

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: P925299

Luminaire Tested: DFN2DIP-SQ2F0-030D040US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925299  
REPORT IS A COMBINATION OF REPORTS P901304 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-030D040US950-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

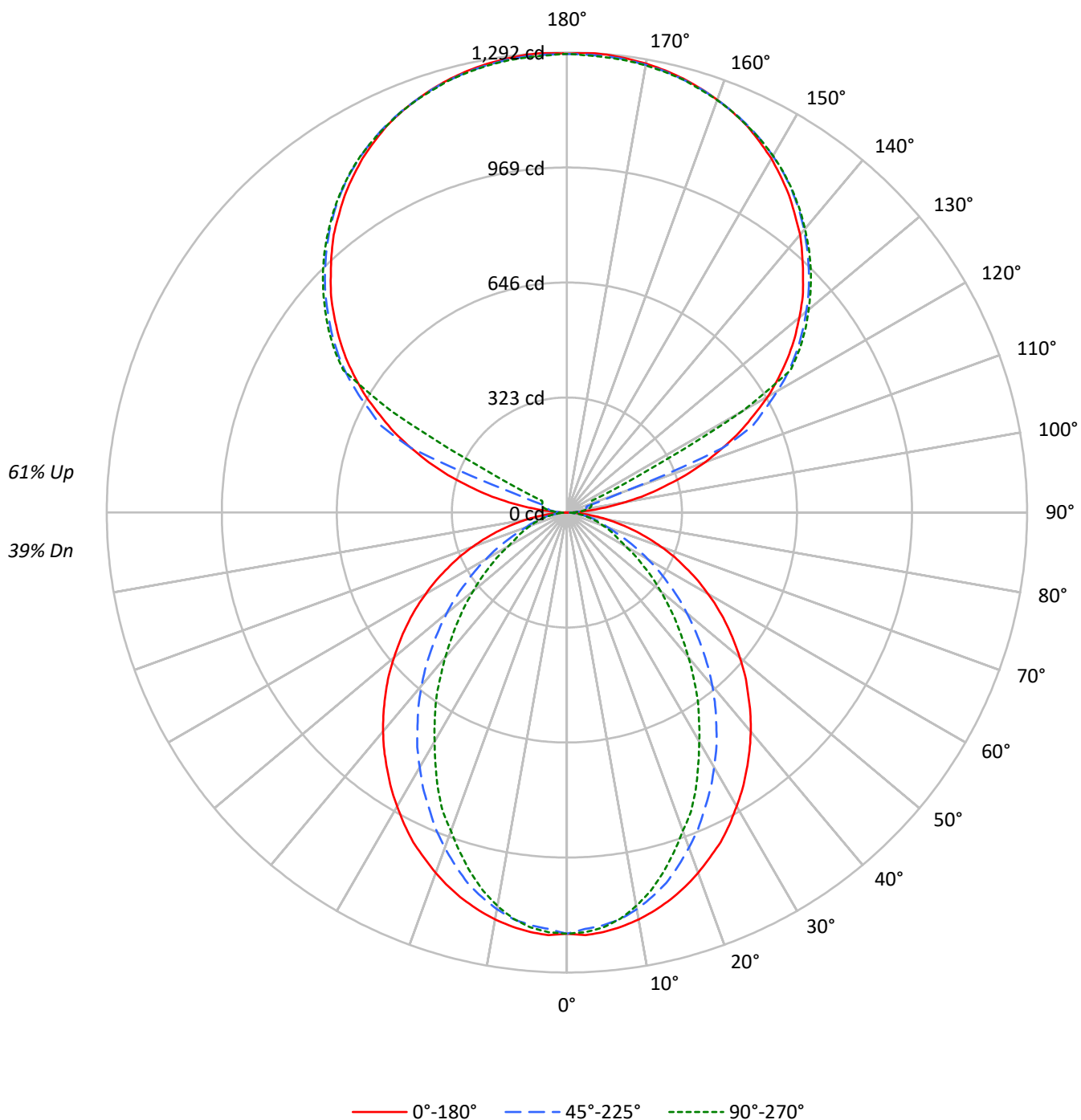
Lumens per Lamp: N/A  
Luminaire Lumens: 6210.5 lumens  
Efficiency: N/A  
Efficacy: 118.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 52.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 96  | 92  | 88  | 85  | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 52 | 41 | 41 | 40 |
| 2   | 87  | 80  | 75  | 70  | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 |
| 4   | 73  | 63  | 55  | 50  | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 |
| 5   | 67  | 56  | 48  | 43  | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 25 | 23 |
| 6   | 62  | 51  | 43  | 37  | 56 | 46 | 40 | 35 | 39 | 34 | 30 | 31 | 28 | 25 | 25 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 31 | 35 | 30 | 26 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 53  | 42  | 34  | 29  | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2601 | 2601 | 2601 |
| 5°  | 2601 | 2554 | 2572 |
| 10° | 2570 | 2498 | 2485 |
| 15° | 2531 | 2410 | 2352 |
| 20° | 2479 | 2291 | 2191 |
| 25° | 2427 | 2159 | 2035 |
| 30° | 2358 | 2024 | 1838 |
| 35° | 2290 | 1878 | 1666 |
| 40° | 2220 | 1729 | 1469 |
| 45° | 2140 | 1565 | 1290 |
| 50° | 2057 | 1399 | 1115 |
| 55° | 1969 | 1222 | 949  |
| 60° | 1868 | 1039 | 777  |
| 65° | 1752 | 852  | 695  |
| 70° | 1610 | 679  | 624  |
| 75° | 1431 | 588  | 560  |
| 80° | 1176 | 477  | 475  |
| 85° | 765  | 296  | 338  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2140 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 110.9  | 1.8       |
| 10°-20°   | 304.3  | 4.9       |
| 20°-30°   | 427.3  | 6.9       |
| 30°-40°   | 465.7  | 7.5       |
| 40°-50°   | 428.1  | 6.9       |
| 50°-60°   | 336.2  | 5.4       |
| 60°-70°   | 218.8  | 3.5       |
| 70°-80°   | 112.6  | 1.8       |
| 80°-90°   | 31.0   | 0.5       |
| 90°-100°  | 42.5   | 0.7       |
| 100°-110° | 158.3  | 2.5       |
| 110°-120° | 419.9  | 6.8       |
| 120°-130° | 696.4  | 11.2      |
| 130°-140° | 739.7  | 11.9      |
| 140°-150° | 687.5  | 11.1      |
| 150°-160° | 552.7  | 8.9       |
| 160°-170° | 356.1  | 5.7       |
| 170°-180° | 122.6  | 2.0       |
| 0°-30°    | 842.5  | 13.6      |
| 0°-40°    | 1308.2 | 21.1      |
| 0°-60°    | 2072.5 | 33.4      |
| 0°-90°    | 2434.9 | 39.2      |
| 90°-120°  | 620.6  | 10.0      |
| 90°-150°  | 2744.1 | 44.2      |
| 90°-180°  | 3776.0 | 60.8      |
| 0°-180°   | 6210.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1183 | 1183  | 1183 | 1183  | 1183 |      |
| 5°   | 1183 | 1178  | 1164 | 1173  | 1170 | 112  |
| 15°  | 1125 | 1113  | 1077 | 1057  | 1046 | 317  |
| 25°  | 1021 | 987   | 916  | 872   | 856  | 470  |
| 35°  | 880  | 825   | 731  | 664   | 640  | 551  |
| 45°  | 719  | 648   | 535  | 459   | 434  | 556  |
| 55°  | 547  | 464   | 348  | 284   | 263  | 489  |
| 65°  | 369  | 283   | 186  | 150   | 147  | 366  |
| 75°  | 197  | 122   | 86   | 78    | 77   | 208  |
| 85°  | 46   | 24    | 20   | 20    | 20   | 53   |
| 90°  | 1    | 11    | 19   | 23    | 25   | 6    |
| 95°  | 60   | 30    | 36   | 41    | 40   | 72   |
| 105° | 283  | 311   | 57   | 67    | 71   | 303  |
| 115° | 536  | 552   | 575  | 144   | 76   | 527  |
| 125° | 758  | 770   | 787  | 794   | 797  | 676  |
| 135° | 938  | 952   | 961  | 970   | 968  | 724  |
| 145° | 1088 | 1087  | 1102 | 1109  | 1104 | 680  |
| 155° | 1198 | 1189  | 1200 | 1206  | 1198 | 552  |
| 165° | 1262 | 1256  | 1259 | 1266  | 1259 | 356  |
| 175° | 1291 | 1284  | 1286 | 1292  | 1283 | 123  |
| 180° | 1288 | 1288  | 1288 | 1288  | 1288 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1182.9 | 1182.9 | 1182.9 | 1182.9 | 1182.9 |
| 2.5°   | 1188.2 | 1182.9 | 1171.0 | 1181.8 | 1179.7 |
| 5°     | 1182.9 | 1177.5 | 1163.6 | 1173.2 | 1170.0 |
| 7.5°   | 1173.2 | 1166.8 | 1151.9 | 1156.1 | 1150.7 |
| 10°    | 1160.4 | 1152.9 | 1131.5 | 1128.2 | 1121.9 |
| 12.5°  | 1144.3 | 1134.7 | 1105.8 | 1099.4 | 1087.6 |
| 15°    | 1125.1 | 1113.2 | 1076.9 | 1056.6 | 1045.9 |
| 17.5°  | 1102.5 | 1085.5 | 1040.4 | 1017.0 | 999.8  |
| 20°    | 1076.9 | 1055.4 | 1001.9 | 975.3  | 951.6  |
| 22.5°  | 1049.1 | 1024.4 | 962.3  | 926.0  | 909.9  |
| 25°    | 1021.3 | 986.9  | 916.3  | 872.4  | 856.3  |
| 27.5°  | 988.1  | 951.6  | 873.5  | 823.2  | 798.5  |
| 30°    | 952.8  | 912.0  | 826.4  | 771.9  | 742.9  |
| 32.5°  | 918.4  | 869.2  | 781.5  | 717.2  | 690.4  |
| 35°    | 880.0  | 825.3  | 731.1  | 663.7  | 640.1  |
| 37.5°  | 842.5  | 783.5  | 684.0  | 610.1  | 583.5  |
| 40°    | 802.9  | 738.7  | 634.8  | 558.8  | 531.0  |
| 42.5°  | 762.2  | 693.7  | 585.6  | 506.3  | 479.6  |
| 45°    | 719.4  | 647.6  | 535.3  | 459.2  | 433.5  |
| 47.5°  | 678.7  | 602.7  | 487.1  | 411.0  | 387.5  |
| 50°    | 633.7  | 557.7  | 440.0  | 366.0  | 343.6  |
| 52.5°  | 589.8  | 509.5  | 395.1  | 324.4  | 304.0  |
| 55°    | 546.9  | 463.5  | 347.8  | 283.7  | 263.4  |
| 57.5°  | 503.1  | 417.5  | 306.2  | 246.2  | 229.1  |
| 60°    | 458.1  | 372.5  | 262.3  | 207.7  | 190.6  |
| 62.5°  | 414.3  | 328.7  | 224.8  | 173.4  | 164.9  |
| 65°    | 369.3  | 282.6  | 186.2  | 149.9  | 146.6  |
| 67.5°  | 326.6  | 239.7  | 149.9  | 131.7  | 128.4  |
| 70°    | 281.5  | 198.1  | 124.1  | 113.4  | 109.1  |
| 72.5°  | 238.7  | 159.4  | 103.8  | 95.3   | 93.1   |
| 75°    | 196.9  | 122.0  | 85.7   | 78.1   | 77.1   |
| 77.5°  | 155.2  | 86.6   | 67.4   | 63.2   | 61.0   |
| 80°    | 116.7  | 62.1   | 51.3   | 47.1   | 47.1   |
| 82.5°  | 81.3   | 41.8   | 35.3   | 33.2   | 33.2   |
| 85°    | 46.0   | 23.5   | 20.3   | 20.3   | 20.3   |
| 87.5°  | 17.2   | 8.5    | 8.5    | 7.5    | 7.5    |
| 90°    | 0.9    | 11.2   | 18.6   | 23.4   | 25.1   |
| 92.5°  | 23.4   | 19.6   | 22.3   | 24.2   | 25.1   |
| 95°    | 60.5   | 29.8   | 36.3   | 41.0   | 40.1   |
| 97.5°  | 109.0  | 32.6   | 47.5   | 50.4   | 51.2   |
| 100°   | 164.9  | 37.3   | 53.1   | 60.5   | 62.4   |
| 102.5° | 226.4  | 224.7  | 55.0   | 65.2   | 68.0   |
| 105°   | 283.2  | 311.3  | 56.9   | 67.1   | 70.8   |
| 107.5° | 349.5  | 372.7  | 58.8   | 69.0   | 72.7   |
| 110°   | 412.9  | 432.4  | 163.1  | 69.9   | 73.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 472.5  | 489.2  | 473.4  | 71.7   | 74.6   |
| 115°   | 535.8  | 551.6  | 575.0  | 143.5  | 76.5   |
| 117.5° | 590.8  | 609.4  | 625.3  | 492.0  | 247.8  |
| 120°   | 652.3  | 666.3  | 683.1  | 694.3  | 568.5  |
| 122.5° | 704.4  | 719.4  | 738.1  | 743.6  | 744.6  |
| 125°   | 757.6  | 769.8  | 787.4  | 794.0  | 796.8  |
| 127.5° | 806.0  | 819.1  | 833.1  | 842.5  | 843.3  |
| 130°   | 851.7  | 866.7  | 876.8  | 887.1  | 886.3  |
| 132.5° | 898.3  | 910.5  | 920.7  | 929.1  | 928.2  |
| 135°   | 937.5  | 952.5  | 960.8  | 970.1  | 968.3  |
| 137.5° | 978.4  | 989.6  | 999.0  | 1008.3 | 1005.5 |
| 140°   | 1018.5 | 1026.0 | 1036.2 | 1044.6 | 1040.0 |
| 142.5° | 1052.2 | 1058.7 | 1070.8 | 1078.1 | 1073.5 |
| 145°   | 1087.6 | 1086.6 | 1102.3 | 1108.9 | 1104.3 |
| 147.5° | 1118.2 | 1115.4 | 1131.3 | 1135.9 | 1132.3 |
| 150°   | 1148.0 | 1141.6 | 1156.5 | 1162.1 | 1157.4 |
| 152.5° | 1173.2 | 1165.8 | 1179.7 | 1185.3 | 1178.9 |
| 155°   | 1197.5 | 1189.2 | 1200.3 | 1205.9 | 1198.4 |
| 157.5° | 1217.0 | 1209.6 | 1218.1 | 1224.6 | 1217.0 |
| 160°   | 1233.8 | 1228.2 | 1233.8 | 1239.3 | 1232.9 |
| 162.5° | 1248.7 | 1243.2 | 1247.8 | 1254.3 | 1245.9 |
| 165°   | 1261.8 | 1256.2 | 1259.0 | 1265.5 | 1259.0 |
| 167.5° | 1272.1 | 1266.3 | 1269.3 | 1275.8 | 1267.4 |
| 170°   | 1280.5 | 1274.8 | 1276.6 | 1283.2 | 1274.8 |
| 172.5° | 1286.0 | 1280.5 | 1282.4 | 1288.9 | 1280.5 |
| 175°   | 1290.6 | 1284.1 | 1286.0 | 1292.5 | 1283.2 |
| 177.5° | 1292.5 | 1286.0 | 1286.9 | 1293.5 | 1285.1 |
| 180°   | 1287.9 | 1287.9 | 1287.9 | 1287.9 | 1287.9 |

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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 | 9.25             | 10.00 | 10.31 | 11.05 | 12.47 | 5.21           | 5.96 | 6.27 | 7.02  | 8.43  |
|                 | 3H   | 10.91            | 11.58 | 11.97 | 12.64 | 14.07 | 6.38           | 7.05 | 7.44 | 8.11  | 9.55  |
|                 | 4H   | 11.50            | 12.13 | 12.57 | 13.19 | 14.64 | 6.81           | 7.45 | 7.88 | 8.51  | 9.95  |
|                 | 6H   | 11.90            | 12.48 | 12.98 | 13.55 | 15.01 | 7.11           | 7.70 | 8.19 | 8.76  | 10.22 |
|                 | 8H   | 12.02            | 12.57 | 13.10 | 13.65 | 15.10 | 7.19           | 7.75 | 8.28 | 8.83  | 10.28 |
|                 | 12H  | 12.07            | 12.59 | 13.16 | 13.67 | 15.14 | 7.23           | 7.75 | 8.32 | 8.83  | 10.30 |
| 4H              | 2H   | 9.26             | 9.89  | 10.34 | 10.95 | 12.40 | 5.79           | 6.42 | 6.87 | 7.49  | 8.93  |
|                 | 3H   | 11.06            | 11.58 | 12.14 | 12.67 | 14.13 | 7.11           | 7.64 | 8.20 | 8.73  | 10.19 |
|                 | 4H   | 11.73            | 12.21 | 12.82 | 13.29 | 14.77 | 7.64           | 8.12 | 8.73 | 9.20  | 10.68 |
|                 | 6H   | 12.22            | 12.64 | 13.32 | 13.74 | 15.21 | 8.04           | 8.45 | 9.13 | 9.55  | 11.03 |
|                 | 8H   | 12.39            | 12.77 | 13.48 | 13.87 | 15.36 | 8.15           | 8.54 | 9.25 | 9.63  | 11.12 |
|                 | 12H  | 12.47            | 12.82 | 13.58 | 13.92 | 15.42 | 8.20           | 8.55 | 9.32 | 9.66  | 11.15 |
| 8H              | 4H   | 11.69            | 12.08 | 12.79 | 13.17 | 14.66 | 7.90           | 8.29 | 9.00 | 9.38  | 10.87 |
|                 | 6H   | 12.23            | 12.55 | 13.35 | 13.69 | 15.17 | 8.39           | 8.71 | 9.51 | 9.85  | 11.34 |
|                 | 8H   | 12.43            | 12.71 | 13.56 | 13.83 | 15.34 | 8.57           | 8.85 | 9.70 | 9.97  | 11.47 |
|                 | 12H  | 12.55            | 12.80 | 13.68 | 13.91 | 15.46 | 8.67           | 8.92 | 9.80 | 10.03 | 11.57 |
| 12H             | 4H   | 11.64            | 11.99 | 12.75 | 13.09 | 14.59 | 7.90           | 8.25 | 9.02 | 9.36  | 10.85 |
|                 | 6H   | 12.20            | 12.48 | 13.33 | 13.60 | 15.11 | 8.44           | 8.72 | 9.56 | 9.84  | 11.34 |
|                 | 8H   | 12.41            | 12.65 | 13.54 | 13.77 | 15.31 | 8.63           | 8.87 | 9.76 | 9.99  | 11.53 |