

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: P925860

Luminaire Tested: DFN2DIP-SQ4F0-080D140US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925860  
REPORT IS A COMBINATION OF REPORTS P900189 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-080D140US950-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

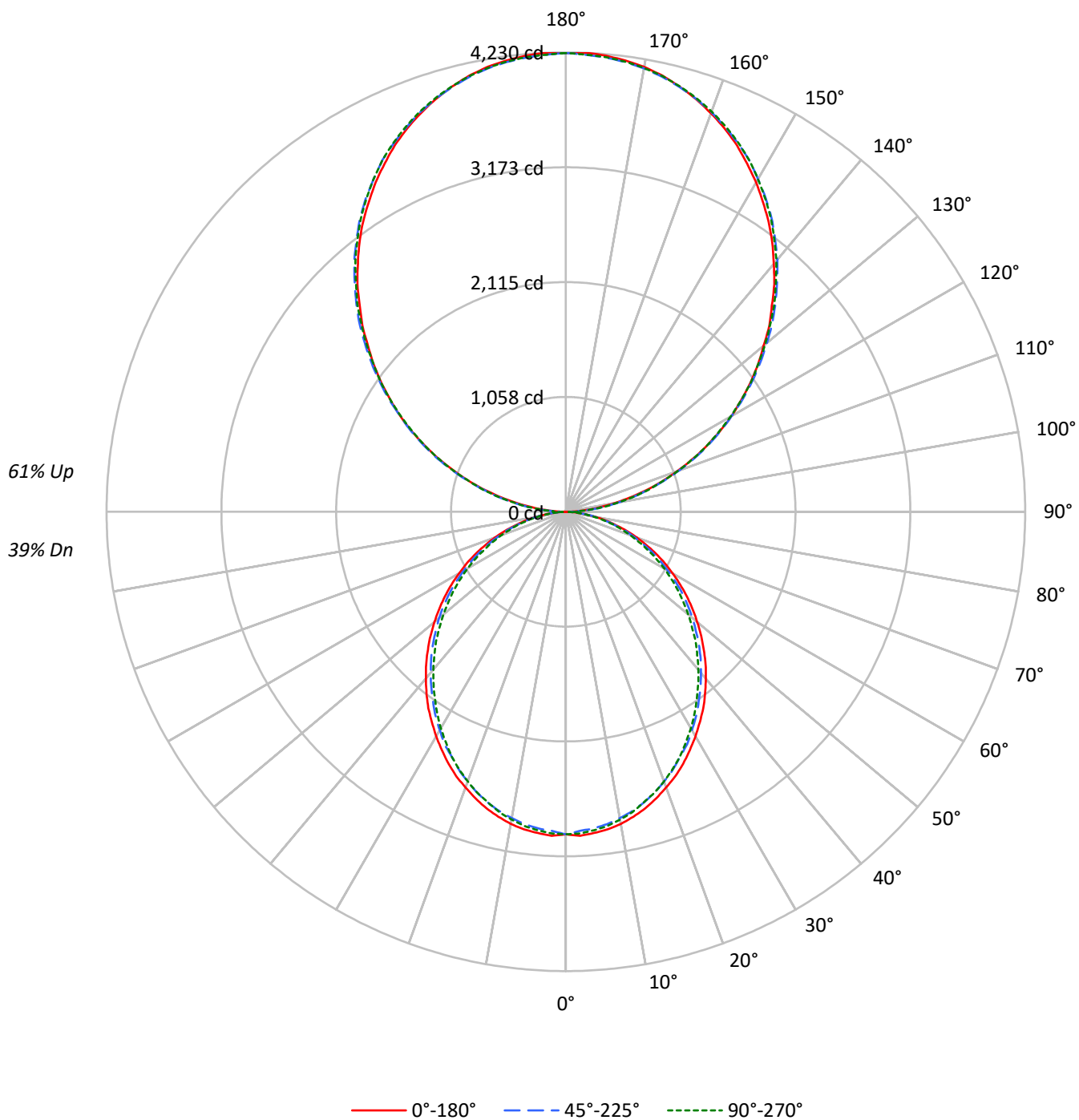
Lumens per Lamp: N/A  
Luminaire Lumens: 19375.7 lumens  
Efficiency: N/A  
Efficacy: 109.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 177.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P925860

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925860

CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US950-FLLFL

**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   | 95  | 91  | 87  | 84  | 86 | 83 | 80 | 77 | 68 | 65 | 63 | 54 | 52 | 51 | 41 | 40 | 39 |
| 2   | 87  | 79  | 73  | 68  | 79 | 72 | 67 | 63 | 59 | 56 | 52 | 47 | 45 | 42 | 36 | 34 | 33 |
| 3   | 79  | 70  | 63  | 57  | 72 | 64 | 58 | 53 | 52 | 48 | 44 | 42 | 38 | 36 | 32 | 30 | 28 |
| 4   | 72  | 62  | 54  | 48  | 65 | 56 | 50 | 44 | 46 | 41 | 37 | 37 | 33 | 31 | 28 | 26 | 24 |
| 5   | 66  | 55  | 47  | 41  | 60 | 50 | 43 | 38 | 41 | 36 | 32 | 33 | 29 | 27 | 26 | 23 | 21 |
| 6   | 61  | 49  | 41  | 36  | 55 | 45 | 38 | 33 | 37 | 32 | 28 | 30 | 26 | 23 | 23 | 20 | 18 |
| 7   | 56  | 44  | 37  | 31  | 51 | 41 | 34 | 29 | 34 | 28 | 25 | 27 | 23 | 20 | 21 | 18 | 16 |
| 8   | 52  | 40  | 33  | 27  | 47 | 37 | 30 | 26 | 31 | 26 | 22 | 25 | 21 | 18 | 19 | 17 | 15 |
| 9   | 49  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 19 | 23 | 19 | 16 | 18 | 15 | 13 |
| 10  | 45  | 34  | 26  | 22  | 41 | 31 | 25 | 20 | 26 | 21 | 18 | 21 | 17 | 15 | 17 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2084 | 2084 | 2084 |
| 5°  | 2087 | 2055 | 2069 |
| 10° | 2070 | 2028 | 2042 |
| 15° | 2040 | 1995 | 1999 |
| 20° | 1999 | 1949 | 1954 |
| 25° | 1958 | 1894 | 1903 |
| 30° | 1906 | 1843 | 1838 |
| 35° | 1858 | 1782 | 1769 |
| 40° | 1798 | 1721 | 1703 |
| 45° | 1738 | 1660 | 1636 |
| 50° | 1673 | 1596 | 1558 |
| 55° | 1604 | 1522 | 1486 |
| 60° | 1527 | 1433 | 1405 |
| 65° | 1443 | 1342 | 1308 |
| 70° | 1336 | 1231 | 1205 |
| 75° | 1187 | 1098 | 1110 |
| 80° | 1008 | 929  | 927  |
| 85° | 729  | 635  | 623  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3325 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 279.5   | 1.4       |
| 10°-20°   | 786.4   | 4.1       |
| 20°-30°   | 1155.7  | 6.0       |
| 30°-40°   | 1342.3  | 6.9       |
| 40°-50°   | 1340.6  | 6.9       |
| 50°-60°   | 1169.0  | 6.0       |
| 60°-70°   | 864.1   | 4.5       |
| 70°-80°   | 488.9   | 2.5       |
| 80°-90°   | 141.0   | 0.7       |
| 90°-100°  | 261.4   | 1.3       |
| 100°-110° | 830.5   | 4.3       |
| 110°-120° | 1421.2  | 7.3       |
| 120°-130° | 1869.1  | 9.6       |
| 130°-140° | 2098.0  | 10.8      |
| 140°-150° | 2057.4  | 10.6      |
| 150°-160° | 1725.8  | 8.9       |
| 160°-170° | 1144.5  | 5.9       |
| 170°-180° | 400.0   | 2.1       |
| 0°-30°    | 2221.6  | 11.5      |
| 0°-40°    | 3563.9  | 18.4      |
| 0°-60°    | 6073.6  | 31.3      |
| 0°-90°    | 7567.7  | 39.1      |
| 90°-120°  | 2513.1  | 13.0      |
| 90°-150°  | 8537.6  | 44.1      |
| 90°-180°  | 11808.0 | 60.9      |
| 0°-180°   | 19375.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2970 | 2970  | 2970 | 2970  | 2970 |      |
| 5°   | 2970 | 2958  | 2927 | 2950  | 2944 | 282  |
| 15°  | 2827 | 2810  | 2773 | 2784  | 2770 | 796  |
| 25°  | 2558 | 2536  | 2487 | 2493  | 2487 | 1177 |
| 35°  | 2207 | 2179  | 2133 | 2116  | 2102 | 1378 |
| 45°  | 1796 | 1776  | 1733 | 1702  | 1691 | 1386 |
| 55°  | 1359 | 1342  | 1308 | 1274  | 1259 | 1215 |
| 65°  | 917  | 900   | 871  | 845   | 831  | 906  |
| 75°  | 480  | 474   | 460  | 443   | 448  | 512  |
| 85°  | 117  | 114   | 112  | 103   | 100  | 130  |
| 90°  | 4    | 46    | 125  | 117   | 121  | 19   |
| 95°  | 186  | 222   | 228  | 228   | 222  | 207  |
| 105° | 767  | 777   | 784  | 791   | 791  | 809  |
| 115° | 1426 | 1447  | 1440 | 1436  | 1426 | 1411 |
| 125° | 2074 | 2106  | 2096 | 2085  | 2081 | 1854 |
| 135° | 2683 | 2723  | 2730 | 2726  | 2716 | 2074 |
| 145° | 3257 | 3283  | 3303 | 3307  | 3293 | 2035 |
| 155° | 3725 | 3735  | 3746 | 3764  | 3753 | 1714 |
| 165° | 4052 | 4048  | 4048 | 4074  | 4056 | 1143 |
| 175° | 4216 | 4206  | 4199 | 4224  | 4202 | 401  |
| 180° | 4224 | 4224  | 4224 | 4224  | 4224 |      |

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CATALOG NUMBER: DFN2DIP-SQ4F0-080D140US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2969.6 | 2969.6 | 2969.6 | 2969.6 | 2969.6 |
| 2.5°   | 2986.9 | 2972.7 | 2941.2 | 2969.6 | 2964.2 |
| 5°     | 2969.6 | 2958.4 | 2927.0 | 2949.7 | 2944.2 |
| 7.5°   | 2949.7 | 2932.7 | 2901.2 | 2924.2 | 2918.5 |
| 10°    | 2918.5 | 2898.4 | 2864.2 | 2886.9 | 2878.5 |
| 12.5°  | 2875.5 | 2858.5 | 2824.2 | 2838.4 | 2832.7 |
| 15°    | 2827.0 | 2810.0 | 2772.7 | 2784.2 | 2770.0 |
| 17.5°  | 2767.0 | 2750.0 | 2712.7 | 2727.0 | 2712.7 |
| 20°    | 2701.3 | 2684.3 | 2644.3 | 2652.8 | 2641.5 |
| 22.5°  | 2635.8 | 2610.0 | 2572.7 | 2572.7 | 2567.0 |
| 25°    | 2558.5 | 2535.8 | 2487.4 | 2492.8 | 2487.4 |
| 27.5°  | 2472.8 | 2452.8 | 2415.8 | 2407.3 | 2393.1 |
| 30°    | 2387.4 | 2364.3 | 2321.7 | 2313.2 | 2301.6 |
| 32.5°  | 2295.9 | 2278.9 | 2233.1 | 2215.9 | 2204.4 |
| 35°    | 2207.4 | 2178.9 | 2133.1 | 2115.9 | 2101.7 |
| 37.5°  | 2107.4 | 2081.6 | 2035.9 | 2015.9 | 2001.7 |
| 40°    | 2004.7 | 1981.6 | 1936.0 | 1910.5 | 1898.9 |
| 42.5°  | 1904.8 | 1881.7 | 1836.3 | 1807.4 | 1790.6 |
| 45°    | 1796.3 | 1776.3 | 1733.2 | 1702.0 | 1690.6 |
| 47.5°  | 1690.6 | 1670.5 | 1624.8 | 1593.3 | 1576.3 |
| 50°    | 1579.1 | 1564.8 | 1524.8 | 1484.8 | 1470.6 |
| 52.5°  | 1470.6 | 1450.6 | 1413.6 | 1382.2 | 1362.1 |
| 55°    | 1359.4 | 1342.1 | 1307.9 | 1273.7 | 1259.4 |
| 57.5°  | 1247.9 | 1233.7 | 1196.4 | 1162.2 | 1150.6 |
| 60°    | 1136.4 | 1125.2 | 1085.2 | 1053.7 | 1045.2 |
| 62.5°  | 1027.9 | 1008.0 | 979.5  | 951.0  | 939.5  |
| 65°    | 916.8  | 899.5  | 871.0  | 845.2  | 831.0  |
| 67.5°  | 802.5  | 788.0  | 762.5  | 742.6  | 731.1  |
| 70°    | 696.8  | 685.3  | 659.6  | 639.6  | 628.3  |
| 72.5°  | 588.3  | 576.9  | 562.6  | 542.6  | 534.1  |
| 75°    | 479.6  | 474.1  | 459.6  | 442.7  | 448.4  |
| 77.5°  | 382.6  | 371.1  | 365.4  | 356.9  | 348.4  |
| 80°    | 285.7  | 282.7  | 276.9  | 268.5  | 262.6  |
| 82.5°  | 194.2  | 194.2  | 191.5  | 179.9  | 179.9  |
| 85°    | 117.0  | 114.2  | 111.5  | 102.7  | 100.0  |
| 87.5°  | 51.5   | 45.8   | 40.0   | 31.5   | 28.5   |
| 90°    | 3.8    | 45.9   | 124.8  | 117.2  | 121.0  |
| 92.5°  | 79.0   | 106.9  | 110.8  | 114.6  | 114.6  |
| 95°    | 185.9  | 221.6  | 227.9  | 227.9  | 221.6  |
| 97.5°  | 309.5  | 342.6  | 356.6  | 356.6  | 356.6  |
| 100°   | 452.1  | 481.4  | 491.5  | 491.5  | 487.7  |
| 102.5° | 602.4  | 624.0  | 638.0  | 641.9  | 638.0  |
| 105°   | 766.6  | 776.8  | 784.5  | 790.8  | 790.8  |
| 107.5° | 929.6  | 944.9  | 944.9  | 947.4  | 929.6  |
| 110°   | 1087.6 | 1107.9 | 1107.9 | 1107.9 | 1097.7 |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1258.1 | 1279.8 | 1276.0 | 1265.8 | 1258.1 |
| 115°   | 1426.2 | 1446.6 | 1440.3 | 1436.4 | 1426.2 |
| 117.5° | 1593.1 | 1621.1 | 1603.3 | 1593.1 | 1582.9 |
| 120°   | 1761.2 | 1789.2 | 1761.2 | 1761.2 | 1749.7 |
| 122.5° | 1914.0 | 1949.6 | 1931.8 | 1921.6 | 1914.0 |
| 125°   | 2074.5 | 2106.2 | 2096.0 | 2084.6 | 2080.8 |
| 127.5° | 2231.0 | 2270.5 | 2256.5 | 2241.2 | 2231.0 |
| 130°   | 2377.5 | 2423.4 | 2417.0 | 2409.3 | 2395.3 |
| 132.5° | 2541.7 | 2577.4 | 2580.0 | 2562.2 | 2552.0 |
| 135°   | 2683.1 | 2722.6 | 2730.3 | 2726.4 | 2716.2 |
| 137.5° | 2841.0 | 2872.9 | 2879.3 | 2876.7 | 2861.4 |
| 140°   | 2979.8 | 3011.7 | 3029.5 | 3029.5 | 3015.5 |
| 142.5° | 3122.4 | 3154.3 | 3164.5 | 3168.3 | 3154.3 |
| 145°   | 3257.4 | 3282.9 | 3303.3 | 3307.1 | 3293.1 |
| 147.5° | 3378.4 | 3410.3 | 3425.5 | 3431.9 | 3417.9 |
| 150°   | 3503.2 | 3524.8 | 3538.9 | 3550.3 | 3538.9 |
| 152.5° | 3614.0 | 3635.7 | 3653.5 | 3667.5 | 3653.5 |
| 155°   | 3724.8 | 3735.0 | 3746.5 | 3764.3 | 3752.8 |
| 157.5° | 3820.3 | 3827.9 | 3834.3 | 3859.8 | 3841.9 |
| 160°   | 3905.7 | 3913.3 | 3917.1 | 3938.8 | 3923.4 |
| 162.5° | 3984.6 | 3984.6 | 3988.4 | 4012.6 | 3994.8 |
| 165°   | 4052.1 | 4048.3 | 4048.3 | 4073.8 | 4055.9 |
| 167.5° | 4113.2 | 4101.7 | 4101.7 | 4127.2 | 4109.4 |
| 170°   | 4159.1 | 4148.9 | 4145.0 | 4170.5 | 4148.9 |
| 172.5° | 4190.9 | 4180.7 | 4176.9 | 4202.4 | 4180.7 |
| 175°   | 4216.4 | 4206.2 | 4198.6 | 4224.0 | 4202.4 |
| 177.5° | 4230.3 | 4220.2 | 4212.6 | 4234.1 | 4212.6 |
| 180°   | 4224.0 | 4224.0 | 4224.0 | 4224.0 | 4224.0 |

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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 | 8.73             | 9.50  | 9.77  | 10.55 | 11.97 | 8.28           | 9.05  | 9.33  | 10.11 | 11.53 |
|                 | 3H   | 10.39            | 11.08 | 11.44 | 12.14 | 13.57 | 9.90           | 10.59 | 10.95 | 11.65 | 13.08 |
|                 | 4H   | 10.97            | 11.63 | 12.04 | 12.69 | 14.13 | 10.48          | 11.13 | 11.55 | 12.20 | 13.64 |
|                 | 6H   | 11.37            | 11.97 | 12.45 | 13.04 | 14.50 | 10.87          | 11.47 | 11.95 | 12.54 | 14.00 |
|                 | 8H   | 11.47            | 12.05 | 12.56 | 13.13 | 14.58 | 10.97          | 11.55 | 12.05 | 12.63 | 14.08 |
|                 | 12H  | 11.52            | 12.07 | 12.61 | 13.14 | 14.62 | 11.01          | 11.56 | 12.10 | 12.63 | 14.11 |
| 4H              | 2H   | 9.18             | 9.83  | 10.25 | 10.90 | 12.34 | 8.82           | 9.48  | 9.90  | 10.54 | 11.99 |
|                 | 3H   | 11.04            | 11.59 | 12.12 | 12.68 | 14.13 | 10.63          | 11.18 | 11.71 | 12.27 | 13.73 |
|                 | 4H   | 11.75            | 12.26 | 12.84 | 13.34 | 14.82 | 11.33          | 11.83 | 12.42 | 12.91 | 14.39 |
|                 | 6H   | 12.27            | 12.70 | 13.36 | 13.80 | 15.28 | 11.84          | 12.27 | 12.93 | 13.37 | 14.84 |
|                 | 8H   | 12.42            | 12.82 | 13.51 | 13.92 | 15.40 | 11.98          | 12.38 | 13.08 | 13.48 | 14.97 |
|                 | 12H  | 12.49            | 12.85 | 13.60 | 13.96 | 15.46 | 12.04          | 12.40 | 13.15 | 13.51 | 15.01 |
| 8H              | 4H   | 11.94            | 12.35 | 13.04 | 13.44 | 14.93 | 11.57          | 11.97 | 12.66 | 13.07 | 14.55 |
|                 | 6H   | 12.58            | 12.91 | 13.69 | 14.05 | 15.53 | 12.19          | 12.53 | 13.31 | 13.66 | 15.15 |
|                 | 8H   | 12.80            | 13.09 | 13.92 | 14.21 | 15.71 | 12.41          | 12.70 | 13.53 | 13.82 | 15.32 |
|                 | 12H  | 12.93            | 13.19 | 14.06 | 14.30 | 15.84 | 12.52          | 12.78 | 13.65 | 13.89 | 15.43 |
| 12H             | 4H   | 11.93            | 12.29 | 13.04 | 13.40 | 14.89 | 11.56          | 11.92 | 12.67 | 13.03 | 14.52 |
|                 | 6H   | 12.61            | 12.90 | 13.73 | 14.02 | 15.52 | 12.23          | 12.53 | 13.36 | 13.64 | 15.15 |
|                 | 8H   | 12.85            | 13.10 | 13.97 | 14.22 | 15.76 | 12.47          | 12.72 | 13.59 | 13.84 | 15.38 |