

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: P925780

Luminaire Tested: DFN2DIP-SQ4F0-060D110US950-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925780  
REPORT IS A COMBINATION OF REPORTS P900149 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-060D110US950-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

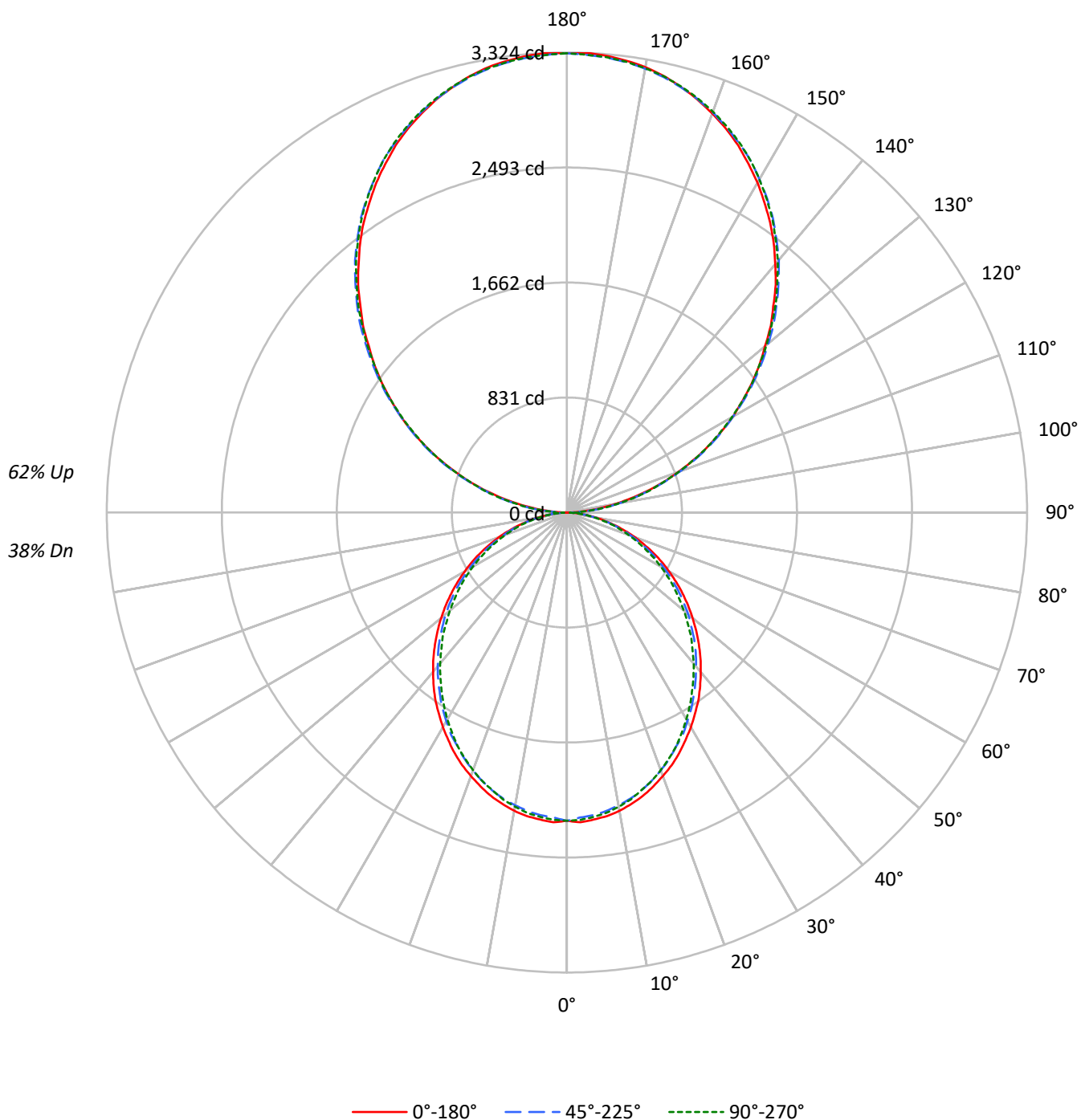
Lumens per Lamp: N/A  
Luminaire Lumens: 14954.0 lumens  
Efficiency: N/A  
Efficacy: 112.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 132.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P925780

CATALOG NUMBER: DFN2DIP-SQ4F0-060D110US950-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P925780

CATALOG NUMBER: DFN2DIP-SQ4F0-060D110US950-FLLFL

**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 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 60 | 60 | 60 | 45 | 45 | 45 |
| 1   | 95  | 91  | 87  | 84  | 86 | 83 | 79 | 76 | 67 | 65 | 63 | 53 | 51 | 50 | 40 | 39 | 38 |
| 2   | 87  | 79  | 73  | 68  | 78 | 72 | 67 | 63 | 59 | 55 | 52 | 46 | 44 | 42 | 35 | 33 | 32 |
| 3   | 79  | 70  | 62  | 57  | 71 | 63 | 57 | 52 | 52 | 47 | 44 | 41 | 38 | 35 | 31 | 29 | 27 |
| 4   | 72  | 62  | 54  | 48  | 65 | 56 | 49 | 44 | 46 | 41 | 37 | 37 | 33 | 30 | 28 | 25 | 23 |
| 5   | 66  | 55  | 47  | 41  | 60 | 50 | 43 | 38 | 41 | 36 | 32 | 33 | 29 | 26 | 25 | 22 | 20 |
| 6   | 61  | 49  | 41  | 35  | 55 | 45 | 38 | 33 | 37 | 32 | 28 | 30 | 26 | 23 | 23 | 20 | 18 |
| 7   | 56  | 44  | 36  | 31  | 51 | 41 | 34 | 29 | 33 | 28 | 24 | 27 | 23 | 20 | 21 | 18 | 16 |
| 8   | 52  | 40  | 32  | 27  | 47 | 37 | 30 | 25 | 30 | 25 | 22 | 25 | 21 | 18 | 19 | 16 | 14 |
| 9   | 48  | 37  | 29  | 24  | 44 | 34 | 27 | 23 | 28 | 23 | 19 | 23 | 19 | 16 | 17 | 15 | 13 |
| 10  | 45  | 33  | 26  | 22  | 41 | 31 | 24 | 20 | 26 | 21 | 17 | 21 | 17 | 14 | 16 | 14 | 12 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1563 | 1563 | 1563 |
| 5°  | 1565 | 1541 | 1552 |
| 10° | 1553 | 1521 | 1531 |
| 15° | 1530 | 1496 | 1499 |
| 20° | 1499 | 1462 | 1466 |
| 25° | 1468 | 1420 | 1427 |
| 30° | 1430 | 1382 | 1378 |
| 35° | 1393 | 1337 | 1326 |
| 40° | 1348 | 1291 | 1277 |
| 45° | 1304 | 1245 | 1227 |
| 50° | 1255 | 1197 | 1168 |
| 55° | 1203 | 1141 | 1115 |
| 60° | 1145 | 1075 | 1054 |
| 65° | 1082 | 1007 | 981  |
| 70° | 1002 | 923  | 904  |
| 75° | 890  | 824  | 832  |
| 80° | 756  | 697  | 695  |
| 85° | 547  | 476  | 467  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2611 cd/sqm

TEST NUMBER: P925780

CATALOG NUMBER: DFN2DIP-SQ4F0-060D110US950-FLLFLL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 209.6   | 1.4       |
| 10°-20°   | 589.8   | 3.9       |
| 20°-30°   | 866.8   | 5.8       |
| 30°-40°   | 1006.7  | 6.7       |
| 40°-50°   | 1005.5  | 6.7       |
| 50°-60°   | 876.7   | 5.9       |
| 60°-70°   | 648.1   | 4.3       |
| 70°-80°   | 366.7   | 2.5       |
| 80°-90°   | 106.2   | 0.7       |
| 90°-100°  | 205.4   | 1.4       |
| 100°-110° | 652.5   | 4.4       |
| 110°-120° | 1116.7  | 7.5       |
| 120°-130° | 1468.6  | 9.8       |
| 130°-140° | 1648.4  | 11.0      |
| 140°-150° | 1616.5  | 10.8      |
| 150°-160° | 1356.0  | 9.1       |
| 160°-170° | 899.3   | 6.0       |
| 170°-180° | 314.3   | 2.1       |
| 0°-30°    | 1666.2  | 11.1      |
| 0°-40°    | 2673.0  | 17.9      |
| 0°-60°    | 4555.2  | 30.5      |
| 0°-90°    | 5676.2  | 38.0      |
| 90°-120°  | 1974.6  | 13.2      |
| 90°-150°  | 6708.2  | 44.9      |
| 90°-180°  | 9278.0  | 62.0      |
| 0°-180°   | 14954.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2227 | 2227  | 2227 | 2227  | 2227 |      |
| 5°   | 2227 | 2219  | 2195 | 2212  | 2208 | 211  |
| 15°  | 2120 | 2108  | 2080 | 2088  | 2078 | 597  |
| 25°  | 1919 | 1902  | 1866 | 1870  | 1866 | 883  |
| 35°  | 1656 | 1634  | 1600 | 1587  | 1576 | 1034 |
| 45°  | 1347 | 1332  | 1300 | 1276  | 1268 | 1040 |
| 55°  | 1020 | 1007  | 981  | 955   | 945  | 912  |
| 65°  | 688  | 675   | 653  | 634   | 623  | 680  |
| 75°  | 360  | 356   | 345  | 332   | 336  | 384  |
| 85°  | 88   | 86    | 84   | 77    | 75   | 98   |
| 90°  | 3    | 36    | 98   | 92    | 95   | 15   |
| 95°  | 146  | 174   | 179  | 179   | 174  | 163  |
| 105° | 602  | 610   | 616  | 621   | 621  | 636  |
| 115° | 1121 | 1137  | 1132 | 1129  | 1121 | 1108 |
| 125° | 1630 | 1655  | 1647 | 1638  | 1635 | 1457 |
| 135° | 2108 | 2139  | 2145 | 2142  | 2134 | 1630 |
| 145° | 2559 | 2579  | 2596 | 2598  | 2587 | 1599 |
| 155° | 2927 | 2935  | 2944 | 2958  | 2949 | 1347 |
| 165° | 3184 | 3181  | 3181 | 3201  | 3187 | 898  |
| 175° | 3313 | 3305  | 3299 | 3319  | 3302 | 315  |
| 180° | 3319 | 3319  | 3319 | 3319  | 3319 |      |

TEST NUMBER: P925780

CATALOG NUMBER: DFN2DIP-SQ4F0-060D110US950-FLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2227.2 | 2227.2 | 2227.2 | 2227.2 | 2227.2 |
| 2.5°   | 2240.2 | 2229.5 | 2205.8 | 2227.2 | 2223.1 |
| 5°     | 2227.2 | 2218.8 | 2195.2 | 2212.2 | 2208.1 |
| 7.5°   | 2212.2 | 2199.5 | 2175.9 | 2193.2 | 2188.9 |
| 10°    | 2188.9 | 2173.9 | 2148.1 | 2165.2 | 2158.8 |
| 12.5°  | 2156.6 | 2143.8 | 2118.2 | 2128.9 | 2124.6 |
| 15°    | 2120.2 | 2107.5 | 2079.5 | 2088.2 | 2077.5 |
| 17.5°  | 2075.2 | 2062.5 | 2034.6 | 2045.2 | 2034.6 |
| 20°    | 2025.9 | 2013.2 | 1983.2 | 1989.6 | 1981.2 |
| 22.5°  | 1976.9 | 1957.5 | 1929.6 | 1929.6 | 1925.3 |
| 25°    | 1918.9 | 1901.9 | 1865.5 | 1869.6 | 1865.5 |
| 27.5°  | 1854.6 | 1839.6 | 1811.8 | 1805.5 | 1794.9 |
| 30°    | 1790.6 | 1773.2 | 1741.2 | 1734.8 | 1726.2 |
| 32.5°  | 1721.9 | 1709.2 | 1674.8 | 1661.9 | 1653.3 |
| 35°    | 1655.6 | 1634.2 | 1599.9 | 1586.9 | 1576.2 |
| 37.5°  | 1580.6 | 1561.2 | 1527.0 | 1511.9 | 1501.2 |
| 40°    | 1503.5 | 1486.2 | 1452.0 | 1432.9 | 1424.2 |
| 42.5°  | 1428.5 | 1411.3 | 1377.2 | 1355.6 | 1342.9 |
| 45°    | 1347.2 | 1332.2 | 1299.9 | 1276.5 | 1267.9 |
| 47.5°  | 1267.9 | 1252.9 | 1218.6 | 1195.0 | 1182.2 |
| 50°    | 1184.3 | 1173.6 | 1143.7 | 1113.6 | 1102.9 |
| 52.5°  | 1102.9 | 1087.9 | 1060.2 | 1036.6 | 1021.6 |
| 55°    | 1019.5 | 1006.6 | 980.9  | 955.2  | 944.6  |
| 57.5°  | 936.0  | 925.3  | 897.3  | 871.7  | 863.0  |
| 60°    | 852.3  | 843.9  | 814.0  | 790.3  | 783.9  |
| 62.5°  | 770.9  | 755.9  | 734.6  | 713.2  | 704.6  |
| 65°    | 687.5  | 674.7  | 653.3  | 633.9  | 623.2  |
| 67.5°  | 601.9  | 591.0  | 571.9  | 556.9  | 548.3  |
| 70°    | 522.6  | 514.0  | 494.6  | 479.7  | 471.3  |
| 72.5°  | 441.2  | 432.6  | 422.0  | 407.0  | 400.6  |
| 75°    | 359.7  | 355.7  | 344.7  | 332.0  | 336.3  |
| 77.5°  | 287.0  | 278.4  | 274.0  | 267.7  | 261.3  |
| 80°    | 214.3  | 212.0  | 207.7  | 201.3  | 197.0  |
| 82.5°  | 145.7  | 145.7  | 143.6  | 135.0  | 135.0  |
| 85°    | 87.7   | 85.7   | 83.6   | 77.0   | 75.0   |
| 87.5°  | 38.6   | 34.3   | 30.0   | 23.7   | 21.4   |
| 90°    | 3.0    | 36.1   | 98.1   | 92.1   | 95.0   |
| 92.5°  | 62.0   | 84.0   | 87.0   | 90.1   | 90.1   |
| 95°    | 146.1  | 174.1  | 179.1  | 179.1  | 174.1  |
| 97.5°  | 243.2  | 269.1  | 280.2  | 280.2  | 280.2  |
| 100°   | 355.2  | 378.2  | 386.2  | 386.2  | 383.2  |
| 102.5° | 473.3  | 490.3  | 501.3  | 504.3  | 501.3  |
| 105°   | 602.4  | 610.4  | 616.4  | 621.3  | 621.3  |
| 107.5° | 730.4  | 742.4  | 742.4  | 744.4  | 730.4  |
| 110°   | 854.5  | 870.5  | 870.5  | 870.5  | 862.5  |

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CATALOG NUMBER: DFN2DIP-SQ4F0-060D110US950-FLLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 988.5  | 1005.5 | 1002.6 | 994.5  | 988.5  |
| 115°   | 1120.7 | 1136.6 | 1131.6 | 1128.7 | 1120.7 |
| 117.5° | 1251.7 | 1273.7 | 1259.7 | 1251.7 | 1243.7 |
| 120°   | 1383.8 | 1405.8 | 1383.8 | 1383.8 | 1374.8 |
| 122.5° | 1503.9 | 1531.8 | 1517.8 | 1509.8 | 1503.9 |
| 125°   | 1629.9 | 1654.9 | 1646.9 | 1637.9 | 1634.9 |
| 127.5° | 1753.0 | 1784.0 | 1773.0 | 1761.0 | 1753.0 |
| 130°   | 1868.0 | 1904.1 | 1899.0 | 1893.0 | 1882.1 |
| 132.5° | 1997.1 | 2025.2 | 2027.2 | 2013.1 | 2005.1 |
| 135°   | 2108.1 | 2139.2 | 2145.2 | 2142.2 | 2134.2 |
| 137.5° | 2232.3 | 2257.3 | 2262.2 | 2260.2 | 2248.3 |
| 140°   | 2341.3 | 2366.3 | 2380.3 | 2380.3 | 2369.4 |
| 142.5° | 2453.4 | 2478.4 | 2486.4 | 2489.4 | 2478.4 |
| 145°   | 2559.4 | 2579.4 | 2595.5 | 2598.4 | 2587.4 |
| 147.5° | 2654.5 | 2679.5 | 2691.5 | 2696.5 | 2685.5 |
| 150°   | 2752.6 | 2769.6 | 2780.5 | 2789.6 | 2780.5 |
| 152.5° | 2839.6 | 2856.6 | 2870.6 | 2881.7 | 2870.6 |
| 155°   | 2926.7 | 2934.6 | 2943.7 | 2957.7 | 2948.6 |
| 157.5° | 3001.7 | 3007.7 | 3012.6 | 3032.7 | 3018.6 |
| 160°   | 3068.7 | 3074.7 | 3077.7 | 3094.8 | 3082.8 |
| 162.5° | 3130.7 | 3130.7 | 3133.8 | 3152.8 | 3138.8 |
| 165°   | 3183.8 | 3180.7 | 3180.7 | 3200.8 | 3186.7 |
| 167.5° | 3231.8 | 3222.8 | 3222.8 | 3242.8 | 3228.8 |
| 170°   | 3267.8 | 3259.8 | 3256.9 | 3276.8 | 3259.8 |
| 172.5° | 3292.8 | 3284.8 | 3281.9 | 3301.9 | 3284.8 |
| 175°   | 3312.9 | 3304.8 | 3298.8 | 3318.9 | 3301.9 |
| 177.5° | 3323.8 | 3315.8 | 3309.8 | 3326.9 | 3309.8 |
| 180°   | 3318.9 | 3318.9 | 3318.9 | 3318.9 | 3318.9 |

TEST NUMBER: P925780

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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 | 7.61             | 8.37  | 8.66  | 9.43  | 10.86 | 7.16           | 7.92  | 8.22  | 8.98  | 10.42 |
|                 | 3H   | 9.26             | 9.95  | 10.33 | 11.01 | 12.47 | 8.77           | 9.46  | 9.84  | 10.52 | 11.97 |
|                 | 4H   | 9.85             | 10.50 | 10.92 | 11.57 | 13.02 | 9.35           | 10.00 | 10.43 | 11.07 | 12.53 |
|                 | 6H   | 10.25            | 10.84 | 11.33 | 11.92 | 13.39 | 9.75           | 10.34 | 10.83 | 11.42 | 12.89 |
|                 | 8H   | 10.35            | 10.92 | 11.44 | 12.01 | 13.47 | 9.85           | 10.42 | 10.94 | 11.51 | 12.97 |
|                 | 12H  | 10.40            | 10.94 | 11.49 | 12.02 | 13.51 | 9.89           | 10.43 | 10.98 | 11.51 | 13.00 |
| 4H              | 2H   | 8.06             | 8.70  | 9.14  | 9.77  | 11.23 | 7.70           | 8.35  | 8.78  | 9.42  | 10.88 |
|                 | 3H   | 9.92             | 10.46 | 11.01 | 11.55 | 13.02 | 9.51           | 10.05 | 10.60 | 11.15 | 12.62 |
|                 | 4H   | 10.63            | 11.13 | 11.72 | 12.21 | 13.71 | 10.21          | 10.70 | 11.30 | 11.79 | 13.28 |
|                 | 6H   | 11.14            | 11.57 | 12.25 | 12.68 | 14.17 | 10.71          | 11.14 | 11.81 | 12.25 | 13.73 |
|                 | 8H   | 11.29            | 11.69 | 12.40 | 12.79 | 14.29 | 10.86          | 11.25 | 11.96 | 12.36 | 13.86 |
|                 | 12H  | 11.36            | 11.72 | 12.48 | 12.84 | 14.35 | 10.91          | 11.28 | 12.03 | 12.39 | 13.90 |
| 8H              | 4H   | 10.82            | 11.22 | 11.92 | 12.32 | 13.82 | 10.44          | 10.84 | 11.54 | 11.94 | 13.44 |
|                 | 6H   | 11.45            | 11.78 | 12.58 | 12.92 | 14.42 | 11.07          | 11.40 | 12.19 | 12.54 | 14.04 |
|                 | 8H   | 11.67            | 11.96 | 12.80 | 13.09 | 14.61 | 11.28          | 11.57 | 12.41 | 12.69 | 14.21 |
|                 | 12H  | 11.80            | 12.06 | 12.94 | 13.18 | 14.73 | 11.39          | 11.65 | 12.53 | 12.77 | 14.32 |
| 12H             | 4H   | 10.80            | 11.16 | 11.92 | 12.27 | 13.78 | 10.43          | 10.79 | 11.55 | 11.91 | 13.41 |
|                 | 6H   | 11.48            | 11.77 | 12.61 | 12.89 | 14.41 | 11.11          | 11.40 | 12.24 | 12.52 | 14.04 |
|                 | 8H   | 11.72            | 11.97 | 12.86 | 13.10 | 14.65 | 11.34          | 11.59 | 12.48 | 12.71 | 14.27 |

END OF REPORT