

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: P911214

Luminaire Tested: DFN2DIP-PN3F0-050D090US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911214  
REPORT IS A COMBINATION OF REPORTS P899600 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-050D090US850-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

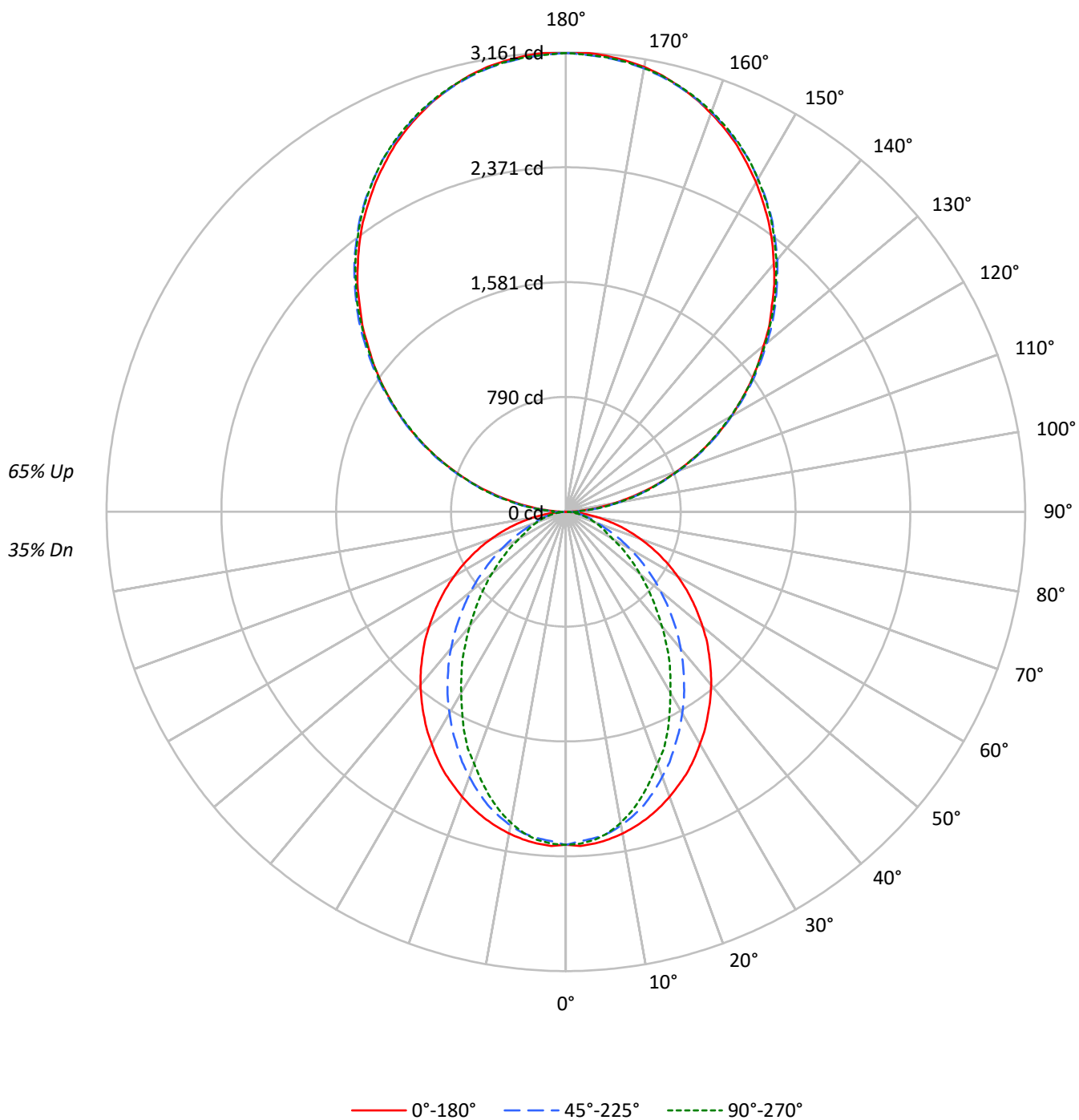
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13546.5 lumens  
Efficiency: N/A  
Efficacy: 116.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 116.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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: P911214

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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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 75 | 75 | 75 | 58 | 58 | 58 | 42 | 42 | 42 |
| 1   | 95  | 91  | 87  | 84  | 85 | 82 | 79 | 76 | 66 | 64 | 62 | 51 | 50 | 49 | 38 | 37 | 36 |
| 2   | 86  | 79  | 74  | 69  | 78 | 72 | 67 | 63 | 58 | 55 | 52 | 45 | 43 | 41 | 34 | 32 | 31 |
| 3   | 79  | 70  | 63  | 58  | 71 | 64 | 58 | 53 | 52 | 47 | 44 | 40 | 38 | 35 | 30 | 28 | 27 |
| 4   | 72  | 62  | 55  | 49  | 65 | 57 | 50 | 45 | 46 | 41 | 38 | 36 | 33 | 30 | 27 | 25 | 23 |
| 5   | 67  | 55  | 48  | 42  | 60 | 51 | 44 | 39 | 41 | 36 | 33 | 33 | 29 | 26 | 25 | 22 | 21 |
| 6   | 61  | 50  | 42  | 37  | 55 | 45 | 39 | 34 | 37 | 32 | 29 | 30 | 26 | 23 | 22 | 20 | 18 |
| 7   | 57  | 45  | 37  | 32  | 51 | 41 | 34 | 30 | 34 | 29 | 25 | 27 | 23 | 21 | 21 | 18 | 16 |
| 8   | 53  | 41  | 33  | 28  | 48 | 37 | 31 | 26 | 31 | 26 | 22 | 25 | 21 | 19 | 19 | 16 | 15 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 28 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 17 | 15 | 13 |
| 10  | 46  | 34  | 27  | 23  | 41 | 31 | 25 | 21 | 26 | 21 | 18 | 21 | 18 | 15 | 16 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2679 | 2679 | 2679 |
| 5°  | 2682 | 2635 | 2652 |
| 10° | 2654 | 2581 | 2565 |
| 15° | 2615 | 2494 | 2430 |
| 20° | 2566 | 2375 | 2266 |
| 25° | 2514 | 2241 | 2107 |
| 30° | 2446 | 2105 | 1906 |
| 35° | 2379 | 1958 | 1729 |
| 40° | 2311 | 1806 | 1527 |
| 45° | 2232 | 1638 | 1343 |
| 50° | 2151 | 1469 | 1164 |
| 55° | 2065 | 1288 | 992  |
| 60° | 1966 | 1099 | 815  |
| 65° | 1852 | 908  | 733  |
| 70° | 1713 | 729  | 661  |
| 75° | 1539 | 638  | 599  |
| 80° | 1287 | 530  | 516  |
| 85° | 875  | 345  | 381  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3127 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 214.8   | 1.6       |
| 10°-20°   | 589.6   | 4.4       |
| 20°-30°   | 827.8   | 6.1       |
| 30°-40°   | 902.4   | 6.7       |
| 40°-50°   | 829.4   | 6.1       |
| 50°-60°   | 651.3   | 4.8       |
| 60°-70°   | 424.0   | 3.1       |
| 70°-80°   | 218.2   | 1.6       |
| 80°-90°   | 64.7    | 0.5       |
| 90°-100°  | 195.3   | 1.4       |
| 100°-110° | 620.6   | 4.6       |
| 110°-120° | 1062.1  | 7.8       |
| 120°-130° | 1396.8  | 10.3      |
| 130°-140° | 1567.9  | 11.6      |
| 140°-150° | 1537.5  | 11.3      |
| 150°-160° | 1289.7  | 9.5       |
| 160°-170° | 855.3   | 6.3       |
| 170°-180° | 299.0   | 2.2       |
| 0°-30°    | 1632.2  | 12.0      |
| 0°-40°    | 2534.6  | 18.7      |
| 0°-60°    | 4015.3  | 29.6      |
| 0°-90°    | 4722.2  | 34.9      |
| 90°-120°  | 1878.1  | 13.9      |
| 90°-150°  | 6380.2  | 47.1      |
| 90°-180°  | 8824.0  | 65.1      |
| 0°-180°   | 13546.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2292 | 2292  | 2292 | 2292  | 2292 |      |
| 5°   | 2292 | 2281  | 2254 | 2273  | 2267 | 217  |
| 15°  | 2180 | 2157  | 2086 | 2047  | 2026 | 614  |
| 25°  | 1979 | 1912  | 1775 | 1690  | 1659 | 910  |
| 35°  | 1705 | 1599  | 1417 | 1286  | 1240 | 1067 |
| 45°  | 1394 | 1255  | 1037 | 890   | 840  | 1076 |
| 55°  | 1060 | 898   | 674  | 550   | 510  | 947  |
| 65°  | 716  | 548   | 361  | 290   | 284  | 709  |
| 75°  | 382  | 236   | 166  | 151   | 149  | 404  |
| 85°  | 89   | 46    | 39   | 39    | 39   | 102  |
| 90°  | 3    | 34    | 93   | 88    | 90   | 13   |
| 95°  | 139  | 166   | 170  | 170   | 166  | 155  |
| 105° | 573  | 580   | 586  | 591   | 591  | 605  |
| 115° | 1066 | 1081  | 1076 | 1074  | 1066 | 1054 |
| 125° | 1550 | 1574  | 1566 | 1558  | 1555 | 1385 |
| 135° | 2005 | 2035  | 2040 | 2038  | 2030 | 1550 |
| 145° | 2434 | 2453  | 2468 | 2471  | 2461 | 1521 |
| 155° | 2784 | 2791  | 2800 | 2813  | 2805 | 1281 |
| 165° | 3028 | 3025  | 3025 | 3044  | 3031 | 854  |
| 175° | 3151 | 3143  | 3138 | 3157  | 3140 | 299  |
| 180° | 3157 | 3157  | 3157 | 3157  | 3157 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2291.7 | 2291.7 | 2291.7 | 2291.7 | 2291.7 |
| 2.5°   | 2302.1 | 2291.7 | 2268.9 | 2289.8 | 2285.5 |
| 5°     | 2291.7 | 2281.4 | 2254.4 | 2273.0 | 2266.9 |
| 7.5°   | 2273.0 | 2260.7 | 2231.6 | 2239.8 | 2229.4 |
| 10°    | 2248.2 | 2233.6 | 2192.3 | 2185.9 | 2173.5 |
| 12.5°  | 2217.1 | 2198.5 | 2142.4 | 2130.1 | 2107.1 |
| 15°    | 2179.7 | 2156.9 | 2086.5 | 2047.1 | 2026.4 |
| 17.5°  | 2136.2 | 2103.0 | 2015.8 | 1970.2 | 1937.0 |
| 20°    | 2086.5 | 2044.9 | 1941.2 | 1889.5 | 1843.7 |
| 22.5°  | 2032.6 | 1984.8 | 1864.5 | 1794.0 | 1763.0 |
| 25°    | 1978.6 | 1912.1 | 1775.3 | 1690.3 | 1659.1 |
| 27.5°  | 1914.4 | 1843.7 | 1692.3 | 1594.9 | 1547.2 |
| 30°    | 1845.9 | 1767.0 | 1601.1 | 1495.4 | 1439.3 |
| 32.5°  | 1779.5 | 1684.0 | 1514.1 | 1389.6 | 1337.7 |
| 35°    | 1704.9 | 1599.1 | 1416.6 | 1285.9 | 1240.2 |
| 37.5°  | 1632.2 | 1518.1 | 1325.4 | 1182.1 | 1130.4 |
| 40°    | 1555.5 | 1431.2 | 1229.8 | 1082.6 | 1028.7 |
| 42.5°  | 1476.7 | 1344.0 | 1134.5 | 980.9  | 929.2  |
| 45°    | 1393.8 | 1254.7 | 1037.0 | 889.6  | 839.8  |
| 47.5°  | 1314.9 | 1167.8 | 943.8  | 796.4  | 750.8  |
| 50°    | 1227.9 | 1080.6 | 852.5  | 709.2  | 665.8  |
| 52.5°  | 1142.7 | 987.1  | 765.3  | 628.5  | 589.1  |
| 55°    | 1059.8 | 898.0  | 673.9  | 549.6  | 510.3  |
| 57.5°  | 974.8  | 808.9  | 593.2  | 477.1  | 443.8  |
| 60°    | 887.6  | 721.7  | 508.0  | 402.5  | 369.2  |
| 62.5°  | 802.7  | 636.8  | 435.5  | 336.0  | 319.5  |
| 65°    | 715.5  | 547.5  | 360.9  | 290.4  | 284.1  |
| 67.5°  | 632.6  | 464.6  | 290.4  | 255.1  | 248.9  |
| 70°    | 545.5  | 383.7  | 240.5  | 219.8  | 211.5  |
| 72.5°  | 462.6  | 309.0  | 201.2  | 184.6  | 180.4  |
| 75°    | 381.6  | 236.3  | 165.9  | 151.4  | 149.4  |
| 77.5°  | 300.8  | 167.9  | 130.8  | 122.3  | 118.1  |
| 80°    | 226.0  | 120.3  | 99.5   | 91.3   | 91.3   |
| 82.5°  | 157.6  | 81.0   | 68.4   | 64.2   | 64.2   |
| 85°    | 89.2   | 45.6   | 39.4   | 39.4   | 39.4   |
| 87.5°  | 33.3   | 16.5   | 16.5   | 14.5   | 14.5   |
| 90°    | 2.9    | 34.3   | 93.3   | 87.5   | 90.4   |
| 92.5°  | 59.0   | 80.0   | 82.8   | 85.6   | 85.6   |
| 95°    | 139.0  | 165.6  | 170.3  | 170.3  | 165.6  |
| 97.5°  | 231.2  | 256.0  | 266.5  | 266.5  | 266.5  |
| 100°   | 337.8  | 359.8  | 367.3  | 367.3  | 364.5  |
| 102.5° | 450.1  | 466.3  | 476.8  | 479.6  | 476.8  |
| 105°   | 572.9  | 580.5  | 586.2  | 591.0  | 591.0  |
| 107.5° | 694.7  | 706.1  | 706.1  | 708.0  | 694.7  |
| 110°   | 812.7  | 828.0  | 828.0  | 828.0  | 820.3  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 940.2  | 956.4  | 953.5  | 946.0  | 940.2  |
| 115°   | 1065.9 | 1081.1 | 1076.3 | 1073.5 | 1065.9 |
| 117.5° | 1190.5 | 1211.5 | 1198.2 | 1190.5 | 1182.9 |
| 120°   | 1316.2 | 1337.0 | 1316.2 | 1316.2 | 1307.5 |
| 122.5° | 1430.3 | 1457.0 | 1443.7 | 1436.0 | 1430.3 |
| 125°   | 1550.3 | 1574.0 | 1566.5 | 1557.8 | 1555.0 |
| 127.5° | 1667.3 | 1696.8 | 1686.3 | 1674.9 | 1667.3 |
| 130°   | 1776.7 | 1811.0 | 1806.2 | 1800.5 | 1790.0 |
| 132.5° | 1899.5 | 1926.1 | 1928.0 | 1914.7 | 1907.1 |
| 135°   | 2005.1 | 2034.6 | 2040.3 | 2037.5 | 2029.9 |
| 137.5° | 2123.1 | 2146.9 | 2151.7 | 2149.8 | 2138.4 |
| 140°   | 2226.9 | 2250.6 | 2263.9 | 2263.9 | 2253.5 |
| 142.5° | 2333.4 | 2357.2 | 2364.8 | 2367.7 | 2357.2 |
| 145°   | 2434.4 | 2453.3 | 2468.5 | 2471.4 | 2461.0 |
| 147.5° | 2524.7 | 2548.5 | 2559.9 | 2564.7 | 2554.2 |
| 150°   | 2618.0 | 2634.2 | 2644.6 | 2653.2 | 2644.6 |
| 152.5° | 2700.7 | 2716.9 | 2730.2 | 2740.8 | 2730.2 |
| 155°   | 2783.6 | 2791.1 | 2799.8 | 2813.1 | 2804.6 |
| 157.5° | 2854.9 | 2860.7 | 2865.4 | 2884.4 | 2871.1 |
| 160°   | 2918.7 | 2924.4 | 2927.3 | 2943.4 | 2932.0 |
| 162.5° | 2977.7 | 2977.7 | 2980.5 | 2998.6 | 2985.3 |
| 165°   | 3028.1 | 3025.2 | 3025.2 | 3044.3 | 3031.0 |
| 167.5° | 3073.8 | 3065.3 | 3065.3 | 3084.2 | 3070.9 |
| 170°   | 3108.1 | 3100.4 | 3097.7 | 3116.6 | 3100.4 |
| 172.5° | 3131.8 | 3124.3 | 3121.4 | 3140.5 | 3124.3 |
| 175°   | 3150.9 | 3143.2 | 3137.6 | 3156.7 | 3140.5 |
| 177.5° | 3161.3 | 3153.8 | 3148.0 | 3164.2 | 3148.0 |
| 180°   | 3156.7 | 3156.7 | 3156.7 | 3156.7 | 3156.7 |



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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 | 8.92             | 9.65  | 10.01 | 10.72 | 12.20 | 4.89           | 5.61 | 5.97 | 6.69 | 8.16  |
|                 | 3H   | 10.59            | 11.23 | 11.68 | 12.32 | 13.81 | 6.07           | 6.71 | 7.16 | 7.80 | 9.29  |
|                 | 4H   | 11.19            | 11.80 | 12.29 | 12.89 | 14.38 | 6.51           | 7.12 | 7.61 | 8.21 | 9.70  |
|                 | 6H   | 11.60            | 12.16 | 12.71 | 13.25 | 14.76 | 6.82           | 7.38 | 7.93 | 8.47 | 9.98  |
|                 | 8H   | 11.72            | 12.25 | 12.83 | 13.36 | 14.86 | 6.90           | 7.43 | 8.02 | 8.54 | 10.05 |
|                 | 12H  | 11.77            | 12.28 | 12.89 | 13.38 | 14.91 | 6.94           | 7.44 | 8.06 | 8.55 | 10.07 |
| 4H              | 2H   | 8.93             | 9.54  | 10.04 | 10.63 | 12.13 | 5.47           | 6.08 | 6.58 | 7.17 | 8.67  |
|                 | 3H   | 10.74            | 11.25 | 11.86 | 12.36 | 13.87 | 6.80           | 7.31 | 7.92 | 8.43 | 9.94  |
|                 | 4H   | 11.42            | 11.89 | 12.54 | 12.99 | 14.53 | 7.34           | 7.81 | 8.46 | 8.91 | 10.44 |
|                 | 6H   | 11.93            | 12.33 | 13.05 | 13.45 | 14.98 | 7.75           | 8.15 | 8.87 | 9.28 | 10.80 |
|                 | 8H   | 12.10            | 12.47 | 13.22 | 13.59 | 15.13 | 7.87           | 8.24 | 9.00 | 9.36 | 10.90 |
|                 | 12H  | 12.18            | 12.52 | 13.33 | 13.65 | 15.20 | 7.93           | 8.26 | 9.07 | 9.40 | 10.94 |
| 8H              | 4H   | 11.38            | 11.75 | 12.51 | 12.87 | 14.41 | 7.61           | 7.98 | 8.74 | 9.10 | 10.64 |
|                 | 6H   | 11.94            | 12.24 | 13.08 | 13.41 | 14.94 | 8.12           | 8.42 | 9.26 | 9.59 | 11.12 |
|                 | 8H   | 12.15            | 12.42 | 13.30 | 13.56 | 15.12 | 8.30           | 8.57 | 9.45 | 9.71 | 11.27 |
|                 | 12H  | 12.28            | 12.51 | 13.43 | 13.65 | 15.25 | 8.41           | 8.65 | 9.57 | 9.79 | 11.38 |
| 12H             | 4H   | 11.33            | 11.67 | 12.47 | 12.80 | 14.34 | 7.61           | 7.95 | 8.75 | 9.08 | 10.62 |
|                 | 6H   | 11.91            | 12.18 | 13.06 | 13.32 | 14.88 | 8.16           | 8.43 | 9.32 | 9.57 | 11.13 |
|                 | 8H   | 12.12            | 12.36 | 13.28 | 13.50 | 15.09 | 8.36           | 8.60 | 9.52 | 9.74 | 11.33 |

END OF REPORT