

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: P919975

Luminaire Tested: DFN2DIP-SQ2F0-080D070US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919975  
REPORT IS A COMBINATION OF REPORTS P901350 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-080D070US935-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

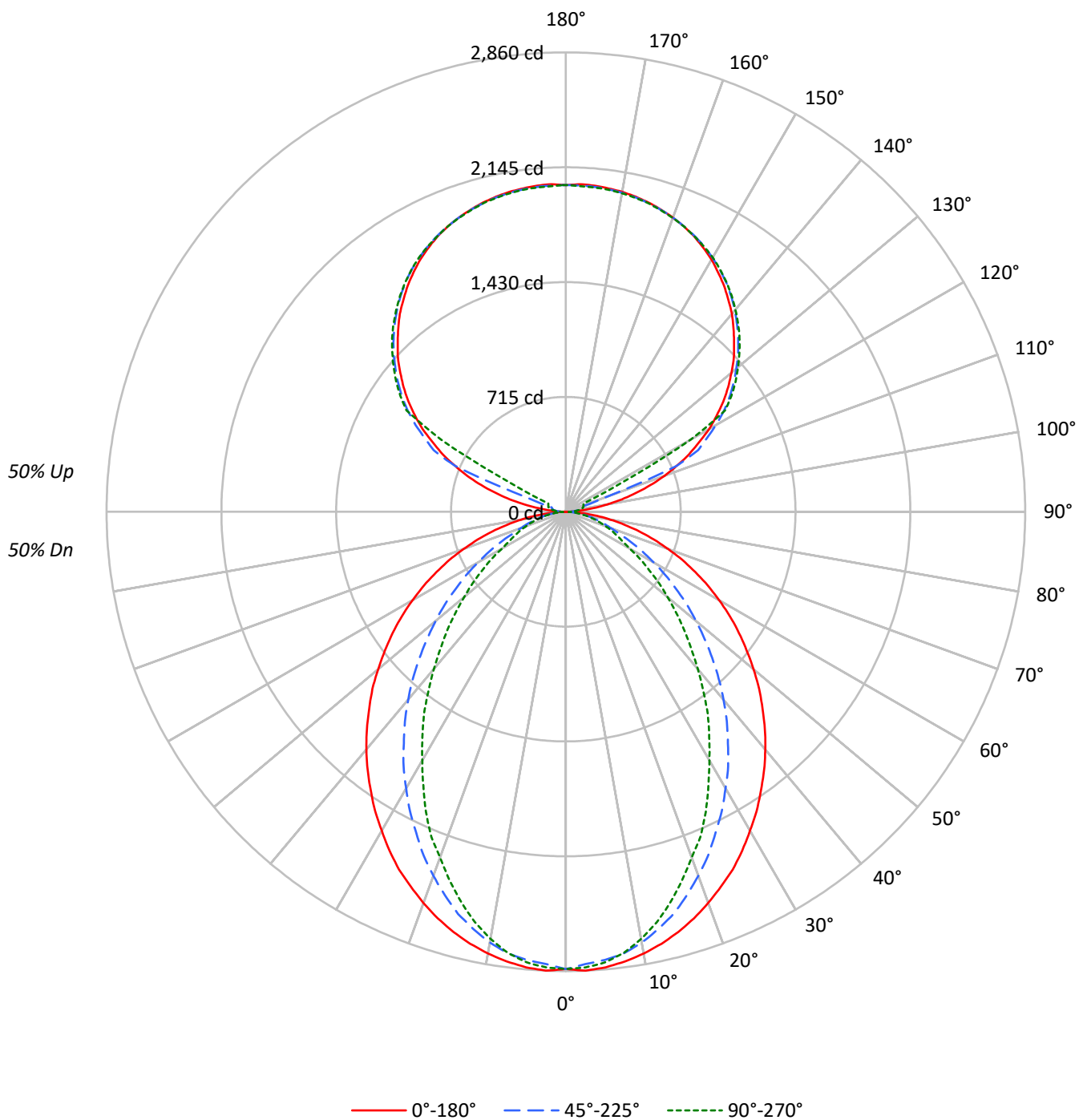
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11821.5 lumens  
Efficiency: N/A  
Efficacy: 88.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 133.4  
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



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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 69 | 69 | 69 | 56 | 56 | 56 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 74 | 71 | 69 | 61 | 60 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 71 | 67 | 65 | 61 | 58 | 54 | 52 | 49 | 45 | 43 | 41 |
| 3   | 82  | 73  | 66  | 60  | 76 | 68 | 62 | 57 | 58 | 53 | 49 | 49 | 45 | 42 | 40 | 38 | 36 |
| 4   | 75  | 65  | 57  | 52  | 69 | 60 | 54 | 48 | 52 | 47 | 42 | 44 | 40 | 37 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 33 | 30 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 37 | 32 | 36 | 32 | 28 | 30 | 27 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 33 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 34 | 29 | 35 | 30 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 48 | 37 | 30 | 26 | 32 | 27 | 23 | 28 | 23 | 21 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 25  | 45 | 34 | 28 | 23 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6260 | 6260 | 6260 |
| 5°  | 6259 | 6147 | 6191 |
| 10° | 6186 | 6013 | 5981 |
| 15° | 6090 | 5801 | 5662 |
| 20° | 5967 | 5514 | 5273 |
| 25° | 5840 | 5196 | 4897 |
| 30° | 5674 | 4870 | 4424 |
| 35° | 5511 | 4521 | 4008 |
| 40° | 5344 | 4162 | 3534 |
| 45° | 5151 | 3765 | 3104 |
| 50° | 4951 | 3366 | 2685 |
| 55° | 4741 | 2941 | 2283 |
| 60° | 4497 | 2499 | 1871 |
| 65° | 4216 | 2051 | 1673 |
| 70° | 3875 | 1634 | 1502 |
| 75° | 3446 | 1414 | 1349 |
| 80° | 2829 | 1149 | 1143 |
| 85° | 1842 | 713  | 813  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 5151 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 266.8   | 2.3       |
| 10°-20°   | 732.4   | 6.2       |
| 20°-30°   | 1028.3  | 8.7       |
| 30°-40°   | 1120.9  | 9.5       |
| 40°-50°   | 1030.3  | 8.7       |
| 50°-60°   | 809.1   | 6.8       |
| 60°-70°   | 526.6   | 4.5       |
| 70°-80°   | 271.1   | 2.3       |
| 80°-90°   | 72.8    | 0.6       |
| 90°-100°  | 67.1    | 0.6       |
| 100°-110° | 250.0   | 2.1       |
| 110°-120° | 663.1   | 5.6       |
| 120°-130° | 1099.8  | 9.3       |
| 130°-140° | 1168.3  | 9.9       |
| 140°-150° | 1085.8  | 9.2       |
| 150°-160° | 872.9   | 7.4       |
| 160°-170° | 562.5   | 4.8       |
| 170°-180° | 193.6   | 1.6       |
| 0°-30°    | 2027.6  | 17.2      |
| 0°-40°    | 3148.5  | 26.6      |
| 0°-60°    | 4987.8  | 42.2      |
| 0°-90°    | 5858.4  | 49.6      |
| 90°-120°  | 980.2   | 8.3       |
| 90°-150°  | 4334.1  | 36.7      |
| 90°-180°  | 5963.0  | 50.4      |
| 0°-180°   | 11821.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2847 | 2847  | 2847 | 2847  | 2847 |      |
| 5°   | 2847 | 2834  | 2800 | 2824  | 2816 | 270  |
| 15°  | 2708 | 2679  | 2592 | 2543  | 2517 | 763  |
| 25°  | 2458 | 2375  | 2205 | 2100  | 2061 | 1130 |
| 35°  | 2118 | 1986  | 1760 | 1597  | 1540 | 1326 |
| 45°  | 1731 | 1559  | 1288 | 1105  | 1043 | 1337 |
| 55°  | 1316 | 1116  | 837  | 683   | 634  | 1176 |
| 65°  | 889  | 680   | 448  | 361   | 353  | 881  |
| 75°  | 474  | 294   | 206  | 188   | 186  | 501  |
| 85°  | 111  | 57    | 49   | 49    | 49   | 127  |
| 90°  | 1    | 18    | 29   | 37    | 40   | 11   |
| 95°  | 96   | 47    | 57   | 65    | 63   | 113  |
| 105° | 448  | 492   | 90   | 106   | 112  | 478  |
| 115° | 846  | 871   | 908  | 227   | 121  | 833  |
| 125° | 1196 | 1216  | 1244 | 1254  | 1258 | 1067 |
| 135° | 1481 | 1504  | 1517 | 1532  | 1529 | 1144 |
| 145° | 1718 | 1716  | 1741 | 1751  | 1744 | 1074 |
| 155° | 1891 | 1878  | 1896 | 1904  | 1893 | 872  |
| 165° | 1993 | 1984  | 1988 | 1999  | 1988 | 563  |
| 175° | 2038 | 2028  | 2031 | 2041  | 2027 | 194  |
| 180° | 2034 | 2034  | 2034 | 2034  | 2034 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2846.8 | 2846.8 | 2846.8 | 2846.8 | 2846.8 |
| 2.5°   | 2859.6 | 2846.8 | 2818.4 | 2844.3 | 2839.1 |
| 5°     | 2846.8 | 2834.0 | 2800.3 | 2823.6 | 2815.9 |
| 7.5°   | 2823.6 | 2808.2 | 2772.2 | 2782.3 | 2769.4 |
| 10°    | 2792.6 | 2774.7 | 2723.3 | 2715.3 | 2700.0 |
| 12.5°  | 2754.2 | 2730.9 | 2661.2 | 2645.8 | 2617.4 |
| 15°    | 2707.7 | 2679.3 | 2591.8 | 2542.9 | 2517.1 |
| 17.5°  | 2653.5 | 2612.3 | 2504.0 | 2447.5 | 2406.1 |
| 20°    | 2591.8 | 2540.1 | 2411.4 | 2347.2 | 2290.3 |
| 22.5°  | 2524.8 | 2465.5 | 2316.0 | 2228.5 | 2189.9 |
| 25°    | 2457.8 | 2375.3 | 2205.3 | 2099.8 | 2061.0 |
| 27.5°  | 2378.0 | 2290.3 | 2102.2 | 1981.2 | 1921.8 |
| 30°    | 2293.0 | 2194.9 | 1988.8 | 1857.6 | 1787.9 |
| 32.5°  | 2210.4 | 2091.9 | 1880.8 | 1726.1 | 1661.6 |
| 35°    | 2117.8 | 1986.3 | 1759.7 | 1597.4 | 1540.5 |
| 37.5°  | 2027.6 | 1885.8 | 1646.3 | 1468.3 | 1404.1 |
| 40°    | 1932.3 | 1777.8 | 1527.7 | 1344.8 | 1277.8 |
| 42.5°  | 1834.4 | 1669.6 | 1409.3 | 1218.6 | 1154.3 |
| 45°    | 1731.3 | 1558.6 | 1288.2 | 1105.1 | 1043.4 |
| 47.5°  | 1633.5 | 1450.6 | 1172.3 | 989.2  | 932.6  |
| 50°    | 1525.2 | 1342.4 | 1058.9 | 881.0  | 827.1  |
| 52.5°  | 1419.4 | 1226.1 | 950.6  | 780.7  | 731.8  |
| 55°    | 1316.4 | 1115.5 | 837.2  | 682.8  | 633.9  |
| 57.5°  | 1210.9 | 1004.8 | 736.9  | 592.6  | 551.3  |
| 60°    | 1102.6 | 896.6  | 631.1  | 499.9  | 458.7  |
| 62.5°  | 997.1  | 791.0  | 541.0  | 417.4  | 396.9  |
| 65°    | 888.9  | 680.0  | 448.2  | 360.8  | 352.8  |
| 67.5°  | 785.8  | 577.0  | 360.8  | 316.8  | 309.2  |
| 70°    | 677.6  | 476.7  | 298.8  | 273.0  | 262.7  |
| 72.5°  | 574.5  | 383.7  | 249.9  | 229.4  | 224.1  |
| 75°    | 474.0  | 293.6  | 206.1  | 188.0  | 185.6  |
| 77.5°  | 373.7  | 208.5  | 162.4  | 152.0  | 146.8  |
| 80°    | 280.7  | 149.6  | 123.6  | 113.4  | 113.4  |
| 82.5°  | 195.7  | 100.6  | 85.0   | 79.8   | 79.8   |
| 85°    | 110.7  | 56.6   | 48.9   | 48.9   | 48.9   |
| 87.5°  | 41.2   | 20.5   | 20.5   | 18.1   | 18.1   |
| 90°    | 1.4    | 17.7   | 29.4   | 36.9   | 39.7   |
| 92.5°  | 36.9   | 30.9   | 35.3   | 38.3   | 39.7   |
| 95°    | 95.6   | 47.0   | 57.3   | 64.8   | 63.3   |
| 97.5°  | 172.1  | 51.6   | 75.0   | 79.6   | 80.9   |
| 100°   | 260.6  | 58.9   | 83.9   | 95.6   | 98.6   |
| 102.5° | 357.6  | 354.8  | 86.9   | 103.0  | 107.5  |
| 105°   | 447.5  | 491.6  | 89.8   | 105.9  | 111.8  |
| 107.5° | 551.9  | 588.7  | 92.8   | 108.9  | 114.9  |
| 110°   | 652.1  | 682.9  | 257.6  | 110.5  | 116.2  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 746.3  | 772.7  | 747.7  | 113.2  | 117.8  |
| 115°   | 846.3  | 871.2  | 908.1  | 226.7  | 120.8  |
| 117.5° | 933.1  | 962.5  | 987.7  | 777.1  | 391.5  |
| 120°   | 1030.3 | 1052.3 | 1078.9 | 1096.6 | 897.8  |
| 122.5° | 1112.6 | 1136.2 | 1165.8 | 1174.5 | 1176.0 |
| 125°   | 1196.5 | 1215.7 | 1243.7 | 1254.0 | 1258.3 |
| 127.5° | 1273.1 | 1293.6 | 1315.9 | 1330.6 | 1332.0 |
| 130°   | 1345.2 | 1368.8 | 1384.9 | 1401.2 | 1399.8 |
| 132.5° | 1418.8 | 1438.0 | 1454.1 | 1467.4 | 1466.0 |
| 135°   | 1480.7 | 1504.2 | 1517.4 | 1532.2 | 1529.3 |
| 137.5° | 1545.3 | 1563.1 | 1577.9 | 1592.6 | 1588.2 |
| 140°   | 1608.6 | 1620.5 | 1636.6 | 1649.8 | 1642.5 |
| 142.5° | 1661.7 | 1672.1 | 1691.1 | 1702.8 | 1695.5 |
| 145°   | 1717.7 | 1716.1 | 1741.1 | 1751.4 | 1744.1 |
| 147.5° | 1766.1 | 1761.8 | 1786.7 | 1794.1 | 1788.3 |
| 150°   | 1813.3 | 1803.0 | 1826.6 | 1835.3 | 1828.0 |
| 152.5° | 1853.0 | 1841.2 | 1863.3 | 1872.2 | 1861.9 |
| 155°   | 1891.3 | 1878.1 | 1895.7 | 1904.5 | 1892.8 |
| 157.5° | 1922.2 | 1910.5 | 1923.7 | 1934.1 | 1922.2 |
| 160°   | 1948.8 | 1939.8 | 1948.8 | 1957.5 | 1947.1 |
| 162.5° | 1972.2 | 1963.4 | 1970.7 | 1981.1 | 1967.8 |
| 165°   | 1992.8 | 1984.1 | 1988.4 | 1998.7 | 1988.4 |
| 167.5° | 2009.1 | 2000.1 | 2004.7 | 2015.0 | 2001.7 |
| 170°   | 2022.3 | 2013.4 | 2016.4 | 2026.7 | 2013.4 |
| 172.5° | 2031.1 | 2022.3 | 2025.3 | 2035.6 | 2022.3 |
| 175°   | 2038.4 | 2028.1 | 2031.1 | 2041.3 | 2026.7 |
| 177.5° | 2041.3 | 2031.1 | 2032.6 | 2043.0 | 2029.6 |
| 180°   | 2034.0 | 2034.0 | 2034.0 | 2034.0 | 2034.0 |

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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 | 13.36            | 14.19 | 14.33 | 15.17 | 16.45 | 9.32           | 10.15 | 10.29 | 11.13 | 12.41 |
|                 | 3H   | 15.02            | 15.76 | 16.00 | 16.75 | 18.05 | 10.49          | 11.23 | 11.47 | 12.22 | 13.52 |
|                 | 4H   | 15.62            | 16.31 | 16.61 | 17.30 | 18.62 | 10.93          | 11.63 | 11.92 | 12.62 | 13.93 |
|                 | 6H   | 16.02            | 16.66 | 17.02 | 17.66 | 18.98 | 11.24          | 11.88 | 12.24 | 12.87 | 14.20 |
|                 | 8H   | 16.14            | 16.75 | 17.15 | 17.76 | 19.08 | 11.32          | 11.93 | 12.33 | 12.94 | 14.26 |
|                 | 12H  | 16.19            | 16.77 | 17.21 | 17.78 | 19.12 | 11.35          | 11.93 | 12.37 | 12.94 | 14.28 |
| 4H              | 2H   | 13.38            | 14.07 | 14.37 | 15.06 | 16.38 | 9.91           | 10.61 | 10.91 | 11.60 | 12.91 |
|                 | 3H   | 15.18            | 15.76 | 16.19 | 16.78 | 18.11 | 11.24          | 11.82 | 12.24 | 12.84 | 14.16 |
|                 | 4H   | 15.86            | 16.39 | 16.87 | 17.40 | 18.75 | 11.77          | 12.30 | 12.78 | 13.31 | 14.66 |
|                 | 6H   | 16.36            | 16.81 | 17.38 | 17.85 | 19.19 | 12.17          | 12.62 | 13.19 | 13.66 | 15.00 |
|                 | 8H   | 16.52            | 16.94 | 17.55 | 17.97 | 19.33 | 12.29          | 12.71 | 13.31 | 13.74 | 15.10 |
|                 | 12H  | 16.60            | 16.99 | 17.65 | 18.03 | 19.40 | 12.34          | 12.72 | 13.39 | 13.77 | 15.13 |
| 8H              | 4H   | 15.82            | 16.25 | 16.85 | 17.28 | 18.64 | 12.04          | 12.46 | 13.06 | 13.49 | 14.85 |
|                 | 6H   | 16.37            | 16.72 | 17.42 | 17.79 | 19.14 | 12.53          | 12.88 | 13.58 | 13.95 | 15.31 |
|                 | 8H   | 16.57            | 16.88 | 17.63 | 17.93 | 19.31 | 12.71          | 13.02 | 13.77 | 14.07 | 15.45 |
|                 | 12H  | 16.69            | 16.97 | 17.76 | 18.02 | 19.44 | 12.81          | 13.08 | 13.87 | 14.13 | 15.55 |
| 12H             | 4H   | 15.77            | 16.16 | 16.82 | 17.20 | 18.56 | 12.04          | 12.42 | 13.08 | 13.47 | 14.83 |
|                 | 6H   | 16.34            | 16.65 | 17.40 | 17.70 | 19.08 | 12.57          | 12.88 | 13.63 | 13.94 | 15.32 |
|                 | 8H   | 16.55            | 16.82 | 17.61 | 17.87 | 19.29 | 12.77          | 13.04 | 13.83 | 14.09 | 15.51 |

END OF REPORT