

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: P920289

Luminaire Tested: DFN2DIP-SQ3F0-120D090US935-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920289  
REPORT IS A COMBINATION OF REPORTS P901487 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-120D090US935-FLLONL  
Description: 3 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

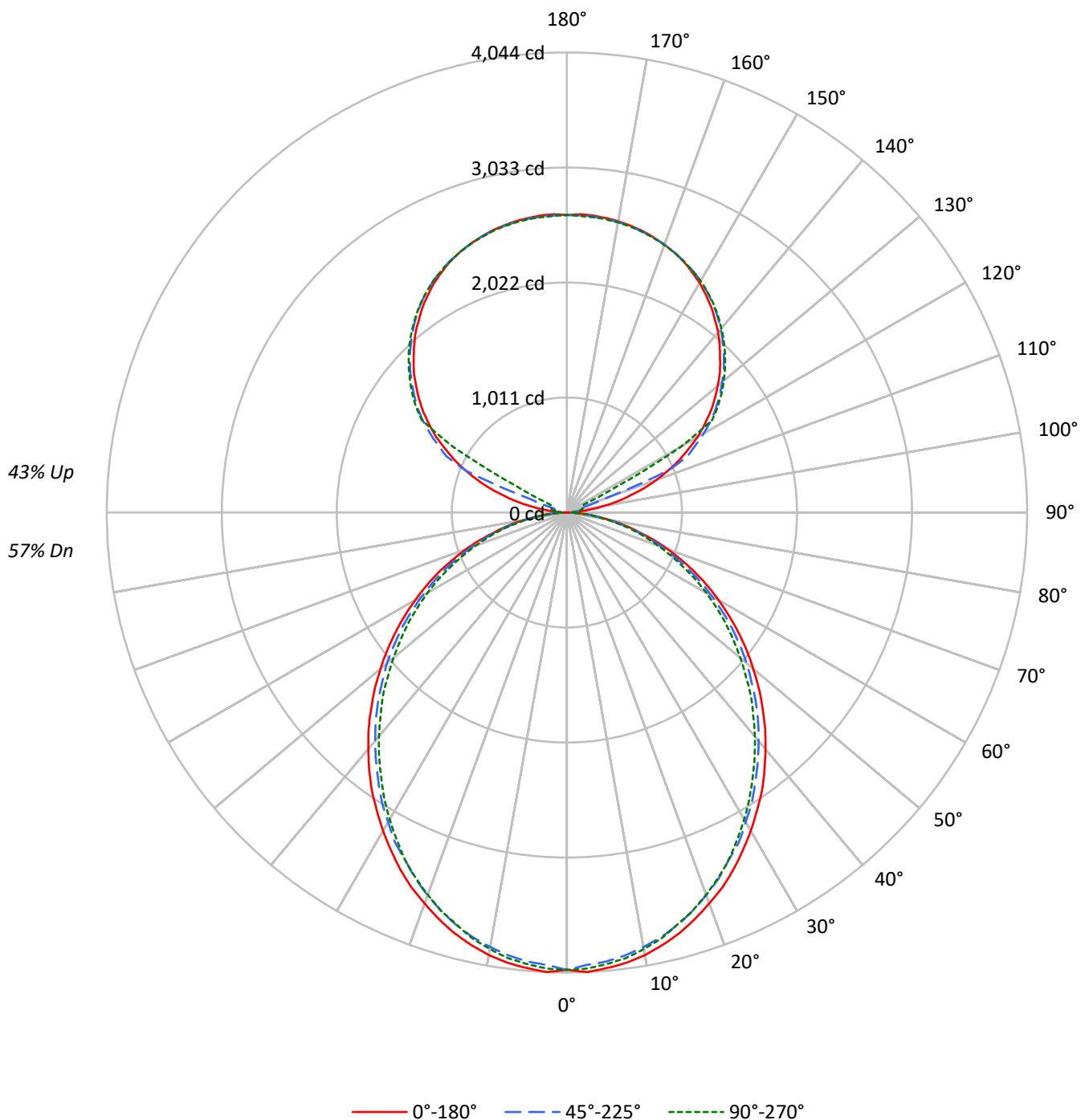
Lumens per Lamp: N/A  
Luminaire Lumens: 17900.1 lumens  
Efficiency: N/A  
Efficacy: 92.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 194.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P920289

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US935-FLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P920289

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US935-FLLONL

**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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 63 | 63 | 63 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 77 | 74 | 72 | 66 | 64 | 62 | 55 | 54 | 53 |
| 2   | 91  | 83  | 77  | 72  | 84  | 77  | 72  | 67  | 67 | 63 | 59 | 58 | 55 | 52 | 49 | 47 | 45 |
| 3   | 83  | 73  | 66  | 60  | 77  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 76  | 65  | 57  | 50  | 70  | 61  | 53  | 48  | 53 | 47 | 43 | 45 | 41 | 38 | 39 | 35 | 33 |
| 5   | 69  | 58  | 49  | 43  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 41 | 36 | 33 | 35 | 31 | 29 |
| 6   | 64  | 52  | 44  | 38  | 59  | 49  | 41  | 36  | 43 | 37 | 32 | 37 | 32 | 29 | 32 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 31  | 39 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 |
| 8   | 55  | 43  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 25 | 21 | 18 |
| 10  | 48  | 36  | 28  | 24  | 45  | 34  | 27  | 22  | 30 | 24 | 20 | 26 | 22 | 18 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4606 | 4606 | 4606 |
| 5°  | 4611 | 4539 | 4571 |
| 10° | 4570 | 4475 | 4508 |
| 15° | 4500 | 4398 | 4410 |
| 20° | 4407 | 4293 | 4309 |
| 25° | 4313 | 4167 | 4193 |
| 30° | 4197 | 4050 | 4046 |
| 35° | 4087 | 3913 | 3891 |
| 40° | 3951 | 3774 | 3743 |
| 45° | 3816 | 3634 | 3591 |
| 50° | 3668 | 3488 | 3416 |
| 55° | 3513 | 3318 | 3254 |
| 60° | 3337 | 3117 | 3069 |
| 65° | 3145 | 2909 | 2851 |
| 70° | 2900 | 2655 | 2615 |
| 75° | 2562 | 2350 | 2396 |
| 80° | 2154 | 1961 | 1980 |
| 85° | 1516 | 1299 | 1296 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3816 cd/sqm

TEST NUMBER: P920289

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US935-FLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 378.4   | 2.1       |
| 10°-20°   | 1064.6  | 5.9       |
| 20°-30°   | 1564.6  | 8.7       |
| 30°-40°   | 1817.2  | 10.2      |
| 40°-50°   | 1814.9  | 10.1      |
| 50°-60°   | 1582.5  | 8.8       |
| 60°-70°   | 1169.9  | 6.5       |
| 70°-80°   | 661.9   | 3.7       |
| 80°-90°   | 179.3   | 1.0       |
| 90°-100°  | 86.2    | 0.5       |
| 100°-110° | 321.5   | 1.8       |
| 110°-120° | 852.6   | 4.8       |
| 120°-130° | 1414.1  | 7.9       |
| 130°-140° | 1502.1  | 8.4       |
| 140°-150° | 1396.0  | 7.8       |
| 150°-160° | 1122.4  | 6.3       |
| 160°-170° | 723.2   | 4.0       |
| 170°-180° | 248.9   | 1.4       |
| 0°-30°    | 3007.6  | 16.8      |
| 0°-40°    | 4824.8  | 27.0      |
| 0°-60°    | 8222.2  | 45.9      |
| 0°-90°    | 10233.3 | 57.2      |
| 90°-120°  | 1260.3  | 7.0       |
| 90°-150°  | 5572.4  | 31.1      |
| 90°-180°  | 7667.0  | 42.8      |
| 0°-180°   | 17900.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4020 | 4020  | 4020 | 4020  | 4020 |      |
| 5°   | 4020 | 4005  | 3962 | 3993  | 3986 | 382  |
| 15°  | 3827 | 3804  | 3754 | 3769  | 3750 | 1078 |
| 25°  | 3464 | 3433  | 3367 | 3375  | 3367 | 1594 |
| 35°  | 2988 | 2950  | 2888 | 2864  | 2845 | 1866 |
| 45°  | 2432 | 2405  | 2346 | 2304  | 2289 | 1877 |
| 55°  | 1840 | 1817  | 1771 | 1724  | 1705 | 1645 |
| 65°  | 1241 | 1218  | 1179 | 1144  | 1125 | 1227 |
| 75°  | 649  | 642   | 622  | 599   | 607  | 693  |
| 85°  | 158  | 155   | 151  | 139   | 135  | 177  |
| 90°  | 2    | 23    | 38   | 47    | 51   | 17   |
| 95°  | 123  | 60    | 74   | 83    | 81   | 146  |
| 105° | 575  | 632   | 116  | 136   | 144  | 615  |
| 115° | 1088 | 1120  | 1168 | 291   | 155  | 1071 |
| 125° | 1538 | 1563  | 1599 | 1612  | 1618 | 1372 |
| 135° | 1904 | 1934  | 1951 | 1970  | 1966 | 1471 |
| 145° | 2208 | 2206  | 2239 | 2252  | 2242 | 1381 |
| 155° | 2432 | 2415  | 2437 | 2449  | 2434 | 1121 |
| 165° | 2562 | 2551  | 2557 | 2570  | 2557 | 724  |
| 175° | 2621 | 2608  | 2611 | 2625  | 2606 | 249  |
| 180° | 2615 | 2615  | 2615 | 2615  | 2615 |      |

TEST NUMBER: P920289

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US935-FLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4020.3 | 4020.3 | 4020.3 | 4020.3 | 4020.3 |
| 2.5°   | 4043.6 | 4024.3 | 3981.7 | 4020.3 | 4012.9 |
| 5°     | 4020.3 | 4005.0 | 3962.4 | 3993.1 | 3985.7 |
| 7.5°   | 3993.1 | 3970.1 | 3927.5 | 3958.7 | 3950.9 |
| 10°    | 3950.9 | 3923.8 | 3877.5 | 3908.2 | 3896.8 |
| 12.5°  | 3892.7 | 3869.7 | 3823.3 | 3842.6 | 3834.8 |
| 15°    | 3827.0 | 3804.1 | 3753.6 | 3769.2 | 3749.9 |
| 17.5°  | 3745.9 | 3722.9 | 3672.4 | 3691.7 | 3672.4 |
| 20°    | 3656.8 | 3633.8 | 3579.8 | 3591.2 | 3576.1 |
| 22.5°  | 3568.2 | 3533.4 | 3482.9 | 3482.9 | 3475.2 |
| 25°    | 3463.6 | 3432.9 | 3367.3 | 3374.7 | 3367.3 |
| 27.5°  | 3347.6 | 3320.5 | 3270.5 | 3259.0 | 3239.8 |
| 30°    | 3231.9 | 3200.8 | 3142.9 | 3131.4 | 3115.9 |
| 32.5°  | 3108.0 | 3085.1 | 3023.1 | 2999.8 | 2984.2 |
| 35°    | 2988.3 | 2949.8 | 2887.8 | 2864.5 | 2845.2 |
| 37.5°  | 2852.9 | 2818.1 | 2756.1 | 2729.1 | 2709.8 |
| 40°    | 2714.0 | 2682.8 | 2620.8 | 2586.4 | 2570.8 |
| 42.5°  | 2578.6 | 2547.4 | 2485.9 | 2447.0 | 2424.0 |
| 45°    | 2431.7 | 2404.7 | 2346.4 | 2304.2 | 2288.6 |
| 47.5°  | 2288.6 | 2261.5 | 2199.6 | 2157.0 | 2134.0 |
| 50°    | 2137.7 | 2118.4 | 2064.2 | 2010.1 | 1990.8 |
| 52.5°  | 1990.8 | 1963.8 | 1913.7 | 1871.0 | 1844.0 |
| 55°    | 1840.3 | 1817.0 | 1770.6 | 1724.2 | 1704.9 |
| 57.5°  | 1689.4 | 1670.1 | 1619.6 | 1573.3 | 1557.7 |
| 60°    | 1538.4 | 1523.3 | 1469.1 | 1426.5 | 1415.0 |
| 62.5°  | 1391.6 | 1364.5 | 1326.0 | 1287.5 | 1271.9 |
| 65°    | 1241.1 | 1217.7 | 1179.1 | 1144.3 | 1125.1 |
| 67.5°  | 1086.5 | 1066.8 | 1032.3 | 1005.3 | 989.7  |
| 70°    | 943.3  | 927.7  | 892.9  | 865.8  | 850.7  |
| 72.5°  | 796.5  | 780.9  | 761.6  | 734.6  | 723.1  |
| 75°    | 649.3  | 641.9  | 622.2  | 599.3  | 607.0  |
| 77.5°  | 518.0  | 502.4  | 494.6  | 483.1  | 471.7  |
| 80°    | 386.8  | 382.6  | 374.9  | 363.4  | 355.6  |
| 82.5°  | 262.9  | 262.9  | 259.2  | 243.7  | 243.7  |
| 85°    | 158.3  | 154.6  | 150.9  | 139.1  | 135.3  |
| 87.5°  | 69.7   | 61.9   | 54.2   | 42.6   | 38.6   |
| 90°    | 1.8    | 22.7   | 37.7   | 47.4   | 51.0   |
| 92.5°  | 47.4   | 39.8   | 45.4   | 49.2   | 51.0   |
| 95°    | 123.0  | 60.4   | 73.7   | 83.3   | 81.4   |
| 97.5°  | 221.4  | 66.3   | 96.4   | 102.2  | 104.0  |
| 100°   | 335.0  | 75.8   | 107.9  | 123.0  | 126.7  |
| 102.5° | 459.8  | 456.2  | 111.7  | 132.3  | 138.2  |
| 105°   | 575.2  | 632.1  | 115.5  | 136.2  | 143.8  |
| 107.5° | 709.6  | 756.8  | 119.3  | 140.0  | 147.7  |
| 110°   | 838.4  | 878.0  | 331.2  | 142.0  | 149.5  |

TEST NUMBER: P920289

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US935-FLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 959.5  | 993.4  | 961.3  | 145.6  | 151.4  |
| 115°   | 1088.0 | 1120.2 | 1167.6 | 291.4  | 155.2  |
| 117.5° | 1199.7 | 1237.5 | 1269.8 | 999.1  | 503.3  |
| 120°   | 1324.6 | 1353.0 | 1387.2 | 1409.8 | 1154.3 |
| 122.5° | 1430.5 | 1460.9 | 1498.8 | 1510.0 | 1512.1 |
| 125°   | 1538.3 | 1563.1 | 1599.0 | 1612.3 | 1617.9 |
| 127.5° | 1636.8 | 1663.3 | 1691.9 | 1710.7 | 1712.5 |
| 130°   | 1729.6 | 1760.0 | 1780.6 | 1801.5 | 1799.7 |
| 132.5° | 1824.2 | 1848.9 | 1869.6 | 1886.7 | 1884.9 |
| 135°   | 1903.8 | 1934.1 | 1950.9 | 1970.0 | 1966.3 |
| 137.5° | 1986.9 | 2009.6 | 2028.7 | 2047.5 | 2041.9 |
| 140°   | 2068.2 | 2083.5 | 2104.2 | 2121.2 | 2111.9 |
| 142.5° | 2136.6 | 2149.8 | 2174.3 | 2189.3 | 2180.0 |
| 145°   | 2208.5 | 2206.4 | 2238.6 | 2251.9 | 2242.4 |
| 147.5° | 2270.7 | 2265.1 | 2297.2 | 2306.7 | 2299.2 |
| 150°   | 2331.4 | 2318.2 | 2348.5 | 2359.7 | 2350.3 |
| 152.5° | 2382.4 | 2367.3 | 2395.6 | 2407.1 | 2393.8 |
| 155°   | 2431.6 | 2414.8 | 2437.4 | 2448.7 | 2433.6 |
| 157.5° | 2471.4 | 2456.3 | 2473.4 | 2486.6 | 2471.4 |
| 160°   | 2505.5 | 2494.1 | 2505.5 | 2516.8 | 2503.5 |
| 162.5° | 2535.6 | 2524.4 | 2533.8 | 2547.1 | 2530.0 |
| 165°   | 2562.2 | 2550.9 | 2556.6 | 2569.8 | 2556.6 |
| 167.5° | 2583.1 | 2571.6 | 2577.4 | 2590.7 | 2573.6 |
| 170°   | 2600.1 | 2588.7 | 2592.5 | 2605.7 | 2588.7 |
| 172.5° | 2611.4 | 2600.1 | 2603.9 | 2617.2 | 2600.1 |
| 175°   | 2620.8 | 2607.5 | 2611.4 | 2624.6 | 2605.7 |
| 177.5° | 2624.6 | 2611.4 | 2613.4 | 2626.6 | 2609.6 |
| 180°   | 2615.2 | 2615.2 | 2615.2 | 2615.2 | 2615.2 |

TEST NUMBER: P920289

CATALOG NUMBER: DFN2DIP-SQ3F0-120D090US935-FLLONL

**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 | 13.18            | 14.11 | 14.07 | 15.02 | 16.19 | 12.74          | 13.67 | 13.63 | 14.58 | 15.75 |
|                 | 3H   | 14.84            | 15.68 | 15.75 | 16.60 | 17.79 | 14.35          | 15.19 | 15.26 | 16.11 | 17.30 |
|                 | 4H   | 15.43            | 16.22 | 16.35 | 17.15 | 18.35 | 14.94          | 15.73 | 15.86 | 16.65 | 17.85 |
|                 | 6H   | 15.83            | 16.56 | 16.76 | 17.49 | 18.70 | 15.33          | 16.06 | 16.26 | 16.99 | 18.20 |
|                 | 8H   | 15.94            | 16.63 | 16.87 | 17.58 | 18.79 | 15.43          | 16.13 | 16.37 | 17.08 | 18.29 |
|                 | 12H  | 15.98            | 16.64 | 16.93 | 17.59 | 18.83 | 15.48          | 16.13 | 16.42 | 17.08 | 18.32 |
| 4H              | 2H   | 13.65            | 14.44 | 14.57 | 15.36 | 16.56 | 13.29          | 14.08 | 14.22 | 15.01 | 16.21 |
|                 | 3H   | 15.51            | 16.17 | 16.45 | 17.13 | 18.34 | 15.11          | 15.76 | 16.04 | 16.72 | 17.94 |
|                 | 4H   | 16.23            | 16.83 | 17.17 | 17.78 | 19.02 | 15.80          | 16.40 | 16.75 | 17.36 | 18.60 |
|                 | 6H   | 16.74            | 17.26 | 17.70 | 18.24 | 19.48 | 16.31          | 16.83 | 17.27 | 17.81 | 19.04 |
|                 | 8H   | 16.89            | 17.38 | 17.85 | 18.35 | 19.60 | 16.45          | 16.94 | 17.42 | 17.91 | 19.16 |
|                 | 12H  | 16.96            | 17.40 | 17.95 | 18.39 | 19.65 | 16.52          | 16.95 | 17.50 | 17.94 | 19.20 |
| 8H              | 4H   | 16.43            | 16.91 | 17.39 | 17.88 | 19.13 | 16.05          | 16.53 | 17.01 | 17.50 | 18.76 |
|                 | 6H   | 17.05            | 17.45 | 18.04 | 18.47 | 19.72 | 16.67          | 17.07 | 17.66 | 18.08 | 19.33 |
|                 | 8H   | 17.27            | 17.63 | 18.27 | 18.63 | 19.90 | 16.88          | 17.23 | 17.87 | 18.23 | 19.50 |
|                 | 12H  | 17.40            | 17.71 | 18.40 | 18.71 | 20.02 | 16.99          | 17.30 | 17.99 | 18.30 | 19.61 |
| 12H             | 4H   | 16.41            | 16.85 | 17.39 | 17.84 | 19.10 | 16.04          | 16.48 | 17.03 | 17.47 | 18.73 |
|                 | 6H   | 17.08            | 17.44 | 18.08 | 18.44 | 19.71 | 16.71          | 17.06 | 17.71 | 18.06 | 19.33 |
|                 | 8H   | 17.32            | 17.63 | 18.32 | 18.63 | 19.95 | 16.94          | 17.25 | 17.94 | 18.25 | 19.56 |