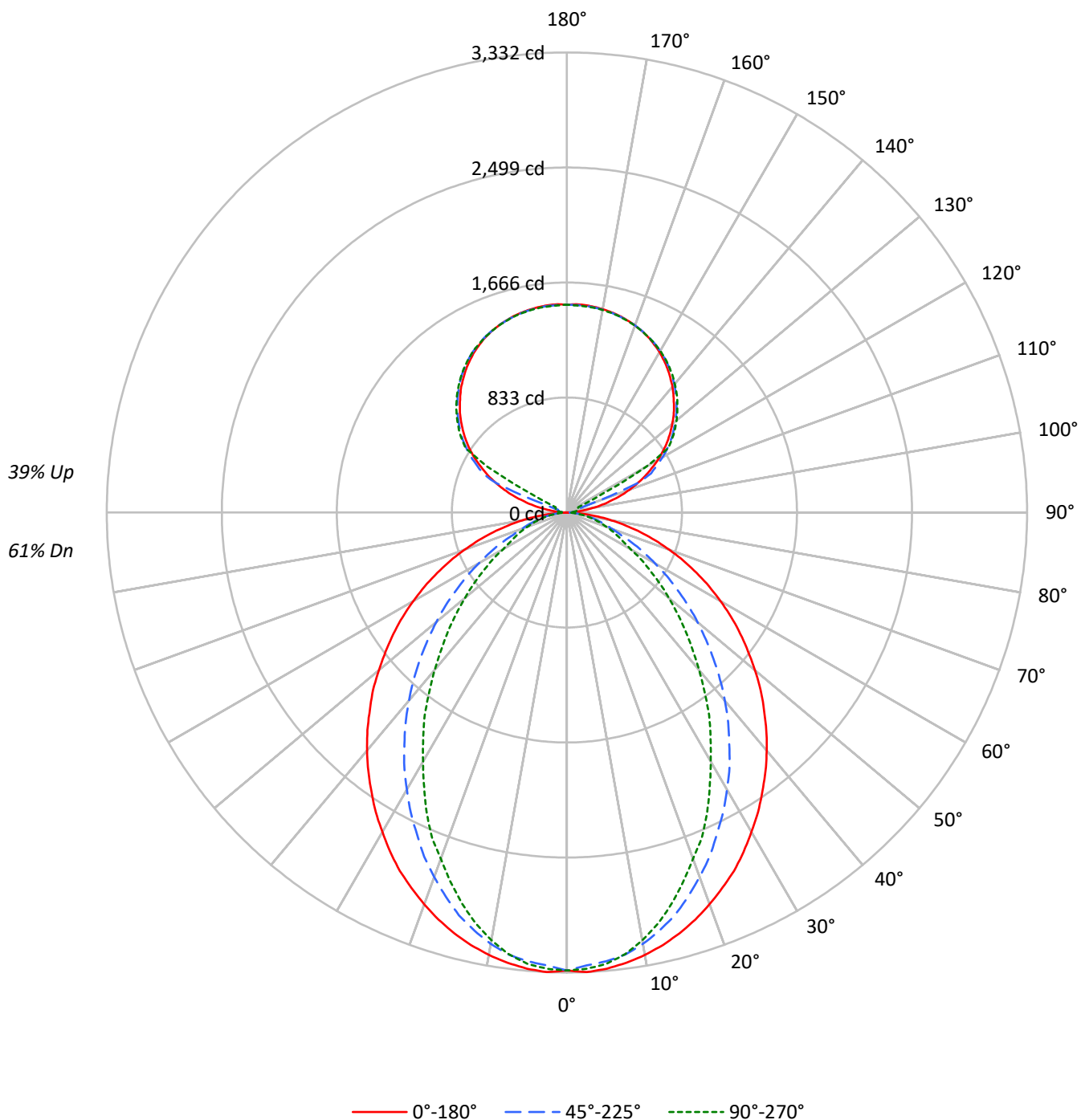
Lumens per Lamp: N/A  
Luminaire Lumens: 11235.6 lumens  
Efficiency: N/A  
Efficacy: 90.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 124.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 89 | 89 | 89 | 77 | 77 | 77 | 66 | 66 | 66 |
| 1   | 101 | 97  | 93  | 90  | 94  | 91  | 87  | 84  | 79 | 77 | 75 | 69 | 67 | 65 | 59 | 58 | 57 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 75  | 70  | 70 | 66 | 63 | 61 | 58 | 56 | 53 | 51 | 49 |
| 3   | 85  | 75  | 68  | 62  | 79  | 71  | 65  | 59  | 62 | 58 | 53 | 55 | 51 | 48 | 47 | 45 | 42 |
| 4   | 78  | 67  | 59  | 53  | 73  | 63  | 56  | 51  | 56 | 50 | 46 | 49 | 45 | 41 | 43 | 40 | 37 |
| 5   | 72  | 60  | 52  | 46  | 67  | 57  | 50  | 44  | 50 | 45 | 40 | 44 | 40 | 36 | 39 | 35 | 33 |
| 6   | 66  | 54  | 46  | 41  | 62  | 51  | 44  | 39  | 46 | 40 | 35 | 40 | 36 | 32 | 35 | 32 | 29 |
| 7   | 61  | 49  | 41  | 36  | 57  | 47  | 39  | 34  | 42 | 36 | 32 | 37 | 32 | 29 | 33 | 29 | 26 |
| 8   | 57  | 45  | 37  | 32  | 53  | 43  | 36  | 31  | 38 | 32 | 28 | 34 | 29 | 26 | 30 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 28  | 35 | 30 | 26 | 31 | 27 | 23 | 28 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 30  | 25  | 33 | 27 | 23 | 29 | 25 | 21 | 26 | 22 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3801 | 3801 | 3801 |
| 5°  | 3804 | 3738 | 3763 |
| 10° | 3764 | 3662 | 3639 |
| 15° | 3710 | 3538 | 3449 |
| 20° | 3639 | 3369 | 3215 |
| 25° | 3566 | 3180 | 2990 |
| 30° | 3469 | 2986 | 2705 |
| 35° | 3374 | 2778 | 2455 |
| 40° | 3278 | 2563 | 2168 |
| 45° | 3165 | 2325 | 1908 |
| 50° | 3049 | 2085 | 1654 |
| 55° | 2927 | 1828 | 1410 |
| 60° | 2787 | 1561 | 1159 |
| 65° | 2624 | 1289 | 1042 |
| 70° | 2427 | 1035 | 941  |
| 75° | 2179 | 907  | 853  |
| 80° | 1821 | 753  | 736  |
| 85° | 1234 | 491  | 546  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3165 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 310.9   | 2.8       |
| 10°-20°   | 853.4   | 7.6       |
| 20°-30°   | 1198.1  | 10.7      |
| 30°-40°   | 1306.0  | 11.6      |
| 40°-50°   | 1200.4  | 10.7      |
| 50°-60°   | 942.7   | 8.4       |
| 60°-70°   | 613.6   | 5.5       |
| 70°-80°   | 315.9   | 2.8       |
| 80°-90°   | 83.3    | 0.7       |
| 90°-100°  | 49.6    | 0.4       |
| 100°-110° | 185.0   | 1.6       |
| 110°-120° | 490.6   | 4.4       |
| 120°-130° | 813.6   | 7.2       |
| 130°-140° | 864.3   | 7.7       |
| 140°-150° | 803.2   | 7.1       |
| 150°-160° | 645.8   | 5.7       |
| 160°-170° | 416.1   | 3.7       |
| 170°-180° | 143.2   | 1.3       |
| 0°-30°    | 2362.4  | 21.0      |
| 0°-40°    | 3668.4  | 32.6      |
| 0°-60°    | 5811.5  | 51.7      |
| 0°-90°    | 6824.3  | 60.7      |
| 90°-120°  | 725.2   | 6.5       |
| 90°-150°  | 3206.2  | 28.5      |
| 90°-180°  | 4411.0  | 39.3      |
| 0°-180°   | 11235.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3317 | 3317  | 3317 | 3317  | 3317 |      |
| 5°   | 3317 | 3302  | 3263 | 3290  | 3281 | 315  |
| 15°  | 3155 | 3122  | 3020 | 2963  | 2933 | 889  |
| 25°  | 2864 | 2768  | 2570 | 2446  | 2401 | 1317 |
| 35°  | 2468 | 2314  | 2050 | 1861  | 1795 | 1544 |
| 45°  | 2017 | 1816  | 1501 | 1288  | 1216 | 1558 |
| 55°  | 1534 | 1300  | 975  | 796   | 738  | 1371 |
| 65°  | 1036 | 792   | 522  | 420   | 411  | 1027 |
| 75°  | 552  | 342   | 240  | 219   | 216  | 584  |
| 85°  | 129  | 66    | 57   | 57    | 57   | 148  |
| 90°  | 1    | 13    | 22   | 27    | 29   | 11   |
| 95°  | 71   | 35    | 42   | 48    | 47   | 84   |
| 105° | 331  | 364   | 66   | 78    | 83   | 354  |
| 115° | 626  | 644   | 672  | 168   | 89   | 616  |
| 125° | 885  | 899   | 920  | 928   | 931  | 789  |
| 135° | 1095 | 1113  | 1122 | 1134  | 1131 | 846  |
| 145° | 1271 | 1270  | 1288 | 1296  | 1290 | 795  |
| 155° | 1399 | 1389  | 1402 | 1409  | 1400 | 645  |
| 165° | 1474 | 1468  | 1471 | 1478  | 1471 | 416  |
| 175° | 1508 | 1500  | 1502 | 1510  | 1499 | 144  |
| 180° | 1505 | 1505  | 1505 | 1505  | 1505 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3316.9 | 3316.9 | 3316.9 | 3316.9 | 3316.9 |
| 2.5°   | 3331.9 | 3316.9 | 3283.7 | 3314.0 | 3308.0 |
| 5°     | 3316.9 | 3301.9 | 3262.8 | 3289.8 | 3280.9 |
| 7.5°   | 3289.8 | 3272.0 | 3230.0 | 3241.7 | 3226.7 |
| 10°    | 3253.9 | 3232.8 | 3173.0 | 3163.7 | 3145.9 |
| 12.5°  | 3208.9 | 3181.9 | 3100.7 | 3082.8 | 3049.6 |
| 15°    | 3154.8 | 3121.7 | 3019.8 | 2962.7 | 2932.8 |
| 17.5°  | 3091.7 | 3043.7 | 2917.5 | 2851.6 | 2803.5 |
| 20°    | 3019.8 | 2959.6 | 2809.5 | 2734.7 | 2668.4 |
| 22.5°  | 2941.8 | 2872.6 | 2698.4 | 2596.5 | 2551.6 |
| 25°    | 2863.7 | 2767.5 | 2569.5 | 2446.5 | 2401.3 |
| 27.5°  | 2770.7 | 2668.4 | 2449.4 | 2308.3 | 2239.2 |
| 30°    | 2671.7 | 2557.3 | 2317.2 | 2164.4 | 2083.1 |
| 32.5°  | 2575.4 | 2437.2 | 2191.4 | 2011.2 | 1936.0 |
| 35°    | 2467.5 | 2314.3 | 2050.3 | 1861.2 | 1794.9 |
| 37.5°  | 2362.4 | 2197.2 | 1918.2 | 1710.8 | 1636.0 |
| 40°    | 2251.3 | 2071.4 | 1779.9 | 1566.9 | 1488.9 |
| 42.5°  | 2137.3 | 1945.3 | 1642.0 | 1419.8 | 1344.9 |
| 45°    | 2017.2 | 1816.0 | 1500.9 | 1287.5 | 1215.6 |
| 47.5°  | 1903.2 | 1690.1 | 1365.9 | 1152.5 | 1086.6 |
| 50°    | 1777.1 | 1564.0 | 1233.8 | 1026.4 | 963.7  |
| 52.5°  | 1653.9 | 1428.7 | 1107.7 | 909.5  | 852.6  |
| 55°    | 1533.7 | 1299.7 | 975.4  | 795.6  | 738.5  |
| 57.5°  | 1410.9 | 1170.7 | 858.6  | 690.5  | 642.4  |
| 60°    | 1284.7 | 1044.5 | 735.4  | 582.5  | 534.4  |
| 62.5°  | 1161.8 | 921.7  | 630.3  | 486.3  | 462.4  |
| 65°    | 1035.6 | 792.4  | 522.3  | 420.4  | 411.2  |
| 67.5°  | 915.6  | 672.3  | 420.4  | 369.1  | 360.2  |
| 70°    | 789.5  | 555.4  | 348.1  | 318.2  | 306.0  |
| 72.5°  | 669.4  | 447.1  | 291.1  | 267.2  | 261.2  |
| 75°    | 552.2  | 342.1  | 240.1  | 219.1  | 216.2  |
| 77.5°  | 435.3  | 243.0  | 189.1  | 177.1  | 171.0  |
| 80°    | 327.1  | 174.2  | 143.9  | 132.2  | 132.2  |
| 82.5°  | 228.0  | 117.2  | 99.1   | 93.0   | 93.0   |
| 85°    | 128.9  | 65.9   | 57.0   | 57.0   | 57.0   |
| 87.5°  | 48.1   | 23.9   | 23.9   | 21.0   | 21.0   |
| 90°    | 1.1    | 13.0   | 21.8   | 27.3   | 29.3   |
| 92.5°  | 27.3   | 22.9   | 26.1   | 28.4   | 29.3   |
| 95°    | 70.7   | 34.8   | 42.4   | 48.0   | 46.8   |
| 97.5°  | 127.3  | 38.2   | 55.5   | 58.9   | 59.8   |
| 100°   | 192.8  | 43.6   | 62.1   | 70.7   | 72.9   |
| 102.5° | 264.6  | 262.4  | 64.3   | 76.2   | 79.5   |
| 105°   | 331.0  | 363.7  | 66.4   | 78.4   | 82.8   |
| 107.5° | 408.3  | 435.4  | 68.7   | 80.5   | 85.0   |
| 110°   | 482.4  | 505.2  | 190.6  | 81.7   | 86.0   |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 552.1  | 571.6  | 553.1  | 83.8   | 87.1   |
| 115°   | 626.1  | 644.5  | 671.8  | 167.7  | 89.3   |
| 117.5° | 690.3  | 712.0  | 730.7  | 574.8  | 289.6  |
| 120°   | 762.1  | 778.5  | 798.1  | 811.2  | 664.1  |
| 122.5° | 823.0  | 840.5  | 862.4  | 868.9  | 870.0  |
| 125°   | 885.1  | 899.4  | 920.1  | 927.6  | 930.9  |
| 127.5° | 941.7  | 957.0  | 973.5  | 984.3  | 985.3  |
| 130°   | 995.1  | 1012.6 | 1024.5 | 1036.5 | 1035.5 |
| 132.5° | 1049.6 | 1063.8 | 1075.7 | 1085.6 | 1084.5 |
| 135°   | 1095.4 | 1112.9 | 1122.5 | 1133.5 | 1131.3 |
| 137.5° | 1143.2 | 1156.3 | 1167.2 | 1178.1 | 1174.9 |
| 140°   | 1190.0 | 1198.8 | 1210.7 | 1220.5 | 1215.1 |
| 142.5° | 1229.3 | 1237.0 | 1251.1 | 1259.7 | 1254.3 |
| 145°   | 1270.7 | 1269.5 | 1288.0 | 1295.7 | 1290.2 |
| 147.5° | 1306.5 | 1303.2 | 1321.8 | 1327.2 | 1322.9 |
| 150°   | 1341.4 | 1333.8 | 1351.2 | 1357.7 | 1352.3 |
| 152.5° | 1370.7 | 1362.1 | 1378.4 | 1385.0 | 1377.3 |
| 155°   | 1399.1 | 1389.4 | 1402.4 | 1408.9 | 1400.3 |
| 157.5° | 1421.9 | 1413.3 | 1423.1 | 1430.7 | 1421.9 |
| 160°   | 1441.6 | 1435.0 | 1441.6 | 1448.0 | 1440.5 |
| 162.5° | 1458.9 | 1452.5 | 1457.9 | 1465.5 | 1455.7 |
| 165°   | 1474.2 | 1467.8 | 1471.0 | 1478.5 | 1471.0 |
| 167.5° | 1486.2 | 1479.6 | 1483.0 | 1490.6 | 1480.8 |
| 170°   | 1496.0 | 1489.4 | 1491.7 | 1499.2 | 1489.4 |
| 172.5° | 1502.5 | 1496.0 | 1498.3 | 1505.8 | 1496.0 |
| 175°   | 1508.0 | 1500.3 | 1502.5 | 1510.1 | 1499.2 |
| 177.5° | 1510.1 | 1502.5 | 1503.7 | 1511.3 | 1501.5 |
| 180°   | 1504.7 | 1504.7 | 1504.7 | 1504.7 | 1504.7 |

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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 | 12.70            | 13.63 | 13.57 | 14.51 | 15.62 | 8.66           | 9.59  | 9.53  | 10.47 | 11.58 |
|                 | 3H   | 14.38            | 15.21 | 15.26 | 16.10 | 17.24 | 9.85           | 10.68 | 10.73 | 11.57 | 12.71 |
|                 | 4H   | 14.99            | 15.77 | 15.88 | 16.67 | 17.82 | 10.30          | 11.08 | 11.19 | 11.98 | 13.13 |
|                 | 6H   | 15.41            | 16.13 | 16.32 | 17.04 | 18.20 | 10.62          | 11.34 | 11.53 | 12.24 | 13.41 |
|                 | 8H   | 15.54            | 16.22 | 16.45 | 17.15 | 18.31 | 10.71          | 11.39 | 11.62 | 12.32 | 13.48 |
|                 | 12H  | 15.60            | 16.25 | 16.52 | 17.17 | 18.35 | 10.75          | 11.41 | 11.67 | 12.32 | 13.51 |
| 4H              | 2H   | 12.73            | 13.51 | 13.63 | 14.41 | 15.56 | 9.27           | 10.05 | 10.17 | 10.94 | 12.09 |
|                 | 3H   | 14.56            | 15.21 | 15.47 | 16.14 | 17.30 | 10.62          | 11.27 | 11.53 | 12.20 | 13.36 |
|                 | 4H   | 15.25            | 15.84 | 16.17 | 16.77 | 17.96 | 11.16          | 11.75 | 12.08 | 12.68 | 13.87 |
|                 | 6H   | 15.77            | 16.28 | 16.70 | 17.23 | 18.42 | 11.58          | 12.09 | 12.52 | 13.04 | 14.23 |
|                 | 8H   | 15.94            | 16.42 | 16.88 | 17.36 | 18.56 | 11.71          | 12.18 | 12.64 | 13.13 | 14.33 |
|                 | 12H  | 16.04            | 16.47 | 17.00 | 17.43 | 18.64 | 11.77          | 12.20 | 12.73 | 13.16 | 14.37 |
| 8H              | 4H   | 15.23            | 15.70 | 16.16 | 16.64 | 17.85 | 11.45          | 11.92 | 12.38 | 12.87 | 14.07 |
|                 | 6H   | 15.79            | 16.18 | 16.75 | 17.17 | 18.37 | 11.96          | 12.35 | 12.92 | 13.34 | 14.54 |
|                 | 8H   | 16.00            | 16.35 | 16.98 | 17.33 | 18.55 | 12.15          | 12.49 | 13.12 | 13.47 | 14.69 |
|                 | 12H  | 16.14            | 16.45 | 17.12 | 17.42 | 18.68 | 12.26          | 12.57 | 13.24 | 13.54 | 14.81 |
| 12H             | 4H   | 15.18            | 15.61 | 16.14 | 16.57 | 17.78 | 11.46          | 11.88 | 12.41 | 12.84 | 14.05 |
|                 | 6H   | 15.76            | 16.11 | 16.74 | 17.09 | 18.31 | 12.01          | 12.36 | 12.98 | 13.33 | 14.55 |
|                 | 8H   | 15.99            | 16.29 | 16.96 | 17.26 | 18.53 | 12.22          | 12.52 | 13.19 | 13.49 | 14.76 |