

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: P907274

Luminaire Tested: DFN2DIP-TR4F0-040D050US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907274  
REPORT IS A COMBINATION OF REPORTS P900387 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-040D050US835-FLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

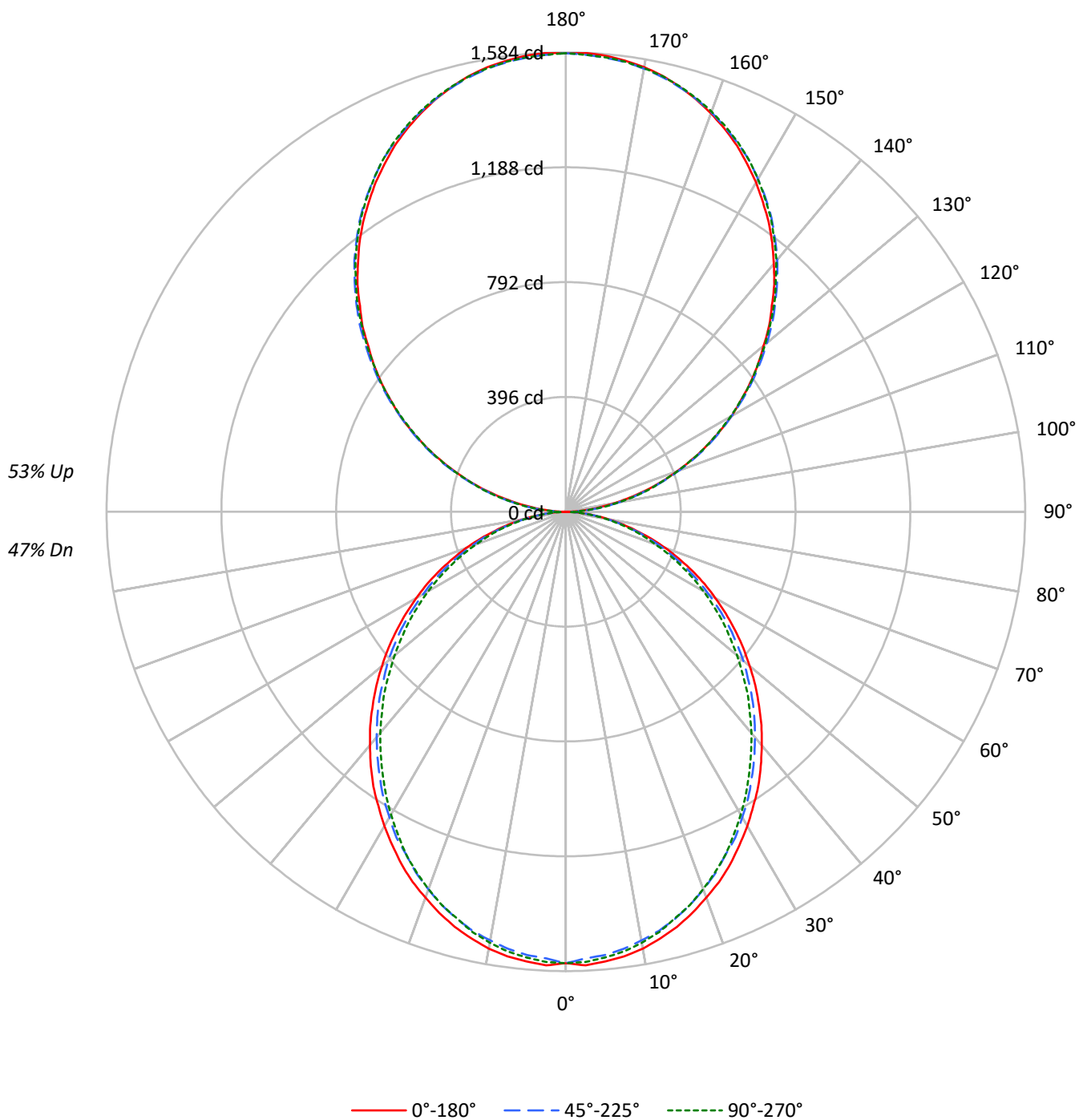
Lumens per Lamp: N/A  
Luminaire Lumens: 8385.0 lumens  
Efficiency: N/A  
Efficacy: 120.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 69.8  
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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 82 | 82 | 82 | 67 | 67 | 67 | 54 | 54 | 54 |
| 1   | 97  | 93  | 89  | 85  | 89 | 85 | 82 | 79 | 72 | 69 | 67 | 59 | 57 | 56 | 47 | 46 | 45 |
| 2   | 88  | 81  | 75  | 70  | 81 | 75 | 69 | 65 | 63 | 59 | 56 | 52 | 49 | 47 | 42 | 40 | 38 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 59 | 54 | 55 | 51 | 47 | 46 | 42 | 39 | 37 | 35 | 32 |
| 4   | 74  | 63  | 55  | 49  | 68 | 58 | 51 | 46 | 49 | 44 | 40 | 41 | 37 | 34 | 33 | 30 | 28 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 44 | 39 | 34 | 37 | 33 | 29 | 30 | 27 | 24 |
| 6   | 62  | 50  | 42  | 37  | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 33 | 29 | 26 | 27 | 24 | 21 |
| 7   | 58  | 45  | 38  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 26 | 23 | 25 | 21 | 19 |
| 8   | 54  | 41  | 34  | 28  | 49 | 38 | 31 | 27 | 33 | 27 | 23 | 28 | 23 | 20 | 23 | 19 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 21 | 18 | 15 |
| 10  | 47  | 35  | 27  | 23  | 43 | 32 | 26 | 21 | 28 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1236 | 1236 | 1236 |
| 5°  | 1238 | 1219 | 1227 |
| 10° | 1228 | 1203 | 1211 |
| 15° | 1210 | 1183 | 1185 |
| 20° | 1186 | 1155 | 1158 |
| 25° | 1162 | 1123 | 1127 |
| 30° | 1131 | 1092 | 1088 |
| 35° | 1102 | 1056 | 1047 |
| 40° | 1067 | 1019 | 1008 |
| 45° | 1032 | 983  | 967  |
| 50° | 993  | 944  | 921  |
| 55° | 952  | 900  | 878  |
| 60° | 907  | 847  | 828  |
| 65° | 857  | 793  | 771  |
| 70° | 793  | 726  | 708  |
| 75° | 705  | 646  | 650  |
| 80° | 599  | 545  | 540  |
| 85° | 433  | 370  | 358  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1233 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 146.5  | 1.7       |
| 10°-20°   | 412.2  | 4.9       |
| 20°-30°   | 605.7  | 7.2       |
| 30°-40°   | 703.5  | 8.4       |
| 40°-50°   | 702.6  | 8.4       |
| 50°-60°   | 612.7  | 7.3       |
| 60°-70°   | 452.9  | 5.4       |
| 70°-80°   | 256.2  | 3.1       |
| 80°-90°   | 72.1   | 0.9       |
| 90°-100°  | 97.8   | 1.2       |
| 100°-110° | 310.9  | 3.7       |
| 110°-120° | 532.1  | 6.3       |
| 120°-130° | 699.7  | 8.3       |
| 130°-140° | 785.4  | 9.4       |
| 140°-150° | 770.2  | 9.2       |
| 150°-160° | 646.1  | 7.7       |
| 160°-170° | 428.5  | 5.1       |
| 170°-180° | 149.8  | 1.8       |
| 0°-30°    | 1164.4 | 13.9      |
| 0°-40°    | 1867.9 | 22.3      |
| 0°-60°    | 3183.2 | 38.0      |
| 0°-90°    | 3964.5 | 47.3      |
| 90°-120°  | 940.8  | 11.2      |
| 90°-150°  | 3196.2 | 38.1      |
| 90°-180°  | 4421.0 | 52.7      |
| 0°-180°   | 8385.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1556 | 1556  | 1556 | 1556  | 1556 |      |
| 5°   | 1556 | 1550  | 1534 | 1546  | 1543 | 148  |
| 15°  | 1482 | 1473  | 1453 | 1459  | 1452 | 417  |
| 25°  | 1341 | 1329  | 1304 | 1306  | 1304 | 617  |
| 35°  | 1157 | 1142  | 1118 | 1109  | 1102 | 722  |
| 45°  | 941  | 931   | 908  | 892   | 886  | 727  |
| 55°  | 712  | 703   | 686  | 668   | 660  | 637  |
| 65°  | 480  | 471   | 456  | 443   | 436  | 475  |
| 75°  | 251  | 248   | 241  | 232   | 235  | 268  |
| 85°  | 61   | 60    | 58   | 54    | 52   | 68   |
| 90°  | 1    | 17    | 47   | 44    | 45   | 8    |
| 95°  | 70   | 83    | 85   | 85    | 83   | 77   |
| 105° | 287  | 291   | 294  | 296   | 296  | 303  |
| 115° | 534  | 542   | 539  | 538   | 534  | 528  |
| 125° | 777  | 788   | 785  | 780   | 779  | 694  |
| 135° | 1004 | 1019  | 1022 | 1021  | 1017 | 776  |
| 145° | 1220 | 1229  | 1237 | 1238  | 1233 | 762  |
| 155° | 1394 | 1398  | 1402 | 1409  | 1405 | 642  |
| 165° | 1517 | 1516  | 1516 | 1525  | 1518 | 428  |
| 175° | 1578 | 1575  | 1572 | 1581  | 1573 | 150  |
| 180° | 1581 | 1581  | 1581 | 1581  | 1581 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1556.4 | 1556.4 | 1556.4 | 1556.4 | 1556.4 |
| 2.5°   | 1565.5 | 1558.0 | 1541.5 | 1556.4 | 1553.6 |
| 5°     | 1556.4 | 1550.5 | 1534.0 | 1545.9 | 1543.1 |
| 7.5°   | 1545.9 | 1537.0 | 1520.5 | 1532.6 | 1529.6 |
| 10°    | 1529.6 | 1519.1 | 1501.2 | 1513.1 | 1508.6 |
| 12.5°  | 1507.0 | 1498.1 | 1480.2 | 1487.7 | 1484.6 |
| 15°    | 1481.6 | 1472.7 | 1453.2 | 1459.2 | 1451.8 |
| 17.5°  | 1450.2 | 1441.3 | 1421.8 | 1429.2 | 1421.8 |
| 20°    | 1415.7 | 1406.8 | 1385.9 | 1390.3 | 1384.5 |
| 22.5°  | 1381.4 | 1367.9 | 1348.4 | 1348.4 | 1345.4 |
| 25°    | 1340.9 | 1329.0 | 1303.6 | 1306.5 | 1303.6 |
| 27.5°  | 1296.0 | 1285.5 | 1266.2 | 1261.7 | 1254.3 |
| 30°    | 1251.2 | 1239.2 | 1216.8 | 1212.3 | 1206.3 |
| 32.5°  | 1203.3 | 1194.4 | 1170.4 | 1161.4 | 1155.3 |
| 35°    | 1156.9 | 1142.0 | 1118.0 | 1109.0 | 1101.5 |
| 37.5°  | 1104.5 | 1091.0 | 1067.0 | 1056.6 | 1049.1 |
| 40°    | 1050.7 | 1038.6 | 1014.6 | 1001.3 | 995.3  |
| 42.5°  | 998.3  | 986.2  | 962.4  | 947.3  | 938.4  |
| 45°    | 941.4  | 931.0  | 908.4  | 892.1  | 886.0  |
| 47.5°  | 886.0  | 875.5  | 851.6  | 835.1  | 826.2  |
| 50°    | 827.6  | 820.1  | 799.2  | 778.2  | 770.7  |
| 52.5°  | 770.7  | 760.3  | 740.9  | 724.4  | 713.9  |
| 55°    | 712.5  | 703.4  | 685.5  | 667.5  | 660.1  |
| 57.5°  | 654.0  | 646.6  | 627.0  | 609.1  | 603.1  |
| 60°    | 595.6  | 589.7  | 568.8  | 552.3  | 547.8  |
| 62.5°  | 538.8  | 528.3  | 513.4  | 498.4  | 492.4  |
| 65°    | 480.5  | 471.4  | 456.5  | 443.0  | 435.6  |
| 67.5°  | 420.6  | 413.0  | 399.7  | 389.2  | 383.2  |
| 70°    | 365.2  | 359.2  | 345.7  | 335.2  | 329.3  |
| 72.5°  | 308.4  | 302.3  | 294.9  | 284.4  | 279.9  |
| 75°    | 251.4  | 248.5  | 240.9  | 232.0  | 235.0  |
| 77.5°  | 200.5  | 194.5  | 191.5  | 187.0  | 182.6  |
| 80°    | 149.7  | 148.1  | 145.1  | 140.7  | 137.7  |
| 82.5°  | 101.8  | 101.8  | 100.4  | 94.3   | 94.3   |
| 85°    | 61.3   | 59.9   | 58.4   | 53.8   | 52.4   |
| 87.5°  | 27.0   | 24.0   | 21.0   | 16.5   | 14.9   |
| 90°    | 1.4    | 17.2   | 46.7   | 43.9   | 45.3   |
| 92.5°  | 29.6   | 40.0   | 41.5   | 42.9   | 42.9   |
| 95°    | 69.6   | 83.0   | 85.3   | 85.3   | 83.0   |
| 97.5°  | 115.8  | 128.2  | 133.5  | 133.5  | 133.5  |
| 100°   | 169.2  | 180.2  | 184.0  | 184.0  | 182.6  |
| 102.5° | 225.5  | 233.6  | 238.8  | 240.3  | 238.8  |
| 105°   | 287.0  | 290.8  | 293.7  | 296.0  | 296.0  |
| 107.5° | 348.0  | 353.7  | 353.7  | 354.7  | 348.0  |
| 110°   | 407.1  | 414.8  | 414.8  | 414.8  | 410.9  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 471.0  | 479.1  | 477.7  | 473.9  | 471.0  |
| 115°   | 533.9  | 541.6  | 539.2  | 537.8  | 533.9  |
| 117.5° | 596.4  | 606.9  | 600.2  | 596.4  | 592.6  |
| 120°   | 659.3  | 669.8  | 659.3  | 659.3  | 655.0  |
| 122.5° | 716.5  | 729.9  | 723.2  | 719.4  | 716.5  |
| 125°   | 776.6  | 788.5  | 784.7  | 780.4  | 779.0  |
| 127.5° | 835.2  | 850.0  | 844.8  | 839.0  | 835.2  |
| 130°   | 890.1  | 907.2  | 904.8  | 902.0  | 896.7  |
| 132.5° | 951.6  | 964.9  | 965.9  | 959.2  | 955.4  |
| 135°   | 1004.5 | 1019.2 | 1022.1 | 1020.7 | 1016.9 |
| 137.5° | 1063.6 | 1075.5 | 1077.9 | 1076.9 | 1071.2 |
| 140°   | 1115.5 | 1127.5 | 1134.1 | 1134.1 | 1128.9 |
| 142.5° | 1168.9 | 1180.9 | 1184.7 | 1186.1 | 1180.9 |
| 145°   | 1219.5 | 1229.0 | 1236.6 | 1238.1 | 1232.8 |
| 147.5° | 1264.8 | 1276.7 | 1282.4 | 1284.8 | 1279.5 |
| 150°   | 1311.5 | 1319.6 | 1324.8 | 1329.1 | 1324.8 |
| 152.5° | 1353.0 | 1361.1 | 1367.7 | 1373.0 | 1367.7 |
| 155°   | 1394.4 | 1398.2 | 1402.5 | 1409.2 | 1404.9 |
| 157.5° | 1430.2 | 1433.0 | 1435.4 | 1445.0 | 1438.3 |
| 160°   | 1462.1 | 1465.0 | 1466.4 | 1474.5 | 1468.8 |
| 162.5° | 1491.7 | 1491.7 | 1493.1 | 1502.2 | 1495.5 |
| 165°   | 1517.0 | 1515.5 | 1515.5 | 1525.1 | 1518.4 |
| 167.5° | 1539.8 | 1535.5 | 1535.5 | 1545.1 | 1538.4 |
| 170°   | 1557.0 | 1553.2 | 1551.8 | 1561.3 | 1553.2 |
| 172.5° | 1568.9 | 1565.1 | 1563.7 | 1573.2 | 1565.1 |
| 175°   | 1578.5 | 1574.6 | 1571.8 | 1581.3 | 1573.2 |
| 177.5° | 1583.7 | 1579.9 | 1577.0 | 1585.1 | 1577.0 |
| 180°   | 1581.3 | 1581.3 | 1581.3 | 1581.3 | 1581.3 |

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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 | 7.75             | 8.58  | 8.73  | 9.58  | 10.89 | 7.31           | 8.15  | 8.29  | 9.14  | 10.45 |
|                 | 3H   | 9.40             | 10.15 | 10.39 | 11.16 | 12.49 | 8.93           | 9.68  | 9.92  | 10.68 | 12.02 |
|                 | 4H   | 9.99             | 10.70 | 10.99 | 11.71 | 13.05 | 9.52           | 10.23 | 10.52 | 11.23 | 12.57 |
|                 | 6H   | 10.39            | 11.04 | 11.40 | 12.05 | 13.41 | 9.91           | 10.57 | 10.93 | 11.58 | 12.93 |
|                 | 8H   | 10.49            | 11.12 | 11.51 | 12.14 | 13.49 | 10.02          | 10.64 | 11.04 | 11.67 | 13.02 |
|                 | 12H  | 10.54            | 11.13 | 11.57 | 12.15 | 13.53 | 10.06          | 10.65 | 11.09 | 11.67 | 13.05 |
| 4H              | 2H   | 8.20             | 8.92  | 9.21  | 9.92  | 11.26 | 7.86           | 8.57  | 8.87  | 9.58  | 10.92 |
|                 | 3H   | 10.07            | 10.66 | 11.09 | 11.70 | 13.05 | 9.68           | 10.27 | 10.69 | 11.30 | 12.66 |
|                 | 4H   | 10.78            | 11.32 | 11.81 | 12.35 | 13.73 | 10.38          | 10.92 | 11.40 | 11.95 | 13.32 |
|                 | 6H   | 11.29            | 11.76 | 12.33 | 12.81 | 14.18 | 10.89          | 11.35 | 11.92 | 12.40 | 13.77 |
|                 | 8H   | 11.44            | 11.88 | 12.48 | 12.92 | 14.31 | 11.03          | 11.47 | 12.07 | 12.51 | 13.90 |
|                 | 12H  | 11.52            | 11.91 | 12.57 | 12.97 | 14.36 | 11.09          | 11.49 | 12.15 | 12.55 | 13.94 |
| 8H              | 4H   | 10.98            | 11.41 | 12.01 | 12.46 | 13.84 | 10.62          | 11.05 | 11.65 | 12.10 | 13.48 |
|                 | 6H   | 11.61            | 11.97 | 12.67 | 13.05 | 14.44 | 11.24          | 11.60 | 12.31 | 12.69 | 14.07 |
|                 | 8H   | 11.83            | 12.14 | 12.90 | 13.21 | 14.62 | 11.46          | 11.78 | 12.53 | 12.84 | 14.25 |
|                 | 12H  | 11.96            | 12.24 | 13.03 | 13.30 | 14.75 | 11.57          | 11.85 | 12.65 | 12.92 | 14.36 |
| 12H             | 4H   | 10.96            | 11.36 | 12.02 | 12.41 | 13.80 | 10.61          | 11.00 | 11.67 | 12.06 | 13.45 |
|                 | 6H   | 11.64            | 11.95 | 12.71 | 13.02 | 14.43 | 11.28          | 11.60 | 12.35 | 12.67 | 14.07 |
|                 | 8H   | 11.88            | 12.16 | 12.95 | 13.22 | 14.67 | 11.52          | 11.80 | 12.59 | 12.86 | 14.31 |