

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: P926421

Luminaire Tested: DFN2DIP-TR4F0-050D080US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926421  
REPORT IS A COMBINATION OF REPORTS P901964 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-050D080US950-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

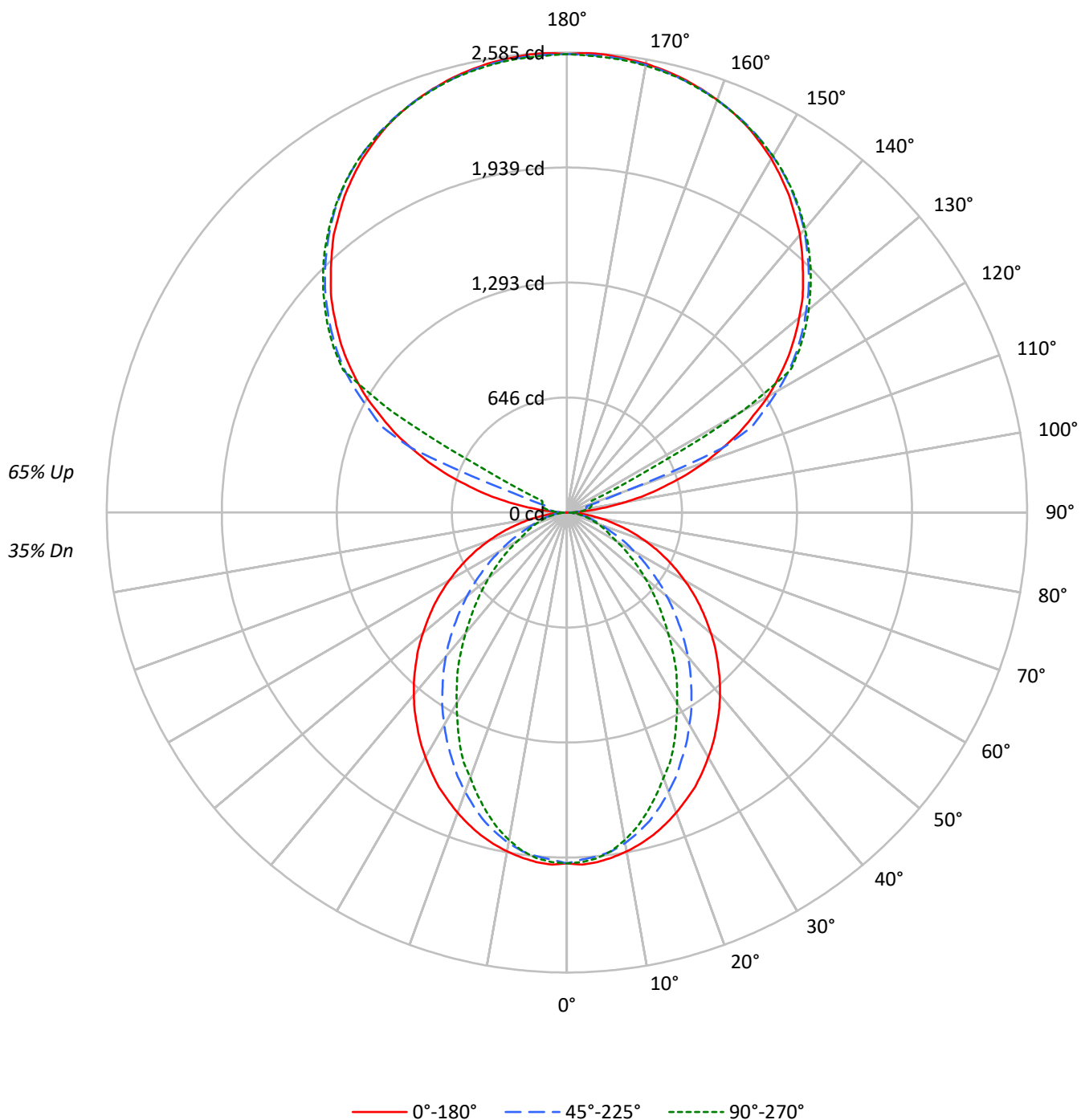
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11610.2 lumens  
Efficiency: N/A  
Efficacy: 114.8 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): 101.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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   | 104 | 104 | 104 | 104 | 94 | 94 | 94 | 94 | 75 | 75 | 75 | 58 | 58 | 58 | 42 | 42 | 42 |
| 1   | 95  | 91  | 87  | 84  | 86 | 82 | 79 | 76 | 66 | 64 | 62 | 51 | 50 | 49 | 38 | 37 | 36 |
| 2   | 87  | 80  | 74  | 69  | 78 | 72 | 67 | 63 | 58 | 55 | 52 | 46 | 43 | 41 | 34 | 32 | 31 |
| 3   | 79  | 70  | 63  | 58  | 71 | 64 | 58 | 53 | 52 | 47 | 44 | 41 | 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  | 56  | 48  | 42  | 60 | 51 | 44 | 39 | 41 | 36 | 33 | 33 | 29 | 27 | 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 | 17 | 15 |
| 9   | 49  | 37  | 30  | 25  | 44 | 34 | 28 | 23 | 28 | 23 | 20 | 23 | 19 | 17 | 18 | 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°  | 1566 | 1566 | 1566 |
| 5°  | 1569 | 1541 | 1551 |
| 10° | 1553 | 1511 | 1501 |
| 15° | 1532 | 1461 | 1423 |
| 20° | 1504 | 1392 | 1327 |
| 25° | 1475 | 1315 | 1234 |
| 30° | 1436 | 1236 | 1117 |
| 35° | 1398 | 1151 | 1014 |
| 40° | 1359 | 1063 | 896  |
| 45° | 1314 | 965  | 789  |
| 50° | 1267 | 867  | 684  |
| 55° | 1219 | 761  | 584  |
| 60° | 1162 | 651  | 480  |
| 65° | 1098 | 539  | 432  |
| 70° | 1019 | 435  | 391  |
| 75° | 921  | 383  | 356  |
| 80° | 778  | 321  | 308  |
| 85° | 542  | 215  | 232  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1369 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 184.8   | 1.6       |
| 10°-20°   | 507.2   | 4.4       |
| 20°-30°   | 712.1   | 6.1       |
| 30°-40°   | 776.3   | 6.7       |
| 40°-50°   | 713.5   | 6.1       |
| 50°-60°   | 560.3   | 4.8       |
| 60°-70°   | 364.7   | 3.1       |
| 70°-80°   | 187.7   | 1.6       |
| 80°-90°   | 52.5    | 0.5       |
| 90°-100°  | 84.9    | 0.7       |
| 100°-110° | 316.6   | 2.7       |
| 110°-120° | 839.7   | 7.2       |
| 120°-130° | 1392.7  | 12.0      |
| 130°-140° | 1479.4  | 12.7      |
| 140°-150° | 1374.9  | 11.8      |
| 150°-160° | 1105.4  | 9.5       |
| 160°-170° | 712.3   | 6.1       |
| 170°-180° | 245.2   | 2.1       |
| 0°-30°    | 1404.1  | 12.1      |
| 0°-40°    | 2180.4  | 18.8      |
| 0°-60°    | 3454.1  | 29.8      |
| 0°-90°    | 4059.1  | 35.0      |
| 90°-120°  | 1241.3  | 10.7      |
| 90°-150°  | 5488.3  | 47.3      |
| 90°-180°  | 7551.0  | 65.0      |
| 0°-180°   | 11610.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1971 | 1971  | 1971 | 1971  | 1971 |      |
| 5°   | 1971 | 1963  | 1939 | 1955  | 1950 | 187  |
| 15°  | 1875 | 1855  | 1795 | 1761  | 1743 | 528  |
| 25°  | 1702 | 1645  | 1527 | 1454  | 1427 | 783  |
| 35°  | 1467 | 1376  | 1219 | 1106  | 1067 | 918  |
| 45°  | 1199 | 1079  | 892  | 765   | 722  | 926  |
| 55°  | 912  | 772   | 580  | 473   | 439  | 815  |
| 65°  | 616  | 471   | 310  | 250   | 244  | 610  |
| 75°  | 328  | 203   | 143  | 130   | 128  | 347  |
| 85°  | 77   | 39    | 34   | 34    | 34   | 88   |
| 90°  | 2    | 22    | 37   | 47    | 50   | 11   |
| 95°  | 121  | 60    | 73   | 82    | 80   | 143  |
| 105° | 567  | 623   | 114  | 134   | 142  | 605  |
| 115° | 1072 | 1103  | 1150 | 287   | 153  | 1055 |
| 125° | 1515 | 1540  | 1575 | 1588  | 1594 | 1351 |
| 135° | 1875 | 1905  | 1922 | 1940  | 1936 | 1448 |
| 145° | 2175 | 2173  | 2205 | 2218  | 2208 | 1360 |
| 155° | 2395 | 2378  | 2401 | 2412  | 2397 | 1104 |
| 165° | 2524 | 2512  | 2518 | 2531  | 2518 | 713  |
| 175° | 2581 | 2568  | 2572 | 2585  | 2566 | 246  |
| 180° | 2576 | 2576  | 2576 | 2576  | 2576 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1971.4 | 1971.4 | 1971.4 | 1971.4 | 1971.4 |
| 2.5°   | 1980.3 | 1971.4 | 1951.8 | 1969.7 | 1966.1 |
| 5°     | 1971.4 | 1962.6 | 1939.3 | 1955.3 | 1950.1 |
| 7.5°   | 1955.3 | 1944.7 | 1919.7 | 1926.8 | 1917.8 |
| 10°    | 1933.9 | 1921.5 | 1885.9 | 1880.4 | 1869.7 |
| 12.5°  | 1907.2 | 1891.2 | 1842.9 | 1832.3 | 1812.6 |
| 15°    | 1875.1 | 1855.4 | 1794.9 | 1761.0 | 1743.1 |
| 17.5°  | 1837.6 | 1809.1 | 1734.1 | 1694.9 | 1666.3 |
| 20°    | 1794.9 | 1759.1 | 1669.9 | 1625.4 | 1586.0 |
| 22.5°  | 1748.5 | 1707.4 | 1603.9 | 1543.3 | 1516.6 |
| 25°    | 1702.0 | 1644.9 | 1527.2 | 1454.1 | 1427.2 |
| 27.5°  | 1646.8 | 1586.0 | 1455.8 | 1371.9 | 1330.9 |
| 30°    | 1587.9 | 1520.0 | 1377.3 | 1286.4 | 1238.1 |
| 32.5°  | 1530.8 | 1448.6 | 1302.5 | 1195.4 | 1150.7 |
| 35°    | 1466.6 | 1375.6 | 1218.6 | 1106.2 | 1066.9 |
| 37.5°  | 1404.1 | 1305.9 | 1140.1 | 1016.9 | 972.4  |
| 40°    | 1338.1 | 1231.1 | 1057.9 | 931.3  | 884.9  |
| 42.5°  | 1270.3 | 1156.2 | 975.9  | 843.8  | 799.4  |
| 45°    | 1199.0 | 1079.4 | 892.1  | 765.3  | 722.5  |
| 47.5°  | 1131.2 | 1004.6 | 811.9  | 685.1  | 645.9  |
| 50°    | 1056.3 | 929.6  | 733.3  | 610.1  | 572.8  |
| 52.5°  | 983.0  | 849.2  | 658.4  | 540.6  | 506.8  |
| 55°    | 911.6  | 772.5  | 579.7  | 472.8  | 438.9  |
| 57.5°  | 838.6  | 695.8  | 510.3  | 410.4  | 381.8  |
| 60°    | 763.6  | 620.9  | 437.0  | 346.2  | 317.6  |
| 62.5°  | 690.5  | 547.8  | 374.6  | 289.1  | 274.8  |
| 65°    | 615.5  | 471.0  | 310.4  | 249.9  | 244.4  |
| 67.5°  | 544.2  | 399.6  | 249.9  | 219.4  | 214.1  |
| 70°    | 469.3  | 330.1  | 206.9  | 189.1  | 181.9  |
| 72.5°  | 397.9  | 265.8  | 173.1  | 158.8  | 155.2  |
| 75°    | 328.3  | 203.3  | 142.7  | 130.2  | 128.5  |
| 77.5°  | 258.7  | 144.4  | 112.5  | 105.2  | 101.6  |
| 80°    | 194.4  | 103.5  | 85.6   | 78.5   | 78.5   |
| 82.5°  | 135.6  | 69.6   | 58.9   | 55.2   | 55.2   |
| 85°    | 76.7   | 39.2   | 33.9   | 33.9   | 33.9   |
| 87.5°  | 28.6   | 14.2   | 14.2   | 12.5   | 12.5   |
| 90°    | 1.8    | 22.3   | 37.2   | 46.7   | 50.3   |
| 92.5°  | 46.7   | 39.2   | 44.7   | 48.5   | 50.3   |
| 95°    | 121.1  | 59.5   | 72.6   | 82.1   | 80.1   |
| 97.5°  | 218.0  | 65.3   | 94.9   | 100.7  | 102.5  |
| 100°   | 330.0  | 74.6   | 106.3  | 121.1  | 124.8  |
| 102.5° | 452.9  | 449.2  | 110.0  | 130.3  | 136.1  |
| 105°   | 566.6  | 622.6  | 113.7  | 134.1  | 141.7  |
| 107.5° | 698.9  | 745.4  | 117.5  | 137.9  | 145.4  |
| 110°   | 825.8  | 864.7  | 326.3  | 139.9  | 147.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 945.0  | 978.4  | 946.8  | 143.4  | 149.2  |
| 115°   | 1071.6 | 1103.3 | 1150.0 | 287.1  | 152.9  |
| 117.5° | 1181.6 | 1218.8 | 1250.7 | 984.0  | 495.8  |
| 120°   | 1304.7 | 1332.5 | 1366.2 | 1388.5 | 1136.9 |
| 122.5° | 1408.9 | 1438.8 | 1476.2 | 1487.3 | 1489.3 |
| 125°   | 1515.1 | 1539.5 | 1574.9 | 1587.9 | 1593.5 |
| 127.5° | 1612.1 | 1638.2 | 1666.4 | 1684.9 | 1686.7 |
| 130°   | 1703.5 | 1733.3 | 1753.7 | 1774.3 | 1772.5 |
| 132.5° | 1796.7 | 1821.0 | 1841.4 | 1858.2 | 1856.4 |
| 135°   | 1875.0 | 1904.9 | 1921.5 | 1940.3 | 1936.5 |
| 137.5° | 1956.9 | 1979.3 | 1998.1 | 2016.7 | 2011.1 |
| 140°   | 2037.0 | 2052.1 | 2072.5 | 2089.3 | 2079.9 |
| 142.5° | 2104.3 | 2117.3 | 2141.4 | 2156.3 | 2147.0 |
| 145°   | 2175.1 | 2173.1 | 2204.8 | 2217.9 | 2208.5 |
| 147.5° | 2236.5 | 2230.9 | 2262.5 | 2271.9 | 2264.5 |
| 150°   | 2296.2 | 2283.1 | 2313.0 | 2324.0 | 2314.8 |
| 152.5° | 2346.5 | 2331.6 | 2359.4 | 2370.8 | 2357.7 |
| 155°   | 2394.9 | 2378.3 | 2400.6 | 2411.7 | 2396.9 |
| 157.5° | 2434.0 | 2419.2 | 2436.0 | 2449.1 | 2434.0 |
| 160°   | 2467.7 | 2456.5 | 2467.7 | 2478.8 | 2465.7 |
| 162.5° | 2497.4 | 2486.3 | 2495.6 | 2508.6 | 2491.8 |
| 165°   | 2523.5 | 2512.5 | 2518.0 | 2531.0 | 2518.0 |
| 167.5° | 2544.0 | 2532.8 | 2538.5 | 2551.6 | 2534.8 |
| 170°   | 2560.9 | 2549.6 | 2553.4 | 2566.5 | 2549.6 |
| 172.5° | 2572.0 | 2560.9 | 2564.6 | 2577.7 | 2560.9 |
| 175°   | 2581.2 | 2568.2 | 2572.0 | 2585.0 | 2566.5 |
| 177.5° | 2585.0 | 2572.0 | 2573.9 | 2587.0 | 2570.2 |
| 180°   | 2575.7 | 2575.7 | 2575.7 | 2575.7 | 2575.7 |

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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 | 7.11             | 7.83  | 8.19  | 8.91  | 10.38 | 3.08           | 3.80 | 4.16 | 4.88 | 6.35 |
|                 | 3H   | 8.78             | 9.42  | 9.87  | 10.51 | 12.00 | 4.26           | 4.91 | 5.35 | 5.99 | 7.49 |
|                 | 4H   | 9.38             | 9.99  | 10.48 | 11.08 | 12.58 | 4.71           | 5.32 | 5.81 | 6.41 | 7.91 |
|                 | 6H   | 9.80             | 10.36 | 10.91 | 11.45 | 12.96 | 5.03           | 5.59 | 6.14 | 6.68 | 8.19 |
|                 | 8H   | 9.92             | 10.45 | 11.03 | 11.56 | 13.06 | 5.11           | 5.65 | 6.23 | 6.75 | 8.26 |
|                 | 12H  | 9.98             | 10.49 | 11.10 | 11.59 | 13.11 | 5.15           | 5.66 | 6.27 | 6.76 | 8.29 |
| 4H              | 2H   | 7.11             | 7.72  | 8.22  | 8.81  | 10.31 | 3.66           | 4.28 | 4.77 | 5.36 | 6.86 |
|                 | 3H   | 8.93             | 9.44  | 10.05 | 10.56 | 12.07 | 5.01           | 5.51 | 6.12 | 6.63 | 8.14 |
|                 | 4H   | 9.62             | 10.09 | 10.74 | 11.19 | 12.72 | 5.55           | 6.02 | 6.67 | 7.12 | 8.65 |
|                 | 6H   | 10.13            | 10.53 | 11.26 | 11.66 | 13.18 | 5.96           | 6.36 | 7.09 | 7.49 | 9.01 |
|                 | 8H   | 10.30            | 10.68 | 11.43 | 11.79 | 13.33 | 6.09           | 6.46 | 7.22 | 7.58 | 9.12 |
|                 | 12H  | 10.39            | 10.73 | 11.53 | 11.86 | 13.40 | 6.15           | 6.49 | 7.29 | 7.62 | 9.16 |
| 8H              | 4H   | 9.58             | 9.95  | 10.71 | 11.07 | 12.61 | 5.82           | 6.19 | 6.95 | 7.31 | 8.85 |
|                 | 6H   | 10.14            | 10.45 | 11.29 | 11.61 | 13.15 | 6.34           | 6.64 | 7.48 | 7.81 | 9.34 |
|                 | 8H   | 10.36            | 10.63 | 11.51 | 11.77 | 13.32 | 6.53           | 6.80 | 7.68 | 7.94 | 9.49 |
|                 | 12H  | 10.49            | 10.73 | 11.65 | 11.87 | 13.46 | 6.64           | 6.88 | 7.80 | 8.02 | 9.61 |
| 12H             | 4H   | 9.53             | 9.86  | 10.67 | 11.00 | 12.54 | 5.82           | 6.16 | 6.96 | 7.29 | 8.83 |
|                 | 6H   | 10.12            | 10.39 | 11.27 | 11.53 | 13.08 | 6.39           | 6.65 | 7.54 | 7.80 | 9.35 |
|                 | 8H   | 10.33            | 10.57 | 11.49 | 11.71 | 13.30 | 6.59           | 6.83 | 7.75 | 7.97 | 9.56 |

END OF REPORT