

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: P909968

Luminaire Tested: DFN2DIP-TR3F0-080D080US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P909968  
REPORT IS A COMBINATION OF REPORTS P900352 AND P897195  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR3F0-080D080US840-RLLFLL  
Description: 3 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

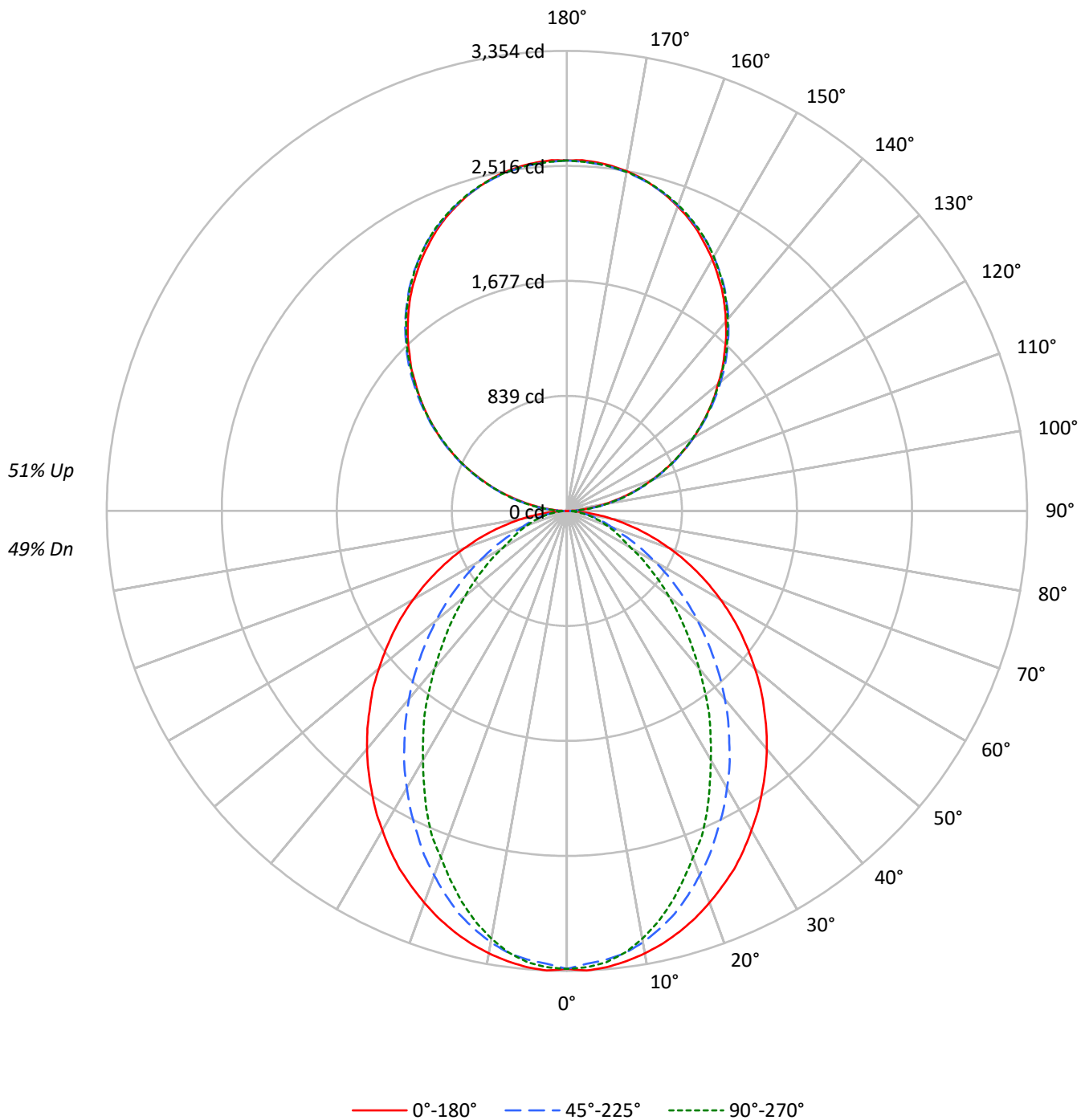
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14016.9 lumens  
Efficiency: N/A  
Efficacy: 98.7 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.74' x L: 3.16' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 142  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
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



TEST NUMBER: P909968

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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4161 | 4161 | 4161 |
| 5°  | 4165 | 4091 | 4118 |
| 10° | 4122 | 4007 | 3981 |
| 15° | 4063 | 3872 | 3772 |
| 20° | 3985 | 3686 | 3515 |
| 25° | 3906 | 3478 | 3268 |
| 30° | 3800 | 3266 | 2955 |
| 35° | 3697 | 3037 | 2680 |
| 40° | 3591 | 2801 | 2365 |
| 45° | 3469 | 2540 | 2081 |
| 50° | 3342 | 2277 | 1802 |
| 55° | 3209 | 1996 | 1535 |
| 60° | 3055 | 1702 | 1261 |
| 65° | 2879 | 1405 | 1131 |
| 70° | 2664 | 1127 | 1020 |
| 75° | 2394 | 987  | 922  |
| 80° | 2003 | 816  | 790  |
| 85° | 1364 | 529  | 579  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3469 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 312.9   | 2.2       |
| 10°-20°   | 859.1   | 6.1       |
| 20°-30°   | 1206.1  | 8.6       |
| 30°-40°   | 1314.7  | 9.4       |
| 40°-50°   | 1208.4  | 8.6       |
| 50°-60°   | 949.0   | 6.8       |
| 60°-70°   | 617.7   | 4.4       |
| 70°-80°   | 318.0   | 2.3       |
| 80°-90°   | 88.4    | 0.6       |
| 90°-100°  | 158.1   | 1.1       |
| 100°-110° | 502.4   | 3.6       |
| 110°-120° | 859.7   | 6.1       |
| 120°-130° | 1130.6  | 8.1       |
| 130°-140° | 1269.1  | 9.1       |
| 140°-150° | 1244.5  | 8.9       |
| 150°-160° | 1043.9  | 7.4       |
| 160°-170° | 692.3   | 4.9       |
| 170°-180° | 242.0   | 1.7       |
| 0°-30°    | 2378.1  | 17.0      |
| 0°-40°    | 3692.9  | 26.3      |
| 0°-60°    | 5850.2  | 41.7      |
| 0°-90°    | 6874.4  | 49.0      |
| 90°-120°  | 1520.1  | 10.8      |
| 90°-150°  | 5164.3  | 36.8      |
| 90°-180°  | 7143.0  | 51.0      |
| 0°-180°   | 14016.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3339 | 3339  | 3339 | 3339  | 3339 |      |
| 5°   | 3339 | 3324  | 3284 | 3312  | 3303 | 317  |
| 15°  | 3176 | 3142  | 3040 | 2982  | 2952 | 895  |
| 25°  | 2883 | 2786  | 2587 | 2463  | 2417 | 1326 |
| 35°  | 2484 | 2330  | 2064 | 1874  | 1807 | 1555 |
| 45°  | 2031 | 1828  | 1511 | 1296  | 1224 | 1568 |
| 55°  | 1544 | 1308  | 982  | 801   | 744  | 1380 |
| 65°  | 1043 | 798   | 526  | 423   | 414  | 1034 |
| 75°  | 556  | 344   | 242  | 221   | 218  | 588  |
| 85°  | 130  | 66    | 57   | 57    | 57   | 149  |
| 90°  | 2    | 28    | 76   | 71    | 73   | 14   |
| 95°  | 112  | 134   | 138  | 138   | 134  | 125  |
| 105° | 464  | 470   | 474  | 478   | 478  | 489  |
| 115° | 863  | 875   | 871  | 869   | 863  | 853  |
| 125° | 1255 | 1274  | 1268 | 1261  | 1259 | 1121 |
| 135° | 1623 | 1647  | 1652 | 1649  | 1643 | 1254 |
| 145° | 1970 | 1986  | 1998 | 2000  | 1992 | 1231 |
| 155° | 2253 | 2259  | 2266 | 2277  | 2270 | 1037 |
| 165° | 2451 | 2449  | 2449 | 2464  | 2453 | 691  |
| 175° | 2550 | 2544  | 2540 | 2555  | 2542 | 242  |
| 180° | 2555 | 2555  | 2555 | 2555  | 2555 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3339.0 | 3339.0 | 3339.0 | 3339.0 | 3339.0 |
| 2.5°   | 3354.1 | 3339.0 | 3305.7 | 3336.1 | 3330.0 |
| 5°     | 3339.0 | 3324.0 | 3284.5 | 3311.8 | 3302.8 |
| 7.5°   | 3311.8 | 3293.8 | 3251.5 | 3263.4 | 3248.2 |
| 10°    | 3275.5 | 3254.4 | 3194.1 | 3184.8 | 3166.8 |
| 12.5°  | 3230.4 | 3203.1 | 3121.3 | 3103.3 | 3070.0 |
| 15°    | 3175.8 | 3142.5 | 3039.9 | 2982.5 | 2952.3 |
| 17.5°  | 3112.3 | 3063.9 | 2937.0 | 2870.6 | 2822.2 |
| 20°    | 3039.9 | 2979.3 | 2828.3 | 2753.0 | 2686.2 |
| 22.5°  | 2961.3 | 2891.7 | 2716.4 | 2613.8 | 2568.6 |
| 25°    | 2882.8 | 2786.0 | 2586.6 | 2462.9 | 2417.3 |
| 27.5°  | 2789.1 | 2686.2 | 2465.7 | 2323.7 | 2254.1 |
| 30°    | 2689.5 | 2574.3 | 2332.7 | 2178.8 | 2097.0 |
| 32.5°  | 2592.6 | 2453.6 | 2206.1 | 2024.6 | 1948.9 |
| 35°    | 2484.0 | 2329.8 | 2064.0 | 1873.6 | 1806.9 |
| 37.5°  | 2378.1 | 2211.8 | 1931.0 | 1722.2 | 1646.9 |
| 40°    | 2266.3 | 2085.2 | 1791.8 | 1577.3 | 1498.7 |
| 42.5°  | 2151.5 | 1958.2 | 1652.9 | 1429.3 | 1353.8 |
| 45°    | 2030.6 | 1828.1 | 1511.0 | 1296.2 | 1223.8 |
| 47.5°  | 1915.9 | 1701.4 | 1375.0 | 1160.2 | 1093.9 |
| 50°    | 1788.9 | 1574.5 | 1242.0 | 1033.3 | 970.1  |
| 52.5°  | 1664.9 | 1438.1 | 1115.0 | 915.6  | 858.3  |
| 55°    | 1544.0 | 1308.4 | 982.0  | 800.8  | 743.5  |
| 57.5°  | 1420.3 | 1178.5 | 864.3  | 695.1  | 646.6  |
| 60°    | 1293.2 | 1051.6 | 740.2  | 586.3  | 538.0  |
| 62.5°  | 1169.5 | 927.8  | 634.5  | 489.6  | 465.5  |
| 65°    | 1042.6 | 797.6  | 525.7  | 423.2  | 413.8  |
| 67.5°  | 921.7  | 676.8  | 423.2  | 371.5  | 362.6  |
| 70°    | 794.8  | 559.2  | 350.4  | 320.2  | 308.1  |
| 72.5°  | 673.9  | 450.1  | 293.1  | 269.0  | 262.9  |
| 75°    | 555.9  | 344.4  | 241.8  | 220.6  | 217.7  |
| 77.5°  | 438.3  | 244.6  | 190.5  | 178.2  | 172.2  |
| 80°    | 329.2  | 175.4  | 144.9  | 133.0  | 133.0  |
| 82.5°  | 229.5  | 118.0  | 99.7   | 93.6   | 93.6   |
| 85°    | 129.9  | 66.3   | 57.4   | 57.4   | 57.4   |
| 87.5°  | 48.4   | 24.0   | 24.0   | 21.2   | 21.2   |
| 90°    | 2.3    | 27.8   | 75.5   | 70.9   | 73.2   |
| 92.5°  | 47.8   | 64.7   | 67.1   | 69.3   | 69.3   |
| 95°    | 112.5  | 134.0  | 137.8  | 137.8  | 134.0  |
| 97.5°  | 187.2  | 207.2  | 215.7  | 215.7  | 215.7  |
| 100°   | 273.5  | 291.1  | 297.3  | 297.3  | 295.0  |
| 102.5° | 364.4  | 377.5  | 385.9  | 388.2  | 385.9  |
| 105°   | 463.7  | 469.9  | 474.5  | 478.4  | 478.4  |
| 107.5° | 562.3  | 571.6  | 571.6  | 573.1  | 562.3  |
| 110°   | 657.8  | 670.1  | 670.1  | 670.1  | 664.0  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 761.0  | 774.2  | 771.8  | 765.7  | 761.0  |
| 115°   | 862.7  | 875.0  | 871.2  | 868.9  | 862.7  |
| 117.5° | 963.6  | 980.6  | 969.8  | 963.6  | 957.5  |
| 120°   | 1065.3 | 1082.3 | 1065.3 | 1065.3 | 1058.3 |
| 122.5° | 1157.7 | 1179.3 | 1168.5 | 1162.4 | 1157.7 |
| 125°   | 1254.8 | 1274.0 | 1267.9 | 1260.9 | 1258.7 |
| 127.5° | 1349.6 | 1373.4 | 1364.9 | 1355.7 | 1349.6 |
| 130°   | 1438.1 | 1465.8 | 1462.0 | 1457.4 | 1449.0 |
| 132.5° | 1537.5 | 1559.0 | 1560.6 | 1549.8 | 1543.7 |
| 135°   | 1623.0 | 1646.9 | 1651.5 | 1649.2 | 1643.1 |
| 137.5° | 1718.5 | 1737.8 | 1741.6 | 1740.1 | 1730.8 |
| 140°   | 1802.5 | 1821.7 | 1832.5 | 1832.5 | 1824.0 |
| 142.5° | 1888.8 | 1908.0 | 1914.2 | 1916.5 | 1908.0 |
| 145°   | 1970.4 | 1985.8 | 1998.1 | 2000.4 | 1992.0 |
| 147.5° | 2043.6 | 2062.9 | 2072.0 | 2076.0 | 2067.5 |
| 150°   | 2119.1 | 2132.1 | 2140.6 | 2147.6 | 2140.6 |
| 152.5° | 2186.1 | 2199.2 | 2210.0 | 2218.5 | 2210.0 |
| 155°   | 2253.1 | 2259.3 | 2266.2 | 2276.9 | 2270.1 |
| 157.5° | 2310.9 | 2315.5 | 2319.4 | 2334.7 | 2324.0 |
| 160°   | 2362.5 | 2367.1 | 2369.4 | 2382.5 | 2373.3 |
| 162.5° | 2410.2 | 2410.2 | 2412.6 | 2427.2 | 2416.4 |
| 165°   | 2451.0 | 2448.7 | 2448.7 | 2464.2 | 2453.4 |
| 167.5° | 2488.0 | 2481.1 | 2481.1 | 2496.5 | 2485.7 |
| 170°   | 2515.8 | 2509.6 | 2507.3 | 2522.7 | 2509.6 |
| 172.5° | 2535.1 | 2528.9 | 2526.6 | 2541.9 | 2528.9 |
| 175°   | 2550.4 | 2544.3 | 2539.6 | 2555.1 | 2541.9 |
| 177.5° | 2558.9 | 2552.7 | 2548.1 | 2561.2 | 2548.1 |
| 180°   | 2555.1 | 2555.1 | 2555.1 | 2555.1 | 2555.1 |

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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 | 11.96            | 12.78 | 12.93 | 13.76 | 15.05 | 7.93           | 8.76  | 8.91  | 9.74  | 11.03 |
|                 | 3H   | 13.62            | 14.36 | 14.61 | 15.35 | 16.66 | 9.12           | 9.85  | 10.10 | 10.84 | 12.15 |
|                 | 4H   | 14.23            | 14.92 | 15.22 | 15.92 | 17.23 | 9.56           | 10.26 | 10.56 | 11.25 | 12.57 |
|                 | 6H   | 14.64            | 15.28 | 15.65 | 16.28 | 17.61 | 9.88           | 10.52 | 10.88 | 11.52 | 12.85 |
|                 | 8H   | 14.76            | 15.37 | 15.77 | 16.39 | 17.71 | 9.97           | 10.57 | 10.98 | 11.59 | 12.92 |
|                 | 12H  | 14.82            | 15.40 | 15.84 | 16.41 | 17.76 | 10.01          | 10.59 | 11.02 | 11.59 | 12.94 |
| 4H              | 2H   | 11.97            | 12.67 | 12.98 | 13.66 | 14.98 | 8.52           | 9.22  | 9.53  | 10.21 | 11.53 |
|                 | 3H   | 13.79            | 14.37 | 14.80 | 15.39 | 16.72 | 9.87           | 10.44 | 10.88 | 11.47 | 12.80 |
|                 | 4H   | 14.48            | 15.00 | 15.49 | 16.02 | 17.37 | 10.41          | 10.94 | 11.43 | 11.95 | 13.31 |
|                 | 6H   | 14.98            | 15.43 | 16.01 | 16.47 | 17.83 | 10.82          | 11.27 | 11.85 | 12.31 | 13.67 |
|                 | 8H   | 15.15            | 15.57 | 16.18 | 16.61 | 17.97 | 10.95          | 11.37 | 11.98 | 12.40 | 13.77 |
|                 | 12H  | 15.24            | 15.62 | 16.29 | 16.67 | 18.04 | 11.01          | 11.39 | 12.06 | 12.44 | 13.81 |
| 8H              | 4H   | 14.44            | 14.86 | 15.47 | 15.90 | 17.26 | 10.68          | 11.11 | 11.71 | 12.14 | 13.50 |
|                 | 6H   | 15.00            | 15.35 | 16.05 | 16.42 | 17.78 | 11.19          | 11.54 | 12.25 | 12.62 | 13.98 |
|                 | 8H   | 15.21            | 15.51 | 16.27 | 16.57 | 17.96 | 11.38          | 11.69 | 12.44 | 12.75 | 14.13 |
|                 | 12H  | 15.34            | 15.61 | 16.40 | 16.66 | 18.09 | 11.49          | 11.76 | 12.56 | 12.82 | 14.24 |
| 12H             | 4H   | 14.39            | 14.77 | 15.44 | 15.82 | 17.19 | 10.69          | 11.07 | 11.73 | 12.11 | 13.49 |
|                 | 6H   | 14.97            | 15.28 | 16.03 | 16.34 | 17.72 | 11.24          | 11.55 | 12.30 | 12.61 | 13.99 |
|                 | 8H   | 15.19            | 15.46 | 16.25 | 16.51 | 17.93 | 11.44          | 11.71 | 12.51 | 12.77 | 14.19 |