

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: P911783

Luminaire Tested: DFN2DIP-SQ2F0-080D050US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911783  
REPORT IS A COMBINATION OF REPORTS P901326 AND P898215  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-080D050US850-RLLONL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

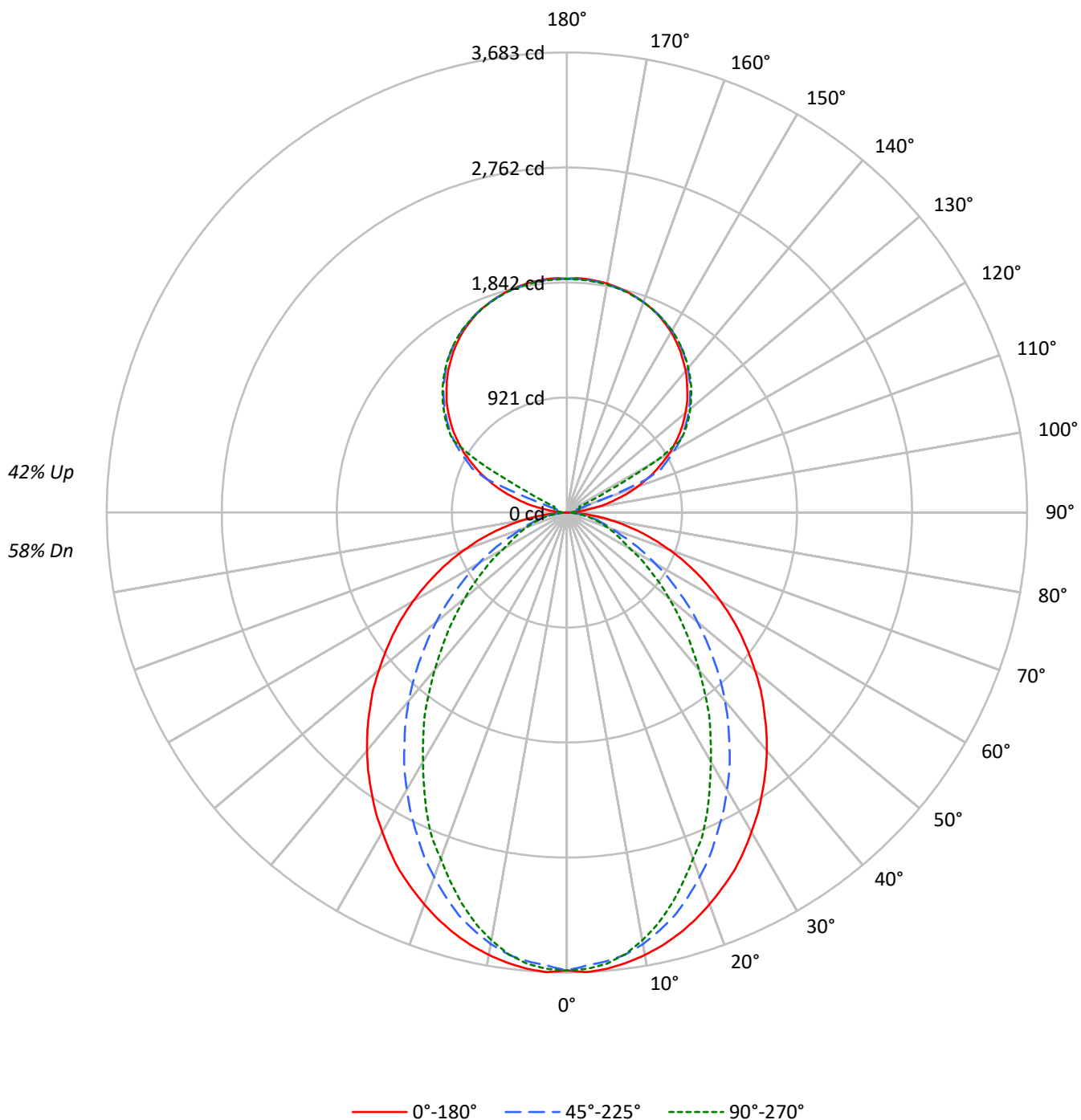
Lumens per Lamp: N/A  
Luminaire Lumens: 13030.8 lumens  
Efficiency: N/A  
Efficacy: 111.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 116.4  
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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 96  | 92  | 89  | 93  | 90  | 86  | 83  | 78 | 75 | 73 | 67 | 65 | 64 | 57 | 56 | 55 |
| 2   | 92  | 84  | 79  | 74  | 85  | 79  | 74  | 69  | 69 | 65 | 62 | 59 | 57 | 54 | 51 | 49 | 47 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 43 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 62  | 56  | 50  | 55 | 49 | 45 | 48 | 44 | 40 | 41 | 38 | 35 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 43  | 38  | 45 | 39 | 35 | 39 | 35 | 31 | 34 | 31 | 28 |
| 7   | 61  | 49  | 41  | 35  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 28 | 25 |
| 8   | 57  | 44  | 37  | 32  | 53  | 42  | 35  | 30  | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 23 |
| 9   | 53  | 41  | 33  | 28  | 49  | 39  | 32  | 27  | 34 | 29 | 25 | 30 | 26 | 23 | 27 | 23 | 20 |
| 10  | 49  | 38  | 30  | 26  | 46  | 36  | 29  | 25  | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 8063 | 8063 | 8063 |
| 5°  | 8062 | 7917 | 7974 |
| 10° | 7968 | 7745 | 7704 |
| 15° | 7844 | 7472 | 7292 |
| 20° | 7685 | 7103 | 6791 |
| 25° | 7522 | 6692 | 6308 |
| 30° | 7308 | 6273 | 5698 |
| 35° | 7098 | 5824 | 5163 |
| 40° | 6883 | 5361 | 4552 |
| 45° | 6635 | 4850 | 3998 |
| 50° | 6377 | 4336 | 3458 |
| 55° | 6106 | 3788 | 2940 |
| 60° | 5792 | 3219 | 2410 |
| 65° | 5431 | 2642 | 2156 |
| 70° | 4991 | 2104 | 1935 |
| 75° | 4438 | 1821 | 1738 |
| 80° | 3644 | 1479 | 1473 |
| 85° | 2372 | 918  | 1048 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 6635 cd/sqm

TEST NUMBER: P911783

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US850-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 343.7   | 2.6       |
| 10°-20°   | 943.4   | 7.2       |
| 20°-30°   | 1324.5  | 10.2      |
| 30°-40°   | 1443.8  | 11.1      |
| 40°-50°   | 1327.0  | 10.2      |
| 50°-60°   | 1042.1  | 8.0       |
| 60°-70°   | 678.3   | 5.2       |
| 70°-80°   | 349.2   | 2.7       |
| 80°-90°   | 92.4    | 0.7       |
| 90°-100°  | 61.7    | 0.5       |
| 100°-110° | 230.0   | 1.8       |
| 110°-120° | 610.1   | 4.7       |
| 120°-130° | 1011.9  | 7.8       |
| 130°-140° | 1074.8  | 8.2       |
| 140°-150° | 999.0   | 7.7       |
| 150°-160° | 803.1   | 6.2       |
| 160°-170° | 517.5   | 4.0       |
| 170°-180° | 178.1   | 1.4       |
| 0°-30°    | 2611.6  | 20.0      |
| 0°-40°    | 4055.4  | 31.1      |
| 0°-60°    | 6424.5  | 49.3      |
| 0°-90°    | 7544.5  | 57.9      |
| 90°-120°  | 901.9   | 6.9       |
| 90°-150°  | 3987.5  | 30.6      |
| 90°-180°  | 5486.0  | 42.1      |
| 0°-180°   | 13030.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3667 | 3667  | 3667 | 3667  | 3667 |      |
| 5°   | 3667 | 3650  | 3607 | 3637  | 3627 | 348  |
| 15°  | 3488 | 3451  | 3338 | 3275  | 3242 | 983  |
| 25°  | 3166 | 3060  | 2840 | 2705  | 2655 | 1456 |
| 35°  | 2728 | 2558  | 2267 | 2058  | 1984 | 1707 |
| 45°  | 2230 | 2008  | 1659 | 1423  | 1344 | 1722 |
| 55°  | 1696 | 1437  | 1078 | 879   | 816  | 1515 |
| 65°  | 1145 | 876   | 577  | 465   | 454  | 1135 |
| 75°  | 610  | 378   | 266  | 242   | 239  | 646  |
| 85°  | 143  | 73    | 63   | 63    | 63   | 164  |
| 90°  | 1    | 16    | 27   | 34    | 36   | 12   |
| 95°  | 88   | 43    | 53   | 60    | 58   | 104  |
| 105° | 412  | 452   | 83   | 98    | 103  | 440  |
| 115° | 779  | 802   | 836  | 209   | 111  | 767  |
| 125° | 1101 | 1118  | 1144 | 1154  | 1158 | 982  |
| 135° | 1362 | 1384  | 1396 | 1410  | 1407 | 1052 |
| 145° | 1580 | 1579  | 1602 | 1611  | 1605 | 988  |
| 155° | 1740 | 1728  | 1744 | 1752  | 1742 | 802  |
| 165° | 1833 | 1825  | 1829 | 1839  | 1829 | 518  |
| 175° | 1875 | 1866  | 1869 | 1878  | 1865 | 178  |
| 180° | 1871 | 1871  | 1871 | 1871  | 1871 |      |

TEST NUMBER: P911783

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US850-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3666.8 | 3666.8 | 3666.8 | 3666.8 | 3666.8 |
| 2.5°   | 3683.3 | 3666.8 | 3630.2 | 3663.6 | 3656.9 |
| 5°     | 3666.8 | 3650.3 | 3606.9 | 3636.9 | 3627.0 |
| 7.5°   | 3636.9 | 3617.1 | 3570.6 | 3583.7 | 3567.1 |
| 10°    | 3597.0 | 3573.9 | 3507.7 | 3497.5 | 3477.7 |
| 12.5°  | 3547.5 | 3517.5 | 3427.7 | 3408.0 | 3371.4 |
| 15°    | 3487.6 | 3451.0 | 3338.3 | 3275.3 | 3242.2 |
| 17.5°  | 3417.8 | 3364.7 | 3225.3 | 3152.4 | 3099.2 |
| 20°    | 3338.3 | 3271.8 | 3106.0 | 3023.2 | 2949.9 |
| 22.5°  | 3252.0 | 3175.6 | 2983.1 | 2870.4 | 2820.7 |
| 25°    | 3165.8 | 3059.5 | 2840.5 | 2704.6 | 2654.6 |
| 27.5°  | 3062.9 | 2949.9 | 2707.7 | 2551.8 | 2475.4 |
| 30°    | 2953.5 | 2827.1 | 2561.7 | 2392.7 | 2302.8 |
| 32.5°  | 2847.1 | 2694.4 | 2422.6 | 2223.3 | 2140.3 |
| 35°    | 2727.8 | 2558.5 | 2266.6 | 2057.5 | 1984.2 |
| 37.5°  | 2611.6 | 2428.9 | 2120.5 | 1891.3 | 1808.6 |
| 40°    | 2488.8 | 2289.9 | 1967.7 | 1732.1 | 1645.9 |
| 42.5°  | 2362.7 | 2150.5 | 1815.2 | 1569.6 | 1486.7 |
| 45°    | 2230.0 | 2007.5 | 1659.3 | 1423.4 | 1343.9 |
| 47.5°  | 2104.0 | 1868.4 | 1510.0 | 1274.1 | 1201.3 |
| 50°    | 1964.5 | 1729.0 | 1364.0 | 1134.7 | 1065.3 |
| 52.5°  | 1828.3 | 1579.3 | 1224.4 | 1005.5 | 942.5  |
| 55°    | 1695.6 | 1436.8 | 1078.4 | 879.4  | 816.4  |
| 57.5°  | 1559.7 | 1294.2 | 949.2  | 763.3  | 710.1  |
| 60°    | 1420.2 | 1154.8 | 812.9  | 643.9  | 590.8  |
| 62.5°  | 1284.3 | 1018.8 | 696.8  | 537.6  | 511.2  |
| 65°    | 1144.9 | 875.9  | 577.3  | 464.8  | 454.5  |
| 67.5°  | 1012.2 | 743.3  | 464.8  | 408.0  | 398.2  |
| 70°    | 872.8  | 614.1  | 384.8  | 351.7  | 338.4  |
| 72.5°  | 740.0  | 494.3  | 321.8  | 295.4  | 288.7  |
| 75°    | 610.5  | 378.2  | 265.5  | 242.2  | 239.1  |
| 77.5°  | 481.3  | 268.6  | 209.2  | 195.7  | 189.1  |
| 80°    | 361.5  | 192.6  | 159.1  | 146.1  | 146.1  |
| 82.5°  | 252.1  | 129.5  | 109.5  | 102.8  | 102.8  |
| 85°    | 142.6  | 72.9   | 63.0   | 63.0   | 63.0   |
| 87.5°  | 53.1   | 26.4   | 26.4   | 23.3   | 23.3   |
| 90°    | 1.3    | 16.2   | 27.1   | 33.9   | 36.5   |
| 92.5°  | 33.9   | 28.5   | 32.5   | 35.3   | 36.5   |
| 95°    | 87.9   | 43.3   | 52.8   | 59.7   | 58.2   |
| 97.5°  | 158.4  | 47.5   | 69.0   | 73.2   | 74.4   |
| 100°   | 239.8  | 54.2   | 77.2   | 87.9   | 90.7   |
| 102.5° | 329.0  | 326.4  | 80.0   | 94.7   | 98.9   |
| 105°   | 411.7  | 452.4  | 82.6   | 97.5   | 102.9  |
| 107.5° | 507.8  | 541.5  | 85.4   | 100.1  | 105.7  |
| 110°   | 600.0  | 628.2  | 237.0  | 101.6  | 106.9  |

TEST NUMBER: P911783

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US850-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 686.6  | 710.9  | 687.9  | 104.2  | 108.3  |
| 115°   | 778.6  | 801.6  | 835.5  | 208.6  | 111.1  |
| 117.5° | 858.5  | 885.5  | 908.7  | 714.9  | 360.2  |
| 120°   | 947.9  | 968.2  | 992.6  | 1008.9 | 826.0  |
| 122.5° | 1023.6 | 1045.3 | 1072.5 | 1080.6 | 1082.1 |
| 125°   | 1100.8 | 1118.5 | 1144.3 | 1153.7 | 1157.8 |
| 127.5° | 1171.2 | 1190.2 | 1210.7 | 1224.1 | 1225.4 |
| 130°   | 1237.6 | 1259.4 | 1274.1 | 1289.1 | 1287.9 |
| 132.5° | 1305.4 | 1323.0 | 1337.8 | 1350.1 | 1348.8 |
| 135°   | 1362.3 | 1384.0 | 1396.0 | 1409.8 | 1407.0 |
| 137.5° | 1421.7 | 1438.0 | 1451.7 | 1465.2 | 1461.2 |
| 140°   | 1480.0 | 1490.9 | 1505.7 | 1517.9 | 1511.2 |
| 142.5° | 1528.9 | 1538.4 | 1555.9 | 1566.7 | 1559.9 |
| 145°   | 1580.3 | 1578.9 | 1601.8 | 1611.4 | 1604.6 |
| 147.5° | 1624.9 | 1620.8 | 1643.9 | 1650.6 | 1645.3 |
| 150°   | 1668.3 | 1658.8 | 1680.5 | 1688.6 | 1681.8 |
| 152.5° | 1704.8 | 1694.0 | 1714.3 | 1722.5 | 1713.0 |
| 155°   | 1740.0 | 1727.9 | 1744.1 | 1752.2 | 1741.5 |
| 157.5° | 1768.4 | 1757.7 | 1769.9 | 1779.4 | 1768.4 |
| 160°   | 1792.9 | 1784.7 | 1792.9 | 1800.9 | 1791.5 |
| 162.5° | 1814.4 | 1806.5 | 1813.1 | 1822.6 | 1810.4 |
| 165°   | 1833.4 | 1825.4 | 1829.4 | 1838.8 | 1829.4 |
| 167.5° | 1848.4 | 1840.2 | 1844.4 | 1853.8 | 1841.6 |
| 170°   | 1860.6 | 1852.4 | 1855.1 | 1864.6 | 1852.4 |
| 172.5° | 1868.7 | 1860.6 | 1863.3 | 1872.8 | 1860.6 |
| 175°   | 1875.4 | 1865.9 | 1868.7 | 1878.1 | 1864.6 |
| 177.5° | 1878.1 | 1868.7 | 1870.1 | 1879.5 | 1867.3 |
| 180°   | 1871.3 | 1871.3 | 1871.3 | 1871.3 | 1871.3 |

TEST NUMBER: P911783

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US850-RLONL

**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 | 14.99            | 15.89 | 15.88 | 16.80 | 17.96 | 10.95          | 11.85 | 11.85 | 12.76 | 13.92 |
|                 | 3H   | 16.65            | 17.46 | 17.56 | 18.38 | 19.56 | 12.13          | 12.93 | 13.03 | 13.85 | 15.03 |
|                 | 4H   | 17.25            | 18.01 | 18.17 | 18.94 | 20.13 | 12.57          | 13.33 | 13.49 | 14.25 | 15.44 |
|                 | 6H   | 17.66            | 18.36 | 18.59 | 19.29 | 20.50 | 12.88          | 13.58 | 13.81 | 14.51 | 15.71 |
|                 | 8H   | 17.78            | 18.45 | 18.72 | 19.39 | 20.60 | 12.96          | 13.63 | 13.90 | 14.57 | 15.77 |
|                 | 12H  | 17.84            | 18.47 | 18.78 | 19.41 | 20.64 | 13.00          | 13.63 | 13.94 | 14.57 | 15.80 |
| 4H              | 2H   | 15.01            | 15.77 | 15.94 | 16.70 | 17.89 | 11.55          | 12.30 | 12.47 | 13.23 | 14.42 |
|                 | 3H   | 16.83            | 17.46 | 17.76 | 18.41 | 19.62 | 12.88          | 13.51 | 13.82 | 14.47 | 15.67 |
|                 | 4H   | 17.51            | 18.08 | 18.45 | 19.03 | 20.26 | 13.42          | 13.99 | 14.36 | 14.94 | 16.17 |
|                 | 6H   | 18.01            | 18.50 | 18.97 | 19.47 | 20.70 | 13.82          | 14.31 | 14.78 | 15.29 | 16.52 |
|                 | 8H   | 18.17            | 18.63 | 19.13 | 19.60 | 20.84 | 13.94          | 14.40 | 14.90 | 15.37 | 16.61 |
|                 | 12H  | 18.26            | 18.67 | 19.24 | 19.66 | 20.91 | 14.00          | 14.41 | 14.98 | 15.40 | 16.65 |
| 8H              | 4H   | 17.47            | 17.94 | 18.44 | 18.90 | 20.15 | 13.69          | 14.15 | 14.65 | 15.12 | 16.36 |
|                 | 6H   | 18.02            | 18.40 | 19.01 | 19.41 | 20.65 | 14.19          | 14.57 | 15.17 | 15.57 | 16.82 |
|                 | 8H   | 18.22            | 18.56 | 19.22 | 19.56 | 20.82 | 14.36          | 14.70 | 15.36 | 15.70 | 16.96 |
|                 | 12H  | 18.35            | 18.65 | 19.35 | 19.64 | 20.95 | 14.47          | 14.77 | 15.47 | 15.76 | 17.06 |
| 12H             | 4H   | 17.43            | 17.84 | 18.41 | 18.83 | 20.08 | 13.69          | 14.11 | 14.67 | 15.09 | 16.34 |
|                 | 6H   | 17.99            | 18.33 | 18.99 | 19.33 | 20.59 | 14.23          | 14.57 | 15.23 | 15.56 | 16.82 |
|                 | 8H   | 18.20            | 18.50 | 19.20 | 19.49 | 20.80 | 14.43          | 14.72 | 15.43 | 15.71 | 17.02 |

END OF REPORT