

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: P907368

Luminaire Tested: DFN2DIP-TR4F0-060D100US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907368  
REPORT IS A COMBINATION OF REPORTS P900482 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-060D100US835-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

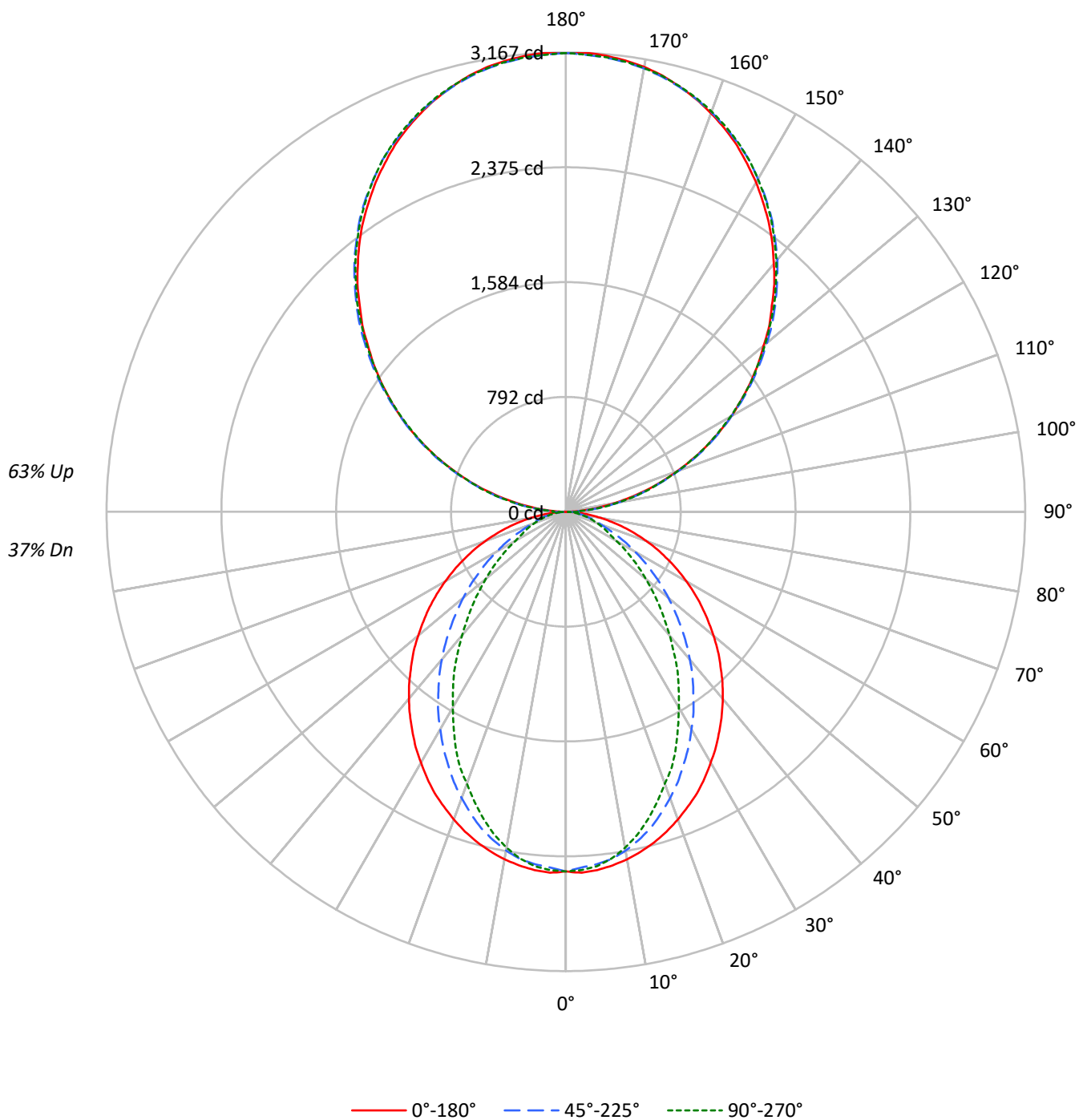
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13950.0 lumens  
Efficiency: N/A  
Efficacy: 107.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 129.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9781  
Total Harmonic Distortion (THDi): 0.075  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P907368

CATALOG NUMBER: DFN2DIP-TR4F0-060D100US835-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P907368

CATALOG NUMBER: DFN2DIP-TR4F0-060D100US835-RLLFLL

**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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 76 | 76 | 76 | 59 | 59 | 59 | 44 | 44 | 44 |
| 1   | 95  | 91  | 87  | 84  | 86 | 83 | 80 | 77 | 67 | 65 | 63 | 53 | 51 | 50 | 39 | 38 | 38 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 63 | 59 | 56 | 53 | 47 | 44 | 42 | 35 | 34 | 32 |
| 3   | 79  | 70  | 64  | 58  | 72 | 64 | 58 | 53 | 52 | 48 | 45 | 41 | 39 | 36 | 31 | 29 | 28 |
| 4   | 73  | 63  | 55  | 49  | 66 | 57 | 51 | 46 | 47 | 42 | 38 | 37 | 34 | 31 | 28 | 26 | 24 |
| 5   | 67  | 56  | 48  | 42  | 60 | 51 | 44 | 39 | 42 | 37 | 33 | 33 | 30 | 27 | 26 | 23 | 21 |
| 6   | 62  | 50  | 42  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 30 | 27 | 24 | 23 | 21 | 19 |
| 7   | 57  | 45  | 38  | 32  | 52 | 41 | 35 | 30 | 34 | 29 | 26 | 28 | 24 | 21 | 21 | 19 | 17 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 31 | 26 | 23 | 25 | 22 | 19 | 20 | 17 | 15 |
| 9   | 49  | 38  | 30  | 25  | 45 | 34 | 28 | 24 | 29 | 24 | 20 | 23 | 20 | 17 | 18 | 16 | 14 |
| 10  | 46  | 34  | 27  | 23  | 42 | 32 | 25 | 21 | 26 | 22 | 18 | 22 | 18 | 16 | 17 | 14 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1970 | 1970 | 1970 |
| 5°  | 1973 | 1939 | 1951 |
| 10° | 1954 | 1901 | 1888 |
| 15° | 1927 | 1838 | 1789 |
| 20° | 1891 | 1751 | 1669 |
| 25° | 1855 | 1654 | 1553 |
| 30° | 1806 | 1555 | 1405 |
| 35° | 1758 | 1448 | 1275 |
| 40° | 1709 | 1337 | 1127 |
| 45° | 1653 | 1214 | 992  |
| 50° | 1594 | 1090 | 861  |
| 55° | 1533 | 957  | 734  |
| 60° | 1462 | 819  | 604  |
| 65° | 1381 | 678  | 544  |
| 70° | 1282 | 547  | 492  |
| 75° | 1158 | 482  | 448  |
| 80° | 978  | 404  | 388  |
| 85° | 682  | 270  | 291  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2466 cd/sqm

TEST NUMBER: P907368

CATALOG NUMBER: DFN2DIP-TR4F0-060D100US835-RLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 232.4   | 1.7       |
| 10°-20°   | 638.0   | 4.6       |
| 20°-30°   | 895.7   | 6.4       |
| 30°-40°   | 976.4   | 7.0       |
| 40°-50°   | 897.4   | 6.4       |
| 50°-60°   | 704.8   | 5.1       |
| 60°-70°   | 458.8   | 3.3       |
| 70°-80°   | 236.1   | 1.7       |
| 80°-90°   | 69.3    | 0.5       |
| 90°-100°  | 195.7   | 1.4       |
| 100°-110° | 621.8   | 4.5       |
| 110°-120° | 1064.1  | 7.6       |
| 120°-130° | 1399.5  | 10.0      |
| 130°-140° | 1570.9  | 11.3      |
| 140°-150° | 1540.4  | 11.0      |
| 150°-160° | 1292.2  | 9.3       |
| 160°-170° | 856.9   | 6.1       |
| 170°-180° | 299.5   | 2.1       |
| 0°-30°    | 1766.2  | 12.7      |
| 0°-40°    | 2742.6  | 19.7      |
| 0°-60°    | 4344.8  | 31.1      |
| 0°-90°    | 5109.0  | 36.6      |
| 90°-120°  | 1881.6  | 13.5      |
| 90°-150°  | 6392.4  | 45.8      |
| 90°-180°  | 8841.0  | 63.4      |
| 0°-180°   | 13950.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2480 | 2480  | 2480 | 2480  | 2480 |      |
| 5°   | 2480 | 2469  | 2439 | 2460  | 2453 | 235  |
| 15°  | 2359 | 2334  | 2258 | 2215  | 2193 | 665  |
| 25°  | 2141 | 2069  | 1921 | 1829  | 1795 | 985  |
| 35°  | 1845 | 1730  | 1533 | 1391  | 1342 | 1155 |
| 45°  | 1508 | 1358  | 1122 | 963   | 909  | 1165 |
| 55°  | 1147 | 972   | 729  | 595   | 552  | 1025 |
| 65°  | 774  | 592   | 390  | 314   | 307  | 768  |
| 75°  | 413  | 256   | 180  | 164   | 162  | 437  |
| 85°  | 96   | 49    | 43   | 43    | 43   | 111  |
| 90°  | 3    | 34    | 93   | 88    | 91   | 14   |
| 95°  | 139  | 166   | 171  | 171   | 166  | 155  |
| 105° | 574  | 582   | 587  | 592   | 592  | 606  |
| 115° | 1068 | 1083  | 1078 | 1076  | 1068 | 1056 |
| 125° | 1553 | 1577  | 1569 | 1561  | 1558 | 1388 |
| 135° | 2009 | 2038  | 2044 | 2041  | 2034 | 1553 |
| 145° | 2439 | 2458  | 2473 | 2476  | 2466 | 1524 |
| 155° | 2789 | 2796  | 2805 | 2818  | 2810 | 1284 |
| 165° | 3034 | 3031  | 3031 | 3050  | 3037 | 856  |
| 175° | 3157 | 3149  | 3144 | 3163  | 3146 | 300  |
| 180° | 3163 | 3163  | 3163 | 3163  | 3163 |      |

TEST NUMBER: P907368

CATALOG NUMBER: DFN2DIP-TR4F0-060D100US835-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2479.8 | 2479.8 | 2479.8 | 2479.8 | 2479.8 |
| 2.5°   | 2491.0 | 2479.8 | 2455.0 | 2477.6 | 2473.1 |
| 5°     | 2479.8 | 2468.6 | 2439.3 | 2459.6 | 2452.9 |
| 7.5°   | 2459.6 | 2446.2 | 2414.8 | 2423.6 | 2412.4 |
| 10°    | 2432.6 | 2416.9 | 2372.2 | 2365.3 | 2351.9 |
| 12.5°  | 2399.1 | 2378.8 | 2318.1 | 2304.8 | 2280.0 |
| 15°    | 2358.6 | 2333.8 | 2257.6 | 2215.0 | 2192.6 |
| 17.5°  | 2311.5 | 2275.5 | 2181.2 | 2131.9 | 2096.0 |
| 20°    | 2257.6 | 2212.6 | 2100.5 | 2044.5 | 1995.0 |
| 22.5°  | 2199.3 | 2147.6 | 2017.4 | 1941.2 | 1907.6 |
| 25°    | 2141.0 | 2069.1 | 1921.0 | 1829.1 | 1795.3 |
| 27.5°  | 2071.5 | 1995.0 | 1831.2 | 1725.7 | 1674.1 |
| 30°    | 1997.4 | 1911.9 | 1732.4 | 1618.1 | 1557.4 |
| 32.5°  | 1925.5 | 1822.2 | 1638.4 | 1503.6 | 1447.4 |
| 35°    | 1844.8 | 1730.3 | 1532.9 | 1391.4 | 1341.9 |
| 37.5°  | 1766.2 | 1642.6 | 1434.1 | 1279.1 | 1223.1 |
| 40°    | 1683.1 | 1548.6 | 1330.7 | 1171.4 | 1113.1 |
| 42.5°  | 1597.9 | 1454.3 | 1227.6 | 1061.4 | 1005.5 |
| 45°    | 1508.1 | 1357.6 | 1122.2 | 962.6  | 908.8  |
| 47.5°  | 1422.9 | 1263.6 | 1021.2 | 861.7  | 812.4  |
| 50°    | 1328.6 | 1169.3 | 922.4  | 767.4  | 720.5  |
| 52.5°  | 1236.4 | 1068.1 | 828.1  | 680.0  | 637.4  |
| 55°    | 1146.7 | 971.7  | 729.3  | 594.8  | 552.1  |
| 57.5°  | 1054.8 | 875.2  | 641.9  | 516.2  | 480.2  |
| 60°    | 960.5  | 781.0  | 549.8  | 435.5  | 399.5  |
| 62.5°  | 868.6  | 689.1  | 471.2  | 363.6  | 345.7  |
| 65°    | 774.3  | 592.4  | 390.5  | 314.3  | 307.4  |
| 67.5°  | 684.5  | 502.6  | 314.3  | 276.0  | 269.3  |
| 70°    | 590.2  | 415.2  | 260.2  | 237.9  | 228.8  |
| 72.5°  | 500.5  | 334.3  | 217.6  | 199.8  | 195.2  |
| 75°    | 412.9  | 255.7  | 179.5  | 163.8  | 161.7  |
| 77.5°  | 325.5  | 181.7  | 141.4  | 132.4  | 127.9  |
| 80°    | 244.5  | 130.2  | 107.6  | 98.8   | 98.8   |
| 82.5°  | 170.5  | 87.6   | 74.0   | 69.5   | 69.5   |
| 85°    | 96.4   | 49.3   | 42.6   | 42.6   | 42.6   |
| 87.5°  | 36.0   | 17.9   | 17.9   | 15.7   | 15.7   |
| 90°    | 2.9    | 34.3   | 93.4   | 87.7   | 90.6   |
| 92.5°  | 59.1   | 80.1   | 83.0   | 85.8   | 85.8   |
| 95°    | 139.2  | 165.9  | 170.7  | 170.7  | 165.9  |
| 97.5°  | 231.7  | 256.5  | 267.0  | 267.0  | 267.0  |
| 100°   | 338.5  | 360.4  | 368.0  | 368.0  | 365.2  |
| 102.5° | 451.0  | 467.2  | 477.7  | 480.5  | 477.7  |
| 105°   | 574.0  | 581.6  | 587.3  | 592.1  | 592.1  |
| 107.5° | 696.0  | 707.5  | 707.5  | 709.4  | 696.0  |
| 110°   | 814.3  | 829.5  | 829.5  | 829.5  | 821.9  |

TEST NUMBER: P907368

CATALOG NUMBER: DFN2DIP-TR4F0-060D100US835-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 942.0  | 958.2  | 955.4  | 947.7  | 942.0  |
| 115°   | 1067.9 | 1083.1 | 1078.4 | 1075.5 | 1067.9 |
| 117.5° | 1192.8 | 1213.8 | 1200.4 | 1192.8 | 1185.1 |
| 120°   | 1318.6 | 1339.6 | 1318.6 | 1318.6 | 1310.1 |
| 122.5° | 1433.0 | 1459.7 | 1446.4 | 1438.8 | 1433.0 |
| 125°   | 1553.2 | 1577.0 | 1569.4 | 1560.8 | 1558.0 |
| 127.5° | 1670.5 | 1700.0 | 1689.5 | 1678.1 | 1670.5 |
| 130°   | 1780.1 | 1814.4 | 1809.7 | 1803.9 | 1793.5 |
| 132.5° | 1903.1 | 1929.8 | 1931.7 | 1918.4 | 1910.7 |
| 135°   | 2008.9 | 2038.5 | 2044.2 | 2041.4 | 2033.7 |
| 137.5° | 2127.2 | 2151.0 | 2155.8 | 2153.9 | 2142.4 |
| 140°   | 2231.1 | 2254.9 | 2268.3 | 2268.3 | 2257.8 |
| 142.5° | 2337.9 | 2361.7 | 2369.3 | 2372.2 | 2361.7 |
| 145°   | 2438.9 | 2458.0 | 2473.3 | 2476.1 | 2465.6 |
| 147.5° | 2529.5 | 2553.4 | 2564.8 | 2569.6 | 2559.1 |
| 150°   | 2623.0 | 2639.2 | 2649.7 | 2658.2 | 2649.7 |
| 152.5° | 2705.9 | 2722.1 | 2735.5 | 2746.0 | 2735.5 |
| 155°   | 2788.9 | 2796.5 | 2805.1 | 2818.4 | 2809.8 |
| 157.5° | 2860.4 | 2866.1 | 2870.9 | 2889.9 | 2876.6 |
| 160°   | 2924.3 | 2930.0 | 2932.8 | 2949.0 | 2937.6 |
| 162.5° | 2983.4 | 2983.4 | 2986.2 | 3004.3 | 2991.0 |
| 165°   | 3033.9 | 3031.0 | 3031.0 | 3050.1 | 3036.8 |
| 167.5° | 3079.7 | 3071.1 | 3071.1 | 3090.2 | 3076.8 |
| 170°   | 3114.0 | 3106.4 | 3103.5 | 3122.6 | 3106.4 |
| 172.5° | 3137.8 | 3130.2 | 3127.3 | 3146.4 | 3130.2 |
| 175°   | 3156.9 | 3149.3 | 3143.6 | 3162.6 | 3146.4 |
| 177.5° | 3167.4 | 3159.8 | 3154.0 | 3170.2 | 3154.0 |
| 180°   | 3162.6 | 3162.6 | 3162.6 | 3162.6 | 3162.6 |

TEST NUMBER: P907368

CATALOG NUMBER: DFN2DIP-TR4F0-060D100US835-RLLFLL

**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 | 8.10             | 8.83  | 9.17  | 9.90  | 11.35 | 4.07           | 4.81 | 5.14 | 5.87 | 7.33  |
|                 | 3H   | 9.77             | 10.43 | 10.85 | 11.50 | 12.97 | 5.26           | 5.91 | 6.34 | 6.99 | 8.46  |
|                 | 4H   | 10.37            | 10.99 | 11.46 | 12.07 | 13.55 | 5.70           | 6.32 | 6.79 | 7.40 | 8.88  |
|                 | 6H   | 10.79            | 11.36 | 11.89 | 12.44 | 13.93 | 6.02           | 6.59 | 7.12 | 7.67 | 9.16  |
|                 | 8H   | 10.91            | 11.46 | 12.02 | 12.55 | 14.04 | 6.11           | 6.65 | 7.21 | 7.75 | 9.23  |
|                 | 12H  | 10.97            | 11.49 | 12.08 | 12.58 | 14.08 | 6.15           | 6.66 | 7.26 | 7.75 | 9.26  |
| 4H              | 2H   | 8.11             | 8.73  | 9.20  | 9.81  | 11.28 | 4.66           | 5.28 | 5.76 | 6.36 | 7.83  |
|                 | 3H   | 9.93             | 10.44 | 11.03 | 11.55 | 13.04 | 6.00           | 6.52 | 7.10 | 7.62 | 9.11  |
|                 | 4H   | 10.62            | 11.09 | 11.72 | 12.18 | 13.69 | 6.55           | 7.02 | 7.65 | 8.11 | 9.62  |
|                 | 6H   | 11.13            | 11.53 | 12.24 | 12.65 | 14.15 | 6.96           | 7.37 | 8.08 | 8.48 | 9.99  |
|                 | 8H   | 11.30            | 11.68 | 12.41 | 12.79 | 14.31 | 7.09           | 7.47 | 8.20 | 8.58 | 10.09 |
|                 | 12H  | 11.39            | 11.73 | 12.52 | 12.85 | 14.38 | 7.15           | 7.49 | 8.28 | 8.61 | 10.14 |
| 8H              | 4H   | 10.58            | 10.95 | 11.69 | 12.06 | 13.58 | 6.82           | 7.20 | 7.93 | 8.31 | 9.83  |
|                 | 6H   | 11.14            | 11.45 | 12.27 | 12.60 | 14.12 | 7.33           | 7.65 | 8.47 | 8.80 | 10.31 |
|                 | 8H   | 11.35            | 11.63 | 12.50 | 12.76 | 14.30 | 7.53           | 7.80 | 8.67 | 8.93 | 10.47 |
|                 | 12H  | 11.49            | 11.73 | 12.63 | 12.86 | 14.43 | 7.64           | 7.88 | 8.79 | 9.01 | 10.58 |
| 12H             | 4H   | 10.52            | 10.87 | 11.66 | 11.99 | 13.51 | 6.82           | 7.16 | 7.95 | 8.28 | 9.81  |
|                 | 6H   | 11.11            | 11.39 | 12.26 | 12.52 | 14.06 | 7.38           | 7.66 | 8.52 | 8.79 | 10.32 |
|                 | 8H   | 11.33            | 11.57 | 12.48 | 12.70 | 14.27 | 7.59           | 7.83 | 8.74 | 8.96 | 10.53 |

END OF REPORT