

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: P924765

Luminaire Tested: DFN2DIP-PN2F0-060D050US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924765  
REPORT IS A COMBINATION OF REPORTS P901019 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-060D050US950-FLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

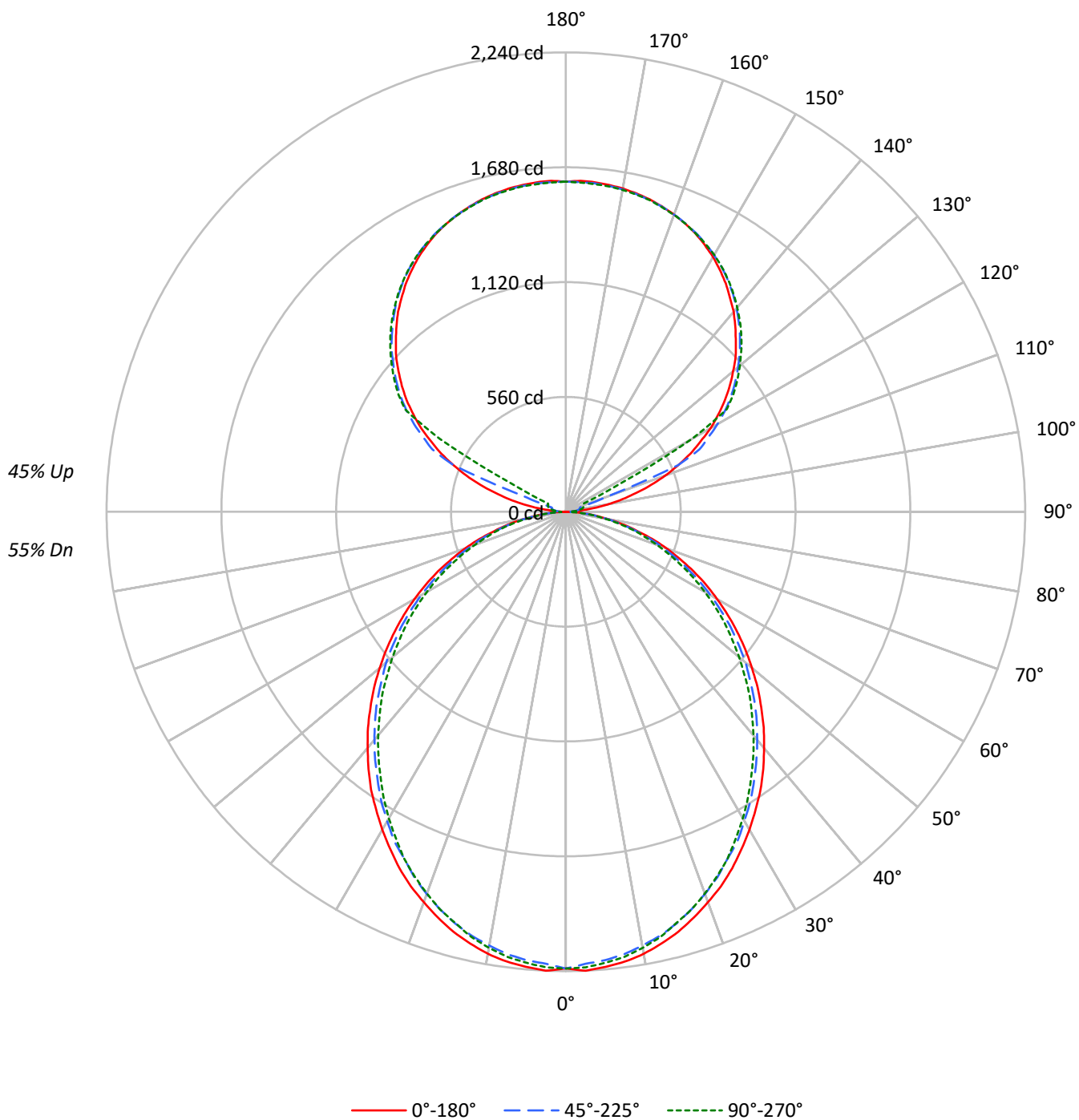
Lumens per Lamp: N/A  
Luminaire Lumens: 10389.1 lumens  
Efficiency: N/A  
Efficacy: 98.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 105.8  
Input Voltage (V): 120  
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

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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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 86 | 86 | 86 | 73 | 73 | 73 | 60 | 60 | 60 |
| 1   | 99  | 94  | 91  | 87  | 92  | 88  | 84  | 81  | 75 | 73 | 71 | 64 | 62 | 60 | 53 | 52 | 51 |
| 2   | 90  | 82  | 76  | 71  | 83  | 77  | 71  | 67  | 66 | 62 | 58 | 56 | 53 | 51 | 47 | 45 | 43 |
| 3   | 82  | 73  | 65  | 59  | 76  | 68  | 61  | 56  | 58 | 53 | 49 | 50 | 46 | 43 | 42 | 39 | 37 |
| 4   | 75  | 64  | 56  | 50  | 69  | 60  | 53  | 47  | 52 | 46 | 42 | 44 | 40 | 37 | 37 | 34 | 32 |
| 5   | 69  | 57  | 49  | 43  | 64  | 53  | 46  | 41  | 46 | 41 | 36 | 40 | 35 | 32 | 34 | 30 | 27 |
| 6   | 64  | 51  | 43  | 37  | 59  | 48  | 41  | 35  | 42 | 36 | 32 | 36 | 31 | 28 | 30 | 27 | 24 |
| 7   | 59  | 46  | 38  | 33  | 54  | 43  | 36  | 31  | 38 | 32 | 28 | 33 | 28 | 25 | 28 | 24 | 22 |
| 8   | 55  | 42  | 34  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 30 | 25 | 22 | 26 | 22 | 19 |
| 9   | 51  | 39  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 26 | 22 | 28 | 23 | 20 | 24 | 20 | 17 |
| 10  | 48  | 35  | 28  | 23  | 44  | 33  | 27  | 22  | 29 | 24 | 20 | 25 | 21 | 18 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 4824 | 4824 | 4824 |
| 5°  | 4824 | 4746 | 4781 |
| 10° | 4777 | 4672 | 4710 |
| 15° | 4699 | 4585 | 4602 |
| 20° | 4596 | 4468 | 4491 |
| 25° | 4494 | 4330 | 4365 |
| 30° | 4368 | 4201 | 4205 |
| 35° | 4247 | 4050 | 4038 |
| 40° | 4100 | 3898 | 3877 |
| 45° | 3954 | 3744 | 3713 |
| 50° | 3793 | 3583 | 3523 |
| 55° | 3623 | 3396 | 3347 |
| 60° | 3432 | 3177 | 3145 |
| 65° | 3221 | 2947 | 2907 |
| 70° | 2954 | 2667 | 2650 |
| 75° | 2588 | 2332 | 2402 |
| 80° | 2142 | 1905 | 1949 |
| 85° | 1453 | 1204 | 1222 |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3954 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 209.6   | 2.0       |
| 10°-20°   | 589.8   | 5.7       |
| 20°-30°   | 866.8   | 8.3       |
| 30°-40°   | 1006.7  | 9.7       |
| 40°-50°   | 1005.5  | 9.7       |
| 50°-60°   | 876.7   | 8.4       |
| 60°-70°   | 648.1   | 6.2       |
| 70°-80°   | 366.7   | 3.5       |
| 80°-90°   | 99.6    | 1.0       |
| 90°-100°  | 53.1    | 0.5       |
| 100°-110° | 197.9   | 1.9       |
| 110°-120° | 524.8   | 5.1       |
| 120°-130° | 870.4   | 8.4       |
| 130°-140° | 924.6   | 8.9       |
| 140°-150° | 859.3   | 8.3       |
| 150°-160° | 690.9   | 6.7       |
| 160°-170° | 445.2   | 4.3       |
| 170°-180° | 153.2   | 1.5       |
| 0°-30°    | 1666.2  | 16.0      |
| 0°-40°    | 2673.0  | 25.7      |
| 0°-60°    | 4555.2  | 43.8      |
| 0°-90°    | 5669.6  | 54.6      |
| 90°-120°  | 775.8   | 7.5       |
| 90°-150°  | 3430.2  | 33.0      |
| 90°-180°  | 4719.0  | 45.4      |
| 0°-180°   | 10389.1 | 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°  | 1    | 14    | 23   | 29    | 31   | 10   |
| 95°  | 76   | 37    | 45   | 51    | 50   | 90   |
| 105° | 354  | 389   | 71   | 84    | 88   | 378  |
| 115° | 670  | 690   | 719  | 179   | 96   | 659  |
| 125° | 947  | 962   | 984  | 992   | 996  | 845  |
| 135° | 1172 | 1191  | 1201 | 1213  | 1210 | 905  |
| 145° | 1359 | 1358  | 1378 | 1386  | 1380 | 850  |
| 155° | 1497 | 1486  | 1500 | 1507  | 1498 | 690  |
| 165° | 1577 | 1570  | 1574 | 1582  | 1574 | 446  |
| 175° | 1613 | 1605  | 1608 | 1616  | 1604 | 154  |
| 180° | 1610 | 1610  | 1610 | 1610  | 1610 |      |

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**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°    | 1.1    | 13.9   | 23.3   | 29.2   | 31.4   |
| 92.5°  | 29.2   | 24.5   | 28.0   | 30.3   | 31.4   |
| 95°    | 75.7   | 37.2   | 45.4   | 51.3   | 50.1   |
| 97.5°  | 136.2  | 40.8   | 59.3   | 63.0   | 64.0   |
| 100°   | 206.3  | 46.7   | 66.4   | 75.7   | 78.0   |
| 102.5° | 283.1  | 280.8  | 68.8   | 81.5   | 85.1   |
| 105°   | 354.1  | 389.1  | 71.1   | 83.9   | 88.5   |
| 107.5° | 436.8  | 465.8  | 73.5   | 86.1   | 90.9   |
| 110°   | 516.1  | 540.4  | 203.9  | 87.4   | 92.0   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 590.6  | 611.5  | 591.8  | 89.7   | 93.2   |
| 115°   | 669.8  | 689.6  | 718.7  | 179.4  | 95.6   |
| 117.5° | 738.5  | 761.8  | 781.7  | 614.9  | 309.9  |
| 120°   | 815.4  | 832.8  | 853.8  | 867.9  | 710.5  |
| 122.5° | 880.5  | 899.2  | 922.6  | 929.6  | 930.8  |
| 125°   | 946.9  | 962.2  | 984.3  | 992.4  | 996.0  |
| 127.5° | 1007.5 | 1023.8 | 1041.5 | 1053.0 | 1054.2 |
| 130°   | 1064.7 | 1083.4 | 1096.1 | 1108.9 | 1107.9 |
| 132.5° | 1123.0 | 1138.1 | 1150.8 | 1161.4 | 1160.3 |
| 135°   | 1171.9 | 1190.6 | 1200.9 | 1212.7 | 1210.3 |
| 137.5° | 1223.0 | 1237.1 | 1248.8 | 1260.4 | 1257.0 |
| 140°   | 1273.1 | 1282.6 | 1295.2 | 1305.7 | 1300.0 |
| 142.5° | 1315.2 | 1323.4 | 1338.5 | 1347.7 | 1341.9 |
| 145°   | 1359.4 | 1358.2 | 1378.0 | 1386.2 | 1380.3 |
| 147.5° | 1397.8 | 1394.3 | 1414.1 | 1419.9 | 1415.4 |
| 150°   | 1435.1 | 1427.0 | 1445.6 | 1452.6 | 1446.7 |
| 152.5° | 1466.5 | 1457.2 | 1474.7 | 1481.8 | 1473.5 |
| 155°   | 1496.8 | 1486.4 | 1500.4 | 1507.3 | 1498.1 |
| 157.5° | 1521.2 | 1512.0 | 1522.5 | 1530.7 | 1521.2 |
| 160°   | 1542.3 | 1535.3 | 1542.3 | 1549.2 | 1541.1 |
| 162.5° | 1560.8 | 1554.0 | 1559.7 | 1567.9 | 1557.4 |
| 165°   | 1577.2 | 1570.3 | 1573.7 | 1581.8 | 1573.7 |
| 167.5° | 1590.0 | 1583.0 | 1586.6 | 1594.7 | 1584.2 |
| 170°   | 1600.5 | 1593.5 | 1595.9 | 1604.0 | 1593.5 |
| 172.5° | 1607.5 | 1600.5 | 1602.9 | 1611.0 | 1600.5 |
| 175°   | 1613.3 | 1605.1 | 1607.5 | 1615.6 | 1604.0 |
| 177.5° | 1615.6 | 1607.5 | 1608.7 | 1616.8 | 1606.3 |
| 180°   | 1609.8 | 1609.8 | 1609.8 | 1609.8 | 1609.8 |

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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 | 13.04            | 13.94 | 13.95 | 14.87 | 16.08 | 12.60          | 13.50 | 13.51 | 14.44 | 15.64 |
|                 | 3H   | 14.68            | 15.49 | 15.61 | 16.43 | 17.66 | 14.20          | 15.01 | 15.13 | 15.95 | 17.18 |
|                 | 4H   | 15.25            | 16.02 | 16.20 | 16.97 | 18.21 | 14.77          | 15.54 | 15.72 | 16.49 | 17.73 |
|                 | 6H   | 15.64            | 16.35 | 16.60 | 17.30 | 18.55 | 15.15          | 15.86 | 16.11 | 16.82 | 18.07 |
|                 | 8H   | 15.74            | 16.41 | 16.70 | 17.39 | 18.63 | 15.25          | 15.93 | 16.21 | 16.90 | 18.15 |
|                 | 12H  | 15.78            | 16.42 | 16.75 | 17.39 | 18.66 | 15.29          | 15.93 | 16.26 | 16.90 | 18.17 |
| 4H              | 2H   | 13.49            | 14.26 | 14.44 | 15.21 | 16.45 | 13.14          | 13.91 | 14.09 | 14.86 | 16.10 |
|                 | 3H   | 15.34            | 15.98 | 16.30 | 16.96 | 18.21 | 14.94          | 15.58 | 15.90 | 16.56 | 17.81 |
|                 | 4H   | 16.04            | 16.62 | 17.01 | 17.60 | 18.87 | 15.62          | 16.21 | 16.59 | 17.18 | 18.46 |
|                 | 6H   | 16.54            | 17.04 | 17.52 | 18.04 | 19.31 | 16.12          | 16.62 | 17.10 | 17.62 | 18.89 |
|                 | 8H   | 16.68            | 17.15 | 17.66 | 18.14 | 19.43 | 16.25          | 16.72 | 17.24 | 17.71 | 19.00 |
|                 | 12H  | 16.74            | 17.17 | 17.74 | 18.17 | 19.47 | 16.31          | 16.73 | 17.31 | 17.74 | 19.04 |
| 8H              | 4H   | 16.23            | 16.70 | 17.21 | 17.69 | 18.98 | 15.86          | 16.33 | 16.84 | 17.32 | 18.61 |
|                 | 6H   | 16.84            | 17.23 | 17.84 | 18.26 | 19.54 | 16.46          | 16.85 | 17.47 | 17.88 | 19.17 |
|                 | 8H   | 17.04            | 17.39 | 18.06 | 18.41 | 19.71 | 16.66          | 17.01 | 17.68 | 18.03 | 19.33 |
|                 | 12H  | 17.16            | 17.47 | 18.18 | 18.48 | 19.83 | 16.77          | 17.07 | 17.79 | 18.08 | 19.43 |
| 12H             | 4H   | 16.21            | 16.64 | 17.21 | 17.64 | 18.94 | 15.85          | 16.28 | 16.85 | 17.28 | 18.58 |
|                 | 6H   | 16.86            | 17.21 | 17.88 | 18.22 | 19.53 | 16.50          | 16.84 | 17.51 | 17.86 | 19.17 |
|                 | 8H   | 17.09            | 17.39 | 18.11 | 18.41 | 19.76 | 16.72          | 17.02 | 17.74 | 18.04 | 19.39 |

END OF REPORT