

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: P925236

Luminaire Tested: DFN2DIP-PN4F0-110D080US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P925236
REPORT IS A COMBINATION OF REPORTS P899695 AND P896497
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-PN4F0-110D080US950-FLLFLL
Description: 4 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

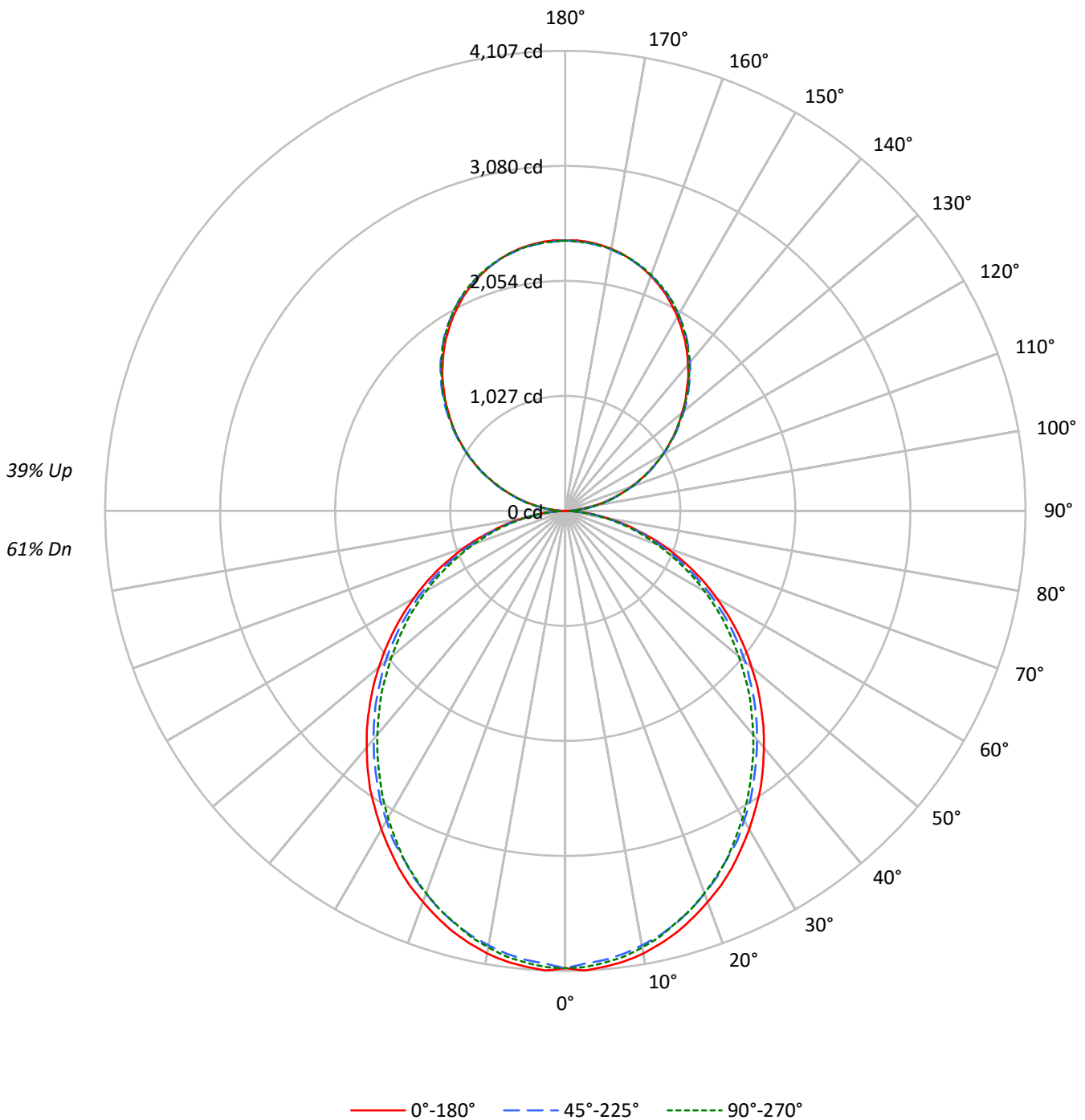
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 17143.4 lumens
Efficiency: N/A
Efficacy: 99.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 172.2
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.996
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: P925236

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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | | 20 | | | | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | | | 0 | |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | | |
| 0 | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 89 | 89 | 89 | 77 | 77 | 77 | 66 | 66 | 66 | 66 | 66 | 66 | 61 |
| 1 | 100 | 96 | 92 | 88 | 94 | 90 | 86 | 83 | 78 | 76 | 73 | 68 | 66 | 64 | 58 | 57 | 56 | 56 | 56 | 56 | 51 |
| 2 | 91 | 84 | 77 | 72 | 85 | 78 | 73 | 68 | 69 | 64 | 61 | 60 | 56 | 54 | 51 | 49 | 47 | 47 | 47 | 47 | 43 |
| 3 | 83 | 74 | 66 | 60 | 78 | 69 | 62 | 57 | 61 | 55 | 51 | 53 | 49 | 45 | 45 | 42 | 40 | 40 | 40 | 40 | 36 |
| 4 | 76 | 65 | 57 | 51 | 71 | 61 | 54 | 48 | 54 | 48 | 44 | 47 | 43 | 39 | 41 | 37 | 34 | 34 | 34 | 34 | 31 |
| 5 | 70 | 58 | 50 | 44 | 65 | 55 | 47 | 42 | 48 | 42 | 38 | 42 | 38 | 34 | 37 | 33 | 30 | 30 | 30 | 30 | 27 |
| 6 | 65 | 52 | 44 | 38 | 60 | 49 | 42 | 36 | 44 | 38 | 33 | 38 | 33 | 30 | 33 | 29 | 26 | 26 | 26 | 26 | 24 |
| 7 | 60 | 47 | 39 | 33 | 56 | 45 | 37 | 32 | 40 | 34 | 29 | 35 | 30 | 26 | 30 | 27 | 24 | 24 | 24 | 24 | 21 |
| 8 | 55 | 43 | 35 | 30 | 52 | 41 | 33 | 28 | 36 | 30 | 26 | 32 | 27 | 24 | 28 | 24 | 21 | 21 | 21 | 21 | 19 |
| 9 | 52 | 39 | 32 | 26 | 48 | 37 | 30 | 25 | 33 | 27 | 23 | 29 | 25 | 21 | 26 | 22 | 19 | 19 | 19 | 19 | 17 |
| 10 | 48 | 36 | 29 | 24 | 45 | 34 | 27 | 23 | 31 | 25 | 21 | 27 | 23 | 19 | 24 | 20 | 17 | 17 | 17 | 17 | 15 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|------|------|------|
| 0° | 2981 | 2981 | 2981 |
| 5° | 2985 | 2939 | 2959 |
| 10° | 2961 | 2900 | 2920 |
| 15° | 2918 | 2853 | 2858 |
| 20° | 2859 | 2787 | 2794 |
| 25° | 2800 | 2708 | 2721 |
| 30° | 2727 | 2635 | 2627 |
| 35° | 2657 | 2548 | 2528 |
| 40° | 2572 | 2460 | 2434 |
| 45° | 2487 | 2373 | 2337 |
| 50° | 2393 | 2281 | 2226 |
| 55° | 2296 | 2174 | 2123 |
| 60° | 2185 | 2048 | 2005 |
| 65° | 2065 | 1917 | 1867 |
| 70° | 1911 | 1758 | 1718 |
| 75° | 1699 | 1567 | 1581 |
| 80° | 1444 | 1324 | 1319 |
| 85° | 1044 | 903 | 882 |

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 2487 cd/sqm



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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 384.3 | 2.2 |
| 10°-20° | 1081.3 | 6.3 |
| 20°-30° | 1589.1 | 9.3 |
| 30°-40° | 1845.7 | 10.8 |
| 40°-50° | 1843.4 | 10.8 |
| 50°-60° | 1607.4 | 9.4 |
| 60°-70° | 1188.2 | 6.9 |
| 70°-80° | 672.3 | 3.9 |
| 80°-90° | 184.3 | 1.1 |
| 90°-100° | 149.4 | 0.9 |
| 100°-110° | 474.6 | 2.8 |
| 110°-120° | 812.1 | 4.7 |
| 120°-130° | 1068.1 | 6.2 |
| 130°-140° | 1198.9 | 7.0 |
| 140°-150° | 1175.6 | 6.9 |
| 150°-160° | 986.2 | 5.8 |
| 160°-170° | 654.0 | 3.8 |
| 170°-180° | 228.6 | 1.3 |
| 0°-30° | 3054.8 | 17.8 |
| 0°-40° | 4900.4 | 28.6 |
| 0°-60° | 8351.2 | 48.7 |
| 0°-90° | 10395.9 | 60.6 |
| 90°-120° | 1436.1 | 8.4 |
| 90°-150° | 4878.6 | 28.5 |
| 90°-180° | 6747.0 | 39.4 |
| 0°-180° | 17143.4 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|------|------|-------|------|-------|------|------|
| 0° | 4083 | 4083 | 4083 | 4083 | 4083 | |
| 5° | 4083 | 4068 | 4024 | 4056 | 4048 | 388 |
| 15° | 3887 | 3864 | 3812 | 3828 | 3809 | 1095 |
| 25° | 3518 | 3487 | 3420 | 3428 | 3420 | 1619 |
| 35° | 3035 | 2996 | 2933 | 2909 | 2890 | 1895 |
| 45° | 2470 | 2442 | 2383 | 2340 | 2324 | 1906 |
| 55° | 1869 | 1845 | 1798 | 1751 | 1732 | 1671 |
| 65° | 1260 | 1237 | 1198 | 1162 | 1143 | 1246 |
| 75° | 659 | 652 | 632 | 609 | 617 | 704 |
| 85° | 161 | 157 | 153 | 141 | 138 | 179 |
| 90° | 2 | 26 | 71 | 67 | 69 | 16 |
| 95° | 106 | 127 | 130 | 130 | 127 | 118 |
| 105° | 438 | 444 | 448 | 452 | 452 | 462 |
| 115° | 815 | 827 | 823 | 821 | 815 | 806 |
| 125° | 1185 | 1204 | 1198 | 1191 | 1189 | 1059 |
| 135° | 1533 | 1556 | 1560 | 1558 | 1552 | 1185 |
| 145° | 1861 | 1876 | 1888 | 1890 | 1882 | 1163 |
| 155° | 2128 | 2134 | 2141 | 2151 | 2144 | 980 |
| 165° | 2316 | 2313 | 2313 | 2328 | 2318 | 653 |
| 175° | 2409 | 2404 | 2399 | 2414 | 2401 | 229 |
| 180° | 2414 | 2414 | 2414 | 2414 | 2414 | |



TEST NUMBER: P925236

CATALOG NUMBER: DFN2DIP-PN4F0-110D080US950-FLLFLL

CANDELA DISTRIBUTION (FULL):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 0° | 4083.3 | 4083.3 | 4083.3 | 4083.3 | 4083.3 |
| 2.5° | 4107.0 | 4087.4 | 4044.1 | 4083.3 | 4075.8 |
| 5° | 4083.3 | 4067.9 | 4024.5 | 4055.7 | 4048.3 |
| 7.5° | 4055.7 | 4032.5 | 3989.2 | 4020.8 | 4012.9 |
| 10° | 4012.9 | 3985.3 | 3938.3 | 3969.5 | 3957.9 |
| 12.5° | 3953.8 | 3930.4 | 3883.4 | 3902.9 | 3895.0 |
| 15° | 3887.1 | 3863.7 | 3812.5 | 3828.3 | 3808.7 |
| 17.5° | 3804.6 | 3781.3 | 3730.0 | 3749.6 | 3730.0 |
| 20° | 3714.2 | 3690.8 | 3635.9 | 3647.5 | 3632.2 |
| 22.5° | 3624.2 | 3588.8 | 3537.5 | 3537.5 | 3529.6 |
| 25° | 3518.0 | 3486.8 | 3420.1 | 3427.6 | 3420.1 |
| 27.5° | 3400.1 | 3372.6 | 3321.7 | 3310.1 | 3290.5 |
| 30° | 3282.6 | 3250.9 | 3192.2 | 3180.5 | 3164.7 |
| 32.5° | 3156.8 | 3133.5 | 3070.5 | 3046.8 | 3031.0 |
| 35° | 3035.2 | 2996.0 | 2933.1 | 2909.3 | 2889.8 |
| 37.5° | 2897.7 | 2862.3 | 2799.4 | 2771.8 | 2752.3 |
| 40° | 2756.5 | 2724.8 | 2661.9 | 2626.9 | 2611.1 |
| 42.5° | 2619.0 | 2587.3 | 2524.9 | 2485.3 | 2462.0 |
| 45° | 2469.9 | 2442.3 | 2383.2 | 2340.4 | 2324.5 |
| 47.5° | 2324.5 | 2297.0 | 2234.1 | 2190.8 | 2167.4 |
| 50° | 2171.2 | 2151.7 | 2096.6 | 2041.7 | 2022.1 |
| 52.5° | 2022.1 | 1994.5 | 1943.8 | 1900.4 | 1872.9 |
| 55° | 1869.2 | 1845.4 | 1798.4 | 1751.3 | 1731.7 |
| 57.5° | 1715.9 | 1696.3 | 1645.1 | 1597.9 | 1582.1 |
| 60° | 1562.6 | 1547.2 | 1492.2 | 1448.8 | 1437.2 |
| 62.5° | 1413.4 | 1386.0 | 1346.8 | 1307.6 | 1291.8 |
| 65° | 1260.5 | 1236.8 | 1197.7 | 1162.3 | 1142.7 |
| 67.5° | 1103.5 | 1083.6 | 1048.5 | 1021.1 | 1005.2 |
| 70° | 958.1 | 942.3 | 906.9 | 879.4 | 863.9 |
| 72.5° | 809.0 | 793.2 | 773.6 | 746.1 | 734.4 |
| 75° | 659.4 | 652.0 | 631.9 | 608.7 | 616.6 |
| 77.5° | 526.1 | 510.3 | 502.4 | 490.7 | 479.1 |
| 80° | 392.9 | 388.7 | 380.7 | 369.1 | 361.2 |
| 82.5° | 267.0 | 267.0 | 263.3 | 247.5 | 247.5 |
| 85° | 160.8 | 157.0 | 153.3 | 141.2 | 137.5 |
| 87.5° | 70.8 | 62.9 | 55.0 | 43.3 | 39.1 |
| 90° | 2.2 | 26.2 | 71.4 | 67.0 | 69.2 |
| 92.5° | 45.1 | 61.2 | 63.3 | 65.4 | 65.4 |
| 95° | 106.3 | 126.6 | 130.2 | 130.2 | 126.6 |
| 97.5° | 176.9 | 195.8 | 203.8 | 203.8 | 203.8 |
| 100° | 258.3 | 275.0 | 280.9 | 280.9 | 278.7 |
| 102.5° | 344.2 | 356.6 | 364.5 | 366.7 | 364.5 |
| 105° | 438.1 | 443.9 | 448.3 | 451.9 | 451.9 |
| 107.5° | 531.2 | 540.0 | 540.0 | 541.4 | 531.2 |
| 110° | 621.4 | 633.1 | 633.1 | 633.1 | 627.3 |



TEST NUMBER: P925236

CATALOG NUMBER: DFN2DIP-PN4F0-110D080US950-FLLFLL

CANDELA DISTRIBUTION (continued):

| | 0° | 22.5° | 45° | 67.5° | 90° |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 718.9 | 731.3 | 729.1 | 723.3 | 718.9 |
| 115° | 815.0 | 826.6 | 823.0 | 820.8 | 815.0 |
| 117.5° | 910.3 | 926.3 | 916.1 | 910.3 | 904.5 |
| 120° | 1006.4 | 1022.4 | 1006.4 | 1006.4 | 999.8 |
| 122.5° | 1093.7 | 1114.1 | 1103.9 | 1098.1 | 1093.7 |
| 125° | 1185.3 | 1203.6 | 1197.7 | 1191.2 | 1189.1 |
| 127.5° | 1274.9 | 1297.4 | 1289.4 | 1280.7 | 1274.9 |
| 130° | 1358.6 | 1384.7 | 1381.1 | 1376.8 | 1368.8 |
| 132.5° | 1452.5 | 1472.8 | 1474.3 | 1464.1 | 1458.3 |
| 135° | 1533.2 | 1555.8 | 1560.2 | 1558.0 | 1552.2 |
| 137.5° | 1623.4 | 1641.6 | 1645.3 | 1643.8 | 1635.1 |
| 140° | 1702.8 | 1720.9 | 1731.1 | 1731.1 | 1723.1 |
| 142.5° | 1784.3 | 1802.5 | 1808.3 | 1810.5 | 1802.5 |
| 145° | 1861.4 | 1875.9 | 1887.6 | 1889.8 | 1881.8 |
| 147.5° | 1930.5 | 1948.7 | 1957.4 | 1961.1 | 1953.1 |
| 150° | 2001.9 | 2014.2 | 2022.2 | 2028.8 | 2022.2 |
| 152.5° | 2065.1 | 2077.5 | 2087.7 | 2095.7 | 2087.7 |
| 155° | 2128.5 | 2134.3 | 2140.9 | 2151.0 | 2144.5 |
| 157.5° | 2183.0 | 2187.4 | 2191.1 | 2205.6 | 2195.4 |
| 160° | 2231.8 | 2236.2 | 2238.4 | 2250.7 | 2242.0 |
| 162.5° | 2276.9 | 2276.9 | 2279.1 | 2292.9 | 2282.7 |
| 165° | 2315.5 | 2313.3 | 2313.3 | 2327.9 | 2317.6 |
| 167.5° | 2350.4 | 2343.9 | 2343.9 | 2358.4 | 2348.2 |
| 170° | 2376.6 | 2370.8 | 2368.6 | 2383.2 | 2370.8 |
| 172.5° | 2394.8 | 2389.0 | 2386.8 | 2401.3 | 2389.0 |
| 175° | 2409.3 | 2403.5 | 2399.1 | 2413.7 | 2401.3 |
| 177.5° | 2417.3 | 2411.5 | 2407.1 | 2419.5 | 2407.1 |
| 180° | 2413.7 | 2413.7 | 2413.7 | 2413.7 | 2413.7 |



TEST NUMBER: P925236
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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 | 12.00 | 12.97 | 12.86 | 13.85 | 14.96 | 11.56 | 12.53 | 12.42 | 13.41 | 14.52 |
| | 3H | 13.67 | 14.54 | 14.54 | 15.43 | 16.57 | 13.19 | 14.05 | 14.06 | 14.94 | 16.08 |
| | 4H | 14.27 | 15.08 | 15.15 | 15.98 | 17.13 | 13.78 | 14.60 | 14.67 | 15.50 | 16.64 |
| | 6H | 14.67 | 15.43 | 15.57 | 16.33 | 17.49 | 14.18 | 14.94 | 15.08 | 15.84 | 17.00 |
| | 8H | 14.78 | 15.50 | 15.69 | 16.42 | 17.58 | 14.29 | 15.01 | 15.20 | 15.93 | 17.09 |
| | 12H | 14.83 | 15.52 | 15.75 | 16.44 | 17.62 | 14.34 | 15.02 | 15.25 | 15.94 | 17.12 |
| 4H | 2H | 12.47 | 13.29 | 13.37 | 14.19 | 15.34 | 12.12 | 12.94 | 13.02 | 13.84 | 14.99 |
| | 3H | 14.35 | 15.04 | 15.26 | 15.97 | 17.13 | 13.95 | 14.63 | 14.85 | 15.56 | 16.73 |
| | 4H | 15.07 | 15.70 | 15.99 | 16.62 | 17.81 | 14.66 | 15.28 | 15.57 | 16.20 | 17.39 |
| | 6H | 15.60 | 16.14 | 16.53 | 17.08 | 18.27 | 15.17 | 15.71 | 16.10 | 16.66 | 17.85 |
| | 8H | 15.75 | 16.25 | 16.68 | 17.20 | 18.40 | 15.32 | 15.83 | 16.25 | 16.77 | 17.97 |
| | 12H | 15.83 | 16.29 | 16.78 | 17.25 | 18.45 | 15.39 | 15.84 | 16.34 | 16.81 | 18.01 |
| 8H | 4H | 15.28 | 15.78 | 16.21 | 16.72 | 17.93 | 14.91 | 15.41 | 15.84 | 16.35 | 17.56 |
| | 6H | 15.92 | 16.34 | 16.88 | 17.32 | 18.52 | 15.54 | 15.96 | 16.50 | 16.94 | 18.14 |
| | 8H | 16.14 | 16.51 | 17.11 | 17.48 | 18.70 | 15.76 | 16.13 | 16.72 | 17.10 | 18.32 |
| | 12H | 16.28 | 16.60 | 17.25 | 17.57 | 18.84 | 15.88 | 16.20 | 16.85 | 17.17 | 18.44 |
| 12H | 4H | 15.27 | 15.72 | 16.22 | 16.68 | 17.89 | 14.91 | 15.36 | 15.86 | 16.32 | 17.53 |
| | 6H | 15.95 | 16.32 | 16.92 | 17.29 | 18.51 | 15.58 | 15.95 | 16.55 | 16.93 | 18.15 |
| | 8H | 16.20 | 16.52 | 17.17 | 17.49 | 18.76 | 15.83 | 16.15 | 16.80 | 17.12 | 18.39 |