

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: P911802

Luminaire Tested: DFN2DIP-SQ3F0-040D050US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911802  
REPORT IS A COMBINATION OF REPORTS P899880 AND P896733  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-040D050US850-RLLFLL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

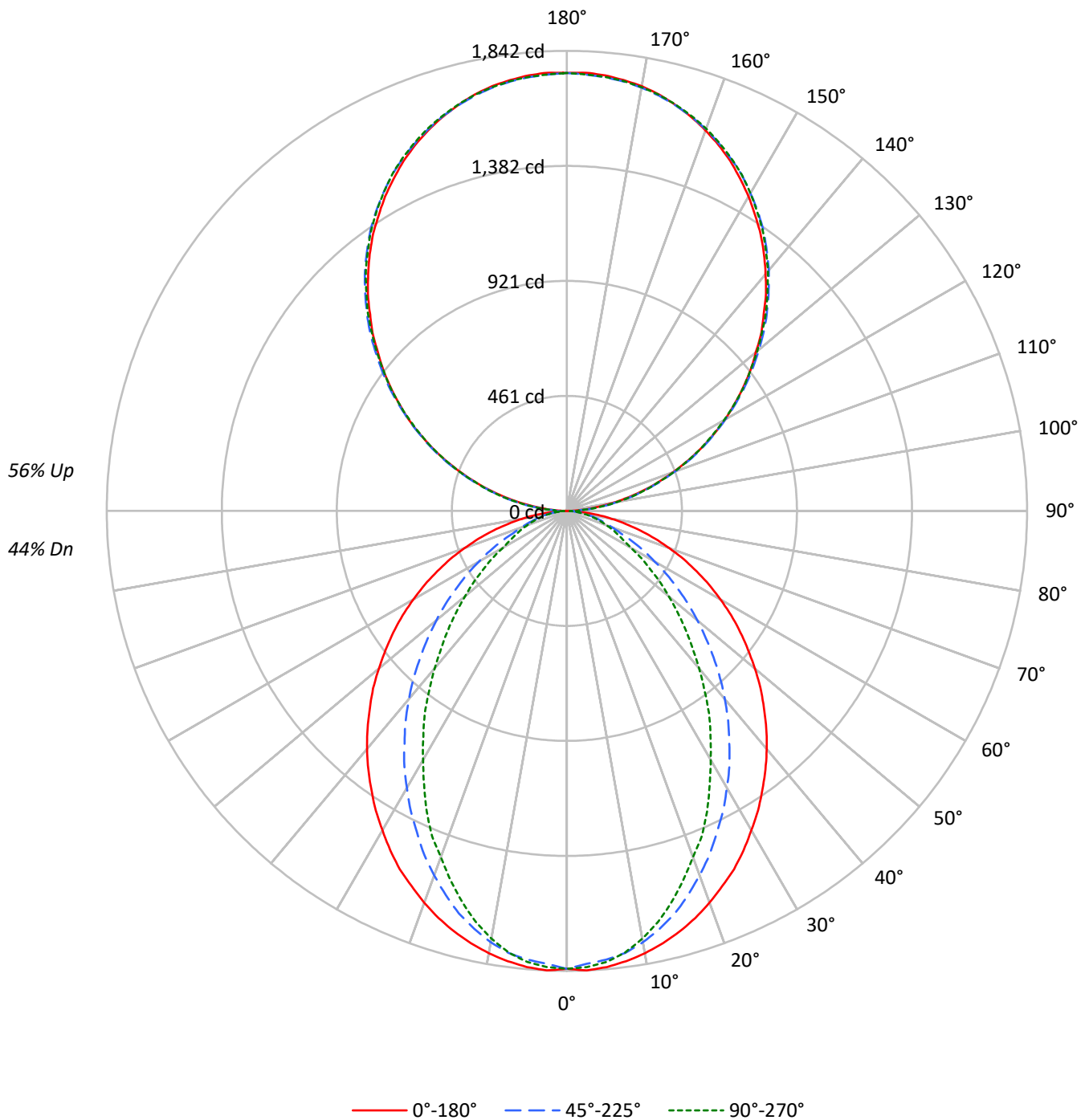
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 8677.9 lumens  
Efficiency: N/A  
Efficacy: 125.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 69.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
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: P911802

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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   | 106 | 106 | 106 | 106 | 97 | 97 | 97 | 97 | 80 | 80 | 80 | 64 | 64 | 64 | 50 | 50 | 50 |
| 1   | 97  | 93  | 89  | 86  | 88 | 85 | 82 | 79 | 70 | 68 | 66 | 57 | 56 | 54 | 45 | 44 | 43 |
| 2   | 88  | 81  | 75  | 71  | 81 | 75 | 70 | 65 | 62 | 59 | 55 | 51 | 48 | 46 | 40 | 38 | 37 |
| 3   | 81  | 72  | 65  | 59  | 74 | 66 | 60 | 55 | 55 | 51 | 47 | 45 | 42 | 39 | 36 | 34 | 32 |
| 4   | 74  | 64  | 56  | 50  | 68 | 59 | 52 | 47 | 49 | 44 | 40 | 41 | 37 | 34 | 32 | 30 | 28 |
| 5   | 68  | 57  | 49  | 43  | 62 | 53 | 46 | 41 | 44 | 39 | 35 | 37 | 33 | 30 | 29 | 27 | 25 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 41 | 35 | 40 | 35 | 31 | 33 | 29 | 26 | 27 | 24 | 22 |
| 7   | 58  | 46  | 39  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 25 | 22 | 20 |
| 8   | 54  | 42  | 35  | 30  | 50 | 39 | 32 | 28 | 33 | 28 | 24 | 28 | 24 | 21 | 23 | 20 | 18 |
| 9   | 50  | 39  | 31  | 26  | 46 | 36 | 29 | 25 | 31 | 25 | 22 | 26 | 22 | 19 | 21 | 18 | 16 |
| 10  | 47  | 35  | 28  | 24  | 43 | 33 | 27 | 22 | 28 | 23 | 20 | 24 | 20 | 17 | 19 | 17 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2101 | 2101 | 2101 |
| 5°  | 2103 | 2066 | 2080 |
| 10° | 2081 | 2024 | 2012 |
| 15° | 2051 | 1956 | 1906 |
| 20° | 2011 | 1862 | 1777 |
| 25° | 1971 | 1758 | 1653 |
| 30° | 1918 | 1651 | 1495 |
| 35° | 1865 | 1536 | 1357 |
| 40° | 1812 | 1417 | 1198 |
| 45° | 1750 | 1285 | 1054 |
| 50° | 1685 | 1152 | 914  |
| 55° | 1618 | 1011 | 779  |
| 60° | 1540 | 862  | 641  |
| 65° | 1451 | 712  | 576  |
| 70° | 1342 | 572  | 520  |
| 75° | 1204 | 501  | 472  |
| 80° | 1007 | 416  | 407  |
| 85° | 683  | 271  | 302  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1763 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 171.8  | 2.0       |
| 10°-20°   | 471.7  | 5.4       |
| 20°-30°   | 662.3  | 7.6       |
| 30°-40°   | 721.9  | 8.3       |
| 40°-50°   | 663.5  | 7.6       |
| 50°-60°   | 521.1  | 6.0       |
| 60°-70°   | 339.2  | 3.9       |
| 70°-80°   | 174.6  | 2.0       |
| 80°-90°   | 49.6   | 0.6       |
| 90°-100°  | 108.5  | 1.3       |
| 100°-110° | 344.8  | 4.0       |
| 110°-120° | 590.1  | 6.8       |
| 120°-130° | 776.0  | 8.9       |
| 130°-140° | 871.0  | 10.0      |
| 140°-150° | 854.2  | 9.8       |
| 150°-160° | 716.5  | 8.3       |
| 160°-170° | 475.2  | 5.5       |
| 170°-180° | 166.1  | 1.9       |
| 0°-30°    | 1305.8 | 15.0      |
| 0°-40°    | 2027.7 | 23.4      |
| 0°-60°    | 3212.2 | 37.0      |
| 0°-90°    | 3775.6 | 43.5      |
| 90°-120°  | 1043.4 | 12.0      |
| 90°-150°  | 3544.6 | 40.8      |
| 90°-180°  | 4902.0 | 56.5      |
| 0°-180°   | 8677.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1833 | 1833  | 1833 | 1833  | 1833 |      |
| 5°   | 1833 | 1825  | 1804 | 1818  | 1814 | 174  |
| 15°  | 1744 | 1726  | 1669 | 1638  | 1621 | 491  |
| 25°  | 1583 | 1530  | 1420 | 1352  | 1327 | 728  |
| 35°  | 1364 | 1279  | 1133 | 1029  | 992  | 854  |
| 45°  | 1115 | 1004  | 830  | 712   | 672  | 861  |
| 55°  | 848  | 718   | 539  | 440   | 408  | 758  |
| 65°  | 572  | 438   | 289  | 232   | 227  | 568  |
| 75°  | 305  | 189   | 133  | 121   | 120  | 323  |
| 85°  | 71   | 36    | 32   | 32    | 32   | 82   |
| 90°  | 2    | 19    | 52   | 49    | 50   | 9    |
| 95°  | 77   | 92    | 95   | 95    | 92   | 86   |
| 105° | 318  | 322   | 326  | 328   | 328  | 336  |
| 115° | 592  | 601   | 598  | 596   | 592  | 586  |
| 125° | 861  | 874   | 870  | 866   | 864  | 770  |
| 135° | 1114 | 1130  | 1134 | 1132  | 1128 | 861  |
| 145° | 1352 | 1363  | 1371 | 1373  | 1367 | 845  |
| 155° | 1546 | 1551  | 1555 | 1563  | 1558 | 712  |
| 165° | 1682 | 1681  | 1681 | 1691  | 1684 | 475  |
| 175° | 1751 | 1746  | 1743 | 1754  | 1745 | 166  |
| 180° | 1754 | 1754  | 1754 | 1754  | 1754 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.4 | 1833.4 | 1833.4 | 1833.4 | 1833.4 |
| 2.5°   | 1841.7 | 1833.4 | 1815.1 | 1831.8 | 1828.4 |
| 5°     | 1833.4 | 1825.1 | 1803.5 | 1818.4 | 1813.5 |
| 7.5°   | 1818.4 | 1808.6 | 1785.4 | 1791.8 | 1783.6 |
| 10°    | 1798.6 | 1786.9 | 1753.8 | 1748.7 | 1738.9 |
| 12.5°  | 1773.7 | 1758.8 | 1713.8 | 1704.0 | 1685.7 |
| 15°    | 1743.8 | 1725.5 | 1669.2 | 1637.7 | 1621.1 |
| 17.5°  | 1709.0 | 1682.4 | 1612.6 | 1576.2 | 1549.6 |
| 20°    | 1669.2 | 1635.9 | 1552.9 | 1511.6 | 1475.0 |
| 22.5°  | 1626.0 | 1587.9 | 1491.5 | 1435.2 | 1410.4 |
| 25°    | 1582.9 | 1529.8 | 1420.2 | 1352.3 | 1327.3 |
| 27.5°  | 1531.5 | 1475.0 | 1353.9 | 1275.9 | 1237.6 |
| 30°    | 1476.7 | 1413.5 | 1280.8 | 1196.3 | 1151.5 |
| 32.5°  | 1423.6 | 1347.2 | 1211.2 | 1111.7 | 1070.1 |
| 35°    | 1364.0 | 1279.2 | 1133.3 | 1028.7 | 992.1  |
| 37.5°  | 1305.8 | 1214.5 | 1060.2 | 945.6  | 904.3  |
| 40°    | 1244.4 | 1144.9 | 983.9  | 866.1  | 823.0  |
| 42.5°  | 1181.3 | 1075.2 | 907.6  | 784.7  | 743.4  |
| 45°    | 1115.0 | 1003.8 | 829.6  | 711.8  | 671.9  |
| 47.5°  | 1052.0 | 934.2  | 755.0  | 637.1  | 600.6  |
| 50°    | 982.2  | 864.5  | 681.9  | 567.4  | 532.7  |
| 52.5°  | 914.1  | 789.7  | 612.3  | 502.7  | 471.2  |
| 55°    | 847.8  | 718.4  | 539.2  | 439.7  | 408.2  |
| 57.5°  | 779.8  | 647.1  | 474.5  | 381.6  | 355.1  |
| 60°    | 710.1  | 577.3  | 406.4  | 321.9  | 295.4  |
| 62.5°  | 642.2  | 509.5  | 348.3  | 268.8  | 255.6  |
| 65°    | 572.5  | 437.9  | 288.7  | 232.3  | 227.2  |
| 67.5°  | 506.1  | 371.6  | 232.3  | 204.1  | 199.1  |
| 70°    | 436.4  | 307.0  | 192.4  | 175.9  | 169.1  |
| 72.5°  | 370.1  | 247.2  | 160.9  | 147.7  | 144.4  |
| 75°    | 305.2  | 189.1  | 132.7  | 121.1  | 119.6  |
| 77.5°  | 240.7  | 134.3  | 104.6  | 97.9   | 94.5   |
| 80°    | 180.8  | 96.3   | 79.5   | 73.1   | 73.1   |
| 82.5°  | 126.1  | 64.8   | 54.8   | 51.3   | 51.3   |
| 85°    | 71.3   | 36.5   | 31.5   | 31.5   | 31.5   |
| 87.5°  | 26.6   | 13.2   | 13.2   | 11.6   | 11.6   |
| 90°    | 1.6    | 19.1   | 51.8   | 48.7   | 50.2   |
| 92.5°  | 32.8   | 44.4   | 46.0   | 47.6   | 47.6   |
| 95°    | 77.2   | 92.0   | 94.6   | 94.6   | 92.0   |
| 97.5°  | 128.4  | 142.2  | 148.1  | 148.1  | 148.1  |
| 100°   | 187.6  | 199.8  | 204.1  | 204.1  | 202.5  |
| 102.5° | 250.1  | 259.1  | 264.8  | 266.5  | 264.8  |
| 105°   | 318.3  | 322.5  | 325.7  | 328.3  | 328.3  |
| 107.5° | 385.9  | 392.3  | 392.3  | 393.4  | 385.9  |
| 110°   | 451.5  | 460.0  | 460.0  | 460.0  | 455.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 522.3  | 531.3  | 529.8  | 525.6  | 522.3  |
| 115°   | 592.1  | 600.6  | 598.0  | 596.4  | 592.1  |
| 117.5° | 661.4  | 673.1  | 665.6  | 661.4  | 657.2  |
| 120°   | 731.2  | 742.8  | 731.2  | 731.2  | 726.4  |
| 122.5° | 794.6  | 809.5  | 802.0  | 797.8  | 794.6  |
| 125°   | 861.2  | 874.4  | 870.2  | 865.5  | 863.9  |
| 127.5° | 926.2  | 942.6  | 936.9  | 930.5  | 926.2  |
| 130°   | 987.1  | 1006.1 | 1003.4 | 1000.3 | 994.4  |
| 132.5° | 1055.3 | 1070.1 | 1071.2 | 1063.8 | 1059.5 |
| 135°   | 1114.0 | 1130.3 | 1133.5 | 1132.0 | 1127.7 |
| 137.5° | 1179.5 | 1192.7 | 1195.4 | 1194.3 | 1188.0 |
| 140°   | 1237.1 | 1250.4 | 1257.7 | 1257.7 | 1252.0 |
| 142.5° | 1296.3 | 1309.6 | 1313.8 | 1315.4 | 1309.6 |
| 145°   | 1352.4 | 1363.0 | 1371.4 | 1373.1 | 1367.2 |
| 147.5° | 1402.7 | 1415.9 | 1422.2 | 1424.8 | 1419.0 |
| 150°   | 1454.5 | 1463.4 | 1469.2 | 1474.0 | 1469.2 |
| 152.5° | 1500.5 | 1509.5 | 1516.8 | 1522.7 | 1516.8 |
| 155°   | 1546.4 | 1550.6 | 1555.4 | 1562.8 | 1558.0 |
| 157.5° | 1586.1 | 1589.2 | 1591.9 | 1602.5 | 1595.1 |
| 160°   | 1621.5 | 1624.7 | 1626.2 | 1635.2 | 1628.9 |
| 162.5° | 1654.3 | 1654.3 | 1655.8 | 1665.9 | 1658.5 |
| 165°   | 1682.4 | 1680.7 | 1680.7 | 1691.3 | 1683.9 |
| 167.5° | 1707.6 | 1702.9 | 1702.9 | 1713.5 | 1706.1 |
| 170°   | 1726.7 | 1722.5 | 1720.9 | 1731.5 | 1722.5 |
| 172.5° | 1739.9 | 1735.7 | 1734.1 | 1744.7 | 1735.7 |
| 175°   | 1750.6 | 1746.2 | 1743.1 | 1753.7 | 1744.7 |
| 177.5° | 1756.3 | 1752.1 | 1748.9 | 1757.9 | 1748.9 |
| 180°   | 1753.7 | 1753.7 | 1753.7 | 1753.7 | 1753.7 |

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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 | 9.05             | 9.83  | 10.07 | 10.85 | 12.22 | 5.01           | 5.79 | 6.03 | 6.81 | 8.18  |
|                 | 3H   | 10.72            | 11.42 | 11.75 | 12.45 | 13.83 | 6.19           | 6.89 | 7.22 | 7.92 | 9.30  |
|                 | 4H   | 11.32            | 11.98 | 12.36 | 13.02 | 14.41 | 6.63           | 7.29 | 7.67 | 8.33 | 9.72  |
|                 | 6H   | 11.74            | 12.35 | 12.79 | 13.38 | 14.79 | 6.95           | 7.55 | 8.00 | 8.59 | 10.00 |
|                 | 8H   | 11.86            | 12.44 | 12.92 | 13.49 | 14.89 | 7.03           | 7.61 | 8.09 | 8.66 | 10.06 |
|                 | 12H  | 11.92            | 12.47 | 12.98 | 13.52 | 14.94 | 7.07           | 7.62 | 8.13 | 8.67 | 10.09 |
| 4H              | 2H   | 9.06             | 9.72  | 10.11 | 10.76 | 12.15 | 5.60           | 6.26 | 6.65 | 7.29 | 8.68  |
|                 | 3H   | 10.88            | 11.43 | 11.94 | 12.49 | 13.90 | 6.94           | 7.49 | 7.99 | 8.55 | 9.95  |
|                 | 4H   | 11.57            | 12.07 | 12.63 | 13.12 | 14.55 | 7.48           | 7.98 | 8.54 | 9.03 | 10.46 |
|                 | 6H   | 12.08            | 12.51 | 13.15 | 13.58 | 15.00 | 7.89           | 8.32 | 8.96 | 9.40 | 10.82 |
|                 | 8H   | 12.25            | 12.65 | 13.32 | 13.72 | 15.16 | 8.01           | 8.41 | 9.08 | 9.48 | 10.92 |
|                 | 12H  | 12.34            | 12.70 | 13.42 | 13.78 | 15.23 | 8.07           | 8.43 | 9.16 | 9.52 | 10.96 |
| 8H              | 4H   | 11.53            | 11.93 | 12.60 | 13.00 | 14.44 | 7.75           | 8.15 | 8.82 | 9.22 | 10.66 |
|                 | 6H   | 12.09            | 12.42 | 13.18 | 13.53 | 14.97 | 8.26           | 8.59 | 9.35 | 9.70 | 11.14 |
|                 | 8H   | 12.30            | 12.59 | 13.40 | 13.69 | 15.14 | 8.45           | 8.74 | 9.55 | 9.83 | 11.28 |
|                 | 12H  | 12.44            | 12.69 | 13.54 | 13.78 | 15.27 | 8.56           | 8.81 | 9.66 | 9.90 | 11.39 |
| 12H             | 4H   | 11.48            | 11.84 | 12.57 | 12.93 | 14.37 | 7.75           | 8.12 | 8.84 | 9.20 | 10.64 |
|                 | 6H   | 12.06            | 12.36 | 13.16 | 13.45 | 14.90 | 8.31           | 8.60 | 9.41 | 9.69 | 11.15 |
|                 | 8H   | 12.28            | 12.54 | 13.38 | 13.62 | 15.12 | 8.51           | 8.77 | 9.61 | 9.86 | 11.35 |

END OF REPORT