

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: P926544

Luminaire Tested: DFN2DIP-TR4F0-080D120US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926544  
REPORT IS A COMBINATION OF REPORTS P900522 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-080D120US950-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

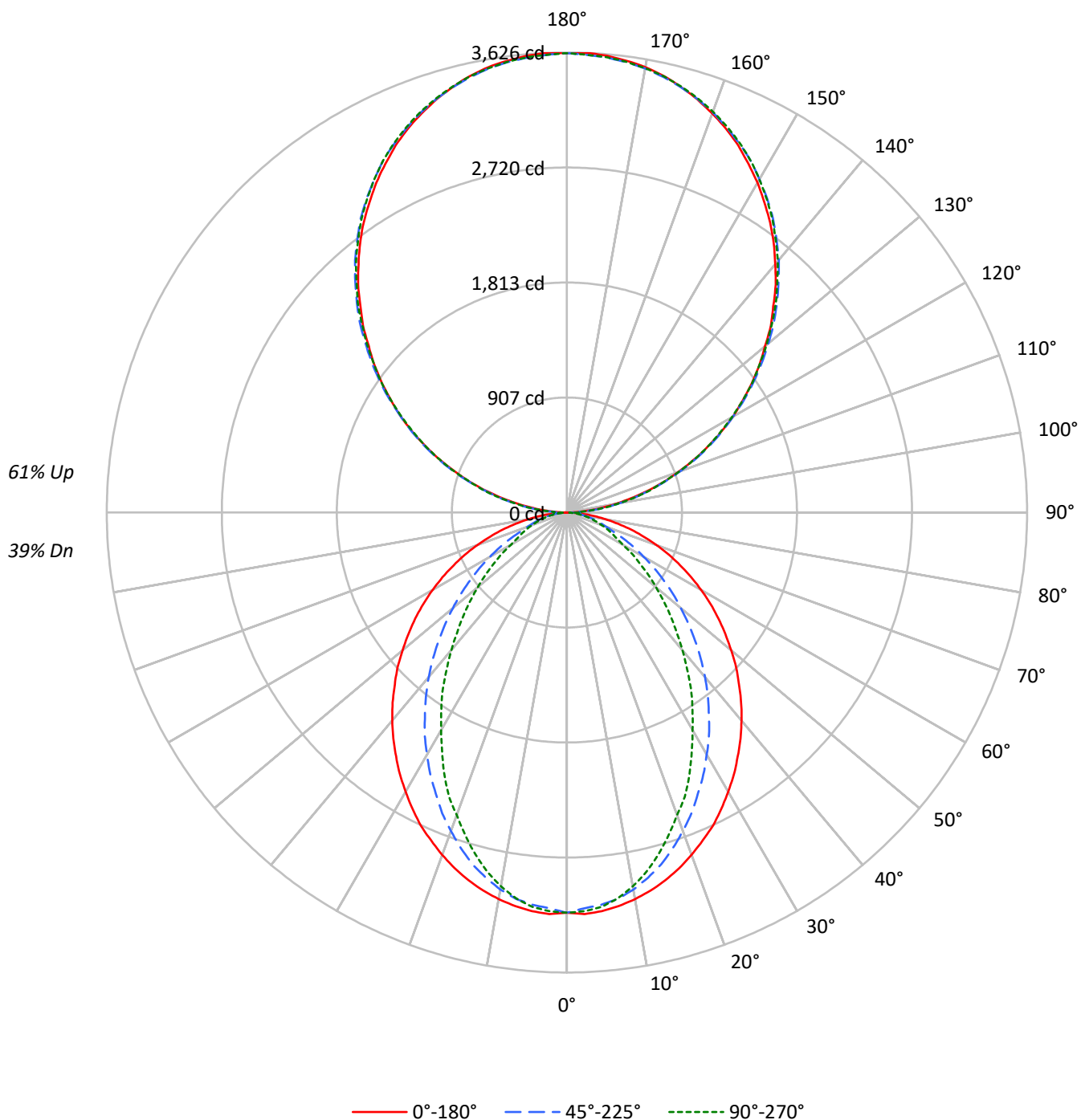
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16618.7 lumens  
Efficiency: N/A  
Efficacy: 99.9 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): 166.4  
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

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### Luminous Intensity Polar Plot



TEST NUMBER: P926544

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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 | 51 | 41 | 40 | 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  | 66 | 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 | 24 | 22 |
| 6   | 62  | 51  | 43  | 37  | 56 | 46 | 40 | 35 | 39 | 33 | 30 | 31 | 28 | 25 | 25 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 22 | 20 | 18 |
| 8   | 53  | 41  | 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°  | 2506 | 2506 | 2506 |
| 5°  | 2510 | 2466 | 2482 |
| 10° | 2485 | 2418 | 2401 |
| 15° | 2451 | 2338 | 2276 |
| 20° | 2406 | 2228 | 2123 |
| 25° | 2359 | 2104 | 1975 |
| 30° | 2297 | 1977 | 1787 |
| 35° | 2236 | 1841 | 1622 |
| 40° | 2174 | 1700 | 1433 |
| 45° | 2102 | 1544 | 1262 |
| 50° | 2027 | 1386 | 1095 |
| 55° | 1950 | 1218 | 934  |
| 60° | 1860 | 1042 | 769  |
| 65° | 1756 | 862  | 692  |
| 70° | 1631 | 695  | 626  |
| 75° | 1473 | 613  | 569  |
| 80° | 1244 | 514  | 493  |
| 85° | 868  | 343  | 370  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2822 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 295.6   | 1.8       |
| 10°-20°   | 811.5   | 4.9       |
| 20°-30°   | 1139.4  | 6.9       |
| 30°-40°   | 1242.0  | 7.5       |
| 40°-50°   | 1141.5  | 6.9       |
| 50°-60°   | 896.5   | 5.4       |
| 60°-70°   | 583.5   | 3.5       |
| 70°-80°   | 300.4   | 1.8       |
| 80°-90°   | 87.0    | 0.5       |
| 90°-100°  | 224.0   | 1.3       |
| 100°-110° | 711.8   | 4.3       |
| 110°-120° | 1218.2  | 7.3       |
| 120°-130° | 1602.1  | 9.6       |
| 130°-140° | 1798.3  | 10.8      |
| 140°-150° | 1763.5  | 10.6      |
| 150°-160° | 1479.3  | 8.9       |
| 160°-170° | 981.0   | 5.9       |
| 170°-180° | 342.9   | 2.1       |
| 0°-30°    | 2246.6  | 13.5      |
| 0°-40°    | 3488.6  | 21.0      |
| 0°-60°    | 5526.6  | 33.3      |
| 0°-90°    | 6497.5  | 39.1      |
| 90°-120°  | 2154.1  | 13.0      |
| 90°-150°  | 7318.0  | 44.0      |
| 90°-180°  | 10121.0 | 60.9      |
| 0°-180°   | 16618.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3154 | 3154  | 3154 | 3154  | 3154 |      |
| 5°   | 3154 | 3140  | 3103 | 3128  | 3120 | 299  |
| 15°  | 3000 | 2969  | 2872 | 2818  | 2789 | 845  |
| 25°  | 2723 | 2632  | 2444 | 2327  | 2284 | 1252 |
| 35°  | 2347 | 2201  | 1950 | 1770  | 1707 | 1469 |
| 45°  | 1918 | 1727  | 1427 | 1224  | 1156 | 1481 |
| 55°  | 1459 | 1236  | 928  | 756   | 702  | 1303 |
| 65°  | 985  | 754   | 497  | 400   | 391  | 976  |
| 75°  | 525  | 325   | 228  | 208   | 206  | 555  |
| 85°  | 123  | 63    | 54   | 54    | 54   | 141  |
| 90°  | 3    | 39    | 107  | 100   | 104  | 16   |
| 95°  | 159  | 190   | 195  | 195   | 190  | 177  |
| 105° | 657  | 666   | 672  | 678   | 678  | 693  |
| 115° | 1222 | 1240  | 1234 | 1231  | 1222 | 1209 |
| 125° | 1778 | 1805  | 1797 | 1787  | 1784 | 1589 |
| 135° | 2300 | 2334  | 2340 | 2337  | 2328 | 1778 |
| 145° | 2792 | 2814  | 2831 | 2835  | 2823 | 1745 |
| 155° | 3193 | 3201  | 3211 | 3226  | 3217 | 1470 |
| 165° | 3473 | 3470  | 3470 | 3492  | 3476 | 980  |
| 175° | 3614 | 3605  | 3599 | 3620  | 3602 | 343  |
| 180° | 3620 | 3620  | 3620 | 3620  | 3620 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3154.3 | 3154.3 | 3154.3 | 3154.3 | 3154.3 |
| 2.5°   | 3168.5 | 3154.3 | 3122.8 | 3151.5 | 3145.8 |
| 5°     | 3154.3 | 3140.1 | 3102.8 | 3128.5 | 3120.1 |
| 7.5°   | 3128.5 | 3111.6 | 3071.6 | 3082.9 | 3068.5 |
| 10°    | 3094.3 | 3074.4 | 3017.4 | 3008.6 | 2991.6 |
| 12.5°  | 3051.7 | 3025.9 | 2948.6 | 2931.6 | 2900.2 |
| 15°    | 3000.1 | 2968.7 | 2871.7 | 2817.5 | 2789.0 |
| 17.5°  | 2940.1 | 2894.4 | 2774.5 | 2711.8 | 2666.0 |
| 20°    | 2871.7 | 2814.5 | 2671.9 | 2600.7 | 2537.6 |
| 22.5°  | 2797.5 | 2731.8 | 2566.2 | 2469.2 | 2426.5 |
| 25°    | 2723.3 | 2631.9 | 2443.5 | 2326.6 | 2283.6 |
| 27.5°  | 2634.9 | 2537.6 | 2329.3 | 2195.2 | 2129.4 |
| 30°    | 2540.7 | 2431.9 | 2203.6 | 2058.3 | 1981.0 |
| 32.5°  | 2449.2 | 2317.8 | 2084.0 | 1912.6 | 1841.1 |
| 35°    | 2346.6 | 2200.9 | 1949.8 | 1770.0 | 1706.9 |
| 37.5°  | 2246.6 | 2089.5 | 1824.1 | 1627.0 | 1555.8 |
| 40°    | 2141.0 | 1969.8 | 1692.7 | 1490.1 | 1415.8 |
| 42.5°  | 2032.5 | 1849.9 | 1561.5 | 1350.2 | 1278.9 |
| 45°    | 1918.3 | 1726.9 | 1427.4 | 1224.5 | 1156.1 |
| 47.5°  | 1809.9 | 1607.3 | 1299.0 | 1096.1 | 1033.4 |
| 50°    | 1689.9 | 1487.4 | 1173.3 | 976.1  | 916.4  |
| 52.5°  | 1572.8 | 1358.6 | 1053.3 | 865.0  | 810.8  |
| 55°    | 1458.6 | 1236.0 | 927.7  | 756.5  | 702.3  |
| 57.5°  | 1341.7 | 1113.3 | 816.5  | 656.6  | 610.8  |
| 60°    | 1221.7 | 993.4  | 699.3  | 553.9  | 508.2  |
| 62.5°  | 1104.8 | 876.4  | 599.4  | 462.5  | 439.8  |
| 65°    | 984.9  | 753.5  | 496.7  | 399.8  | 390.9  |
| 67.5°  | 870.7  | 639.4  | 399.8  | 351.0  | 342.6  |
| 70°    | 750.8  | 528.2  | 331.0  | 302.5  | 291.1  |
| 72.5°  | 636.6  | 425.2  | 276.9  | 254.1  | 248.3  |
| 75°    | 525.2  | 325.3  | 228.4  | 208.4  | 205.7  |
| 77.5°  | 414.0  | 231.1  | 179.9  | 168.4  | 162.7  |
| 80°    | 311.0  | 165.7  | 136.9  | 125.6  | 125.6  |
| 82.5°  | 216.8  | 111.4  | 94.2   | 88.4   | 88.4   |
| 85°    | 122.7  | 62.7   | 54.2   | 54.2   | 54.2   |
| 87.5°  | 45.7   | 22.7   | 22.7   | 20.0   | 20.0   |
| 90°    | 3.2    | 39.3   | 106.9  | 100.5  | 103.7  |
| 92.5°  | 67.6   | 91.7   | 94.9   | 98.3   | 98.3   |
| 95°    | 159.3  | 189.9  | 195.4  | 195.4  | 189.9  |
| 97.5°  | 265.2  | 293.6  | 305.7  | 305.7  | 305.7  |
| 100°   | 387.5  | 412.6  | 421.3  | 421.3  | 418.0  |
| 102.5° | 516.3  | 534.8  | 546.8  | 550.2  | 546.8  |
| 105°   | 657.1  | 665.8  | 672.4  | 677.8  | 677.8  |
| 107.5° | 796.8  | 809.9  | 809.9  | 812.0  | 796.8  |
| 110°   | 932.2  | 949.6  | 949.6  | 949.6  | 940.9  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1078.4 | 1097.0 | 1093.7 | 1085.0 | 1078.4 |
| 115°   | 1222.5 | 1240.0 | 1234.5 | 1231.2 | 1222.5 |
| 117.5° | 1365.5 | 1389.5 | 1374.2 | 1365.5 | 1356.8 |
| 120°   | 1509.6 | 1533.6 | 1509.6 | 1509.6 | 1499.8 |
| 122.5° | 1640.6 | 1671.1 | 1655.9 | 1647.1 | 1640.6 |
| 125°   | 1778.1 | 1805.3 | 1796.7 | 1786.8 | 1783.5 |
| 127.5° | 1912.4 | 1946.2 | 1934.1 | 1921.1 | 1912.4 |
| 130°   | 2037.8 | 2077.1 | 2071.7 | 2065.1 | 2053.1 |
| 132.5° | 2178.6 | 2209.3 | 2211.4 | 2196.1 | 2187.4 |
| 135°   | 2299.8 | 2333.7 | 2340.3 | 2336.9 | 2328.2 |
| 137.5° | 2435.2 | 2462.5 | 2467.9 | 2465.7 | 2452.6 |
| 140°   | 2554.1 | 2581.4 | 2596.7 | 2596.7 | 2584.7 |
| 142.5° | 2676.4 | 2703.7 | 2712.4 | 2715.7 | 2703.7 |
| 145°   | 2792.1 | 2813.9 | 2831.4 | 2834.7 | 2822.7 |
| 147.5° | 2895.8 | 2923.1 | 2936.2 | 2941.7 | 2929.6 |
| 150°   | 3002.8 | 3021.3 | 3033.3 | 3043.2 | 3033.3 |
| 152.5° | 3097.7 | 3116.2 | 3131.6 | 3143.6 | 3131.6 |
| 155°   | 3192.7 | 3201.4 | 3211.3 | 3226.5 | 3216.7 |
| 157.5° | 3274.6 | 3281.1 | 3286.5 | 3308.4 | 3293.1 |
| 160°   | 3347.7 | 3354.3 | 3357.5 | 3376.1 | 3362.9 |
| 162.5° | 3415.3 | 3415.3 | 3418.7 | 3439.4 | 3424.1 |
| 165°   | 3473.2 | 3470.0 | 3470.0 | 3491.7 | 3476.5 |
| 167.5° | 3525.6 | 3515.8 | 3515.8 | 3537.6 | 3522.4 |
| 170°   | 3564.9 | 3556.1 | 3552.9 | 3574.7 | 3556.1 |
| 172.5° | 3592.2 | 3583.4 | 3580.2 | 3602.0 | 3583.4 |
| 175°   | 3614.0 | 3605.3 | 3598.8 | 3620.5 | 3602.0 |
| 177.5° | 3626.1 | 3617.3 | 3610.7 | 3629.3 | 3610.7 |
| 180°   | 3620.5 | 3620.5 | 3620.5 | 3620.5 | 3620.5 |

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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 | 9.22             | 9.97  | 10.27 | 11.02 | 12.44 | 5.19           | 5.94 | 6.25 | 6.99  | 8.42  |
|                 | 3H   | 10.89            | 11.56 | 11.95 | 12.62 | 14.06 | 6.38           | 7.05 | 7.44 | 8.11  | 9.55  |
|                 | 4H   | 11.50            | 12.13 | 12.57 | 13.19 | 14.64 | 6.82           | 7.46 | 7.90 | 8.52  | 9.97  |
|                 | 6H   | 11.91            | 12.50 | 12.99 | 13.56 | 15.02 | 7.14           | 7.73 | 8.22 | 8.79  | 10.25 |
|                 | 8H   | 12.04            | 12.59 | 13.12 | 13.67 | 15.13 | 7.23           | 7.79 | 8.32 | 8.87  | 10.32 |
|                 | 12H  | 12.10            | 12.62 | 13.19 | 13.70 | 15.17 | 7.27           | 7.80 | 8.36 | 8.87  | 10.35 |
| 4H              | 2H   | 9.23             | 9.86  | 10.31 | 10.93 | 12.37 | 5.78           | 6.41 | 6.86 | 7.48  | 8.92  |
|                 | 3H   | 11.05            | 11.58 | 12.14 | 12.67 | 14.13 | 7.12           | 7.65 | 8.21 | 8.74  | 10.20 |
|                 | 4H   | 11.74            | 12.22 | 12.83 | 13.30 | 14.78 | 7.67           | 8.15 | 8.76 | 9.23  | 10.71 |
|                 | 6H   | 12.25            | 12.66 | 13.35 | 13.77 | 15.24 | 8.08           | 8.50 | 9.18 | 9.60  | 11.08 |
|                 | 8H   | 12.42            | 12.81 | 13.52 | 13.91 | 15.40 | 8.21           | 8.60 | 9.31 | 9.69  | 11.18 |
|                 | 12H  | 12.51            | 12.86 | 13.63 | 13.97 | 15.47 | 8.27           | 8.62 | 9.39 | 9.73  | 11.23 |
| 8H              | 4H   | 11.70            | 12.09 | 12.80 | 13.18 | 14.67 | 7.94           | 8.33 | 9.04 | 9.42  | 10.91 |
|                 | 6H   | 12.26            | 12.58 | 13.39 | 13.72 | 15.21 | 8.46           | 8.78 | 9.58 | 9.92  | 11.40 |
|                 | 8H   | 12.48            | 12.76 | 13.61 | 13.88 | 15.39 | 8.65           | 8.93 | 9.78 | 10.05 | 11.56 |
|                 | 12H  | 12.62            | 12.86 | 13.75 | 13.98 | 15.52 | 8.77           | 9.01 | 9.90 | 10.13 | 11.67 |
| 12H             | 4H   | 11.65            | 12.00 | 12.77 | 13.11 | 14.60 | 7.94           | 8.29 | 9.06 | 9.40  | 10.90 |
|                 | 6H   | 12.24            | 12.52 | 13.37 | 13.64 | 15.14 | 8.51           | 8.79 | 9.63 | 9.91  | 11.41 |
|                 | 8H   | 12.46            | 12.70 | 13.59 | 13.82 | 15.36 | 8.72           | 8.96 | 9.85 | 10.08 | 11.62 |

END OF REPORT