

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: P918335

Luminaire Tested: DFN2DIP-TR4F0-080D060US930-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P918335  
REPORT IS A COMBINATION OF REPORTS P901933 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-080D060US930-FLLONL  
Description: 4 foot, Triangle Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

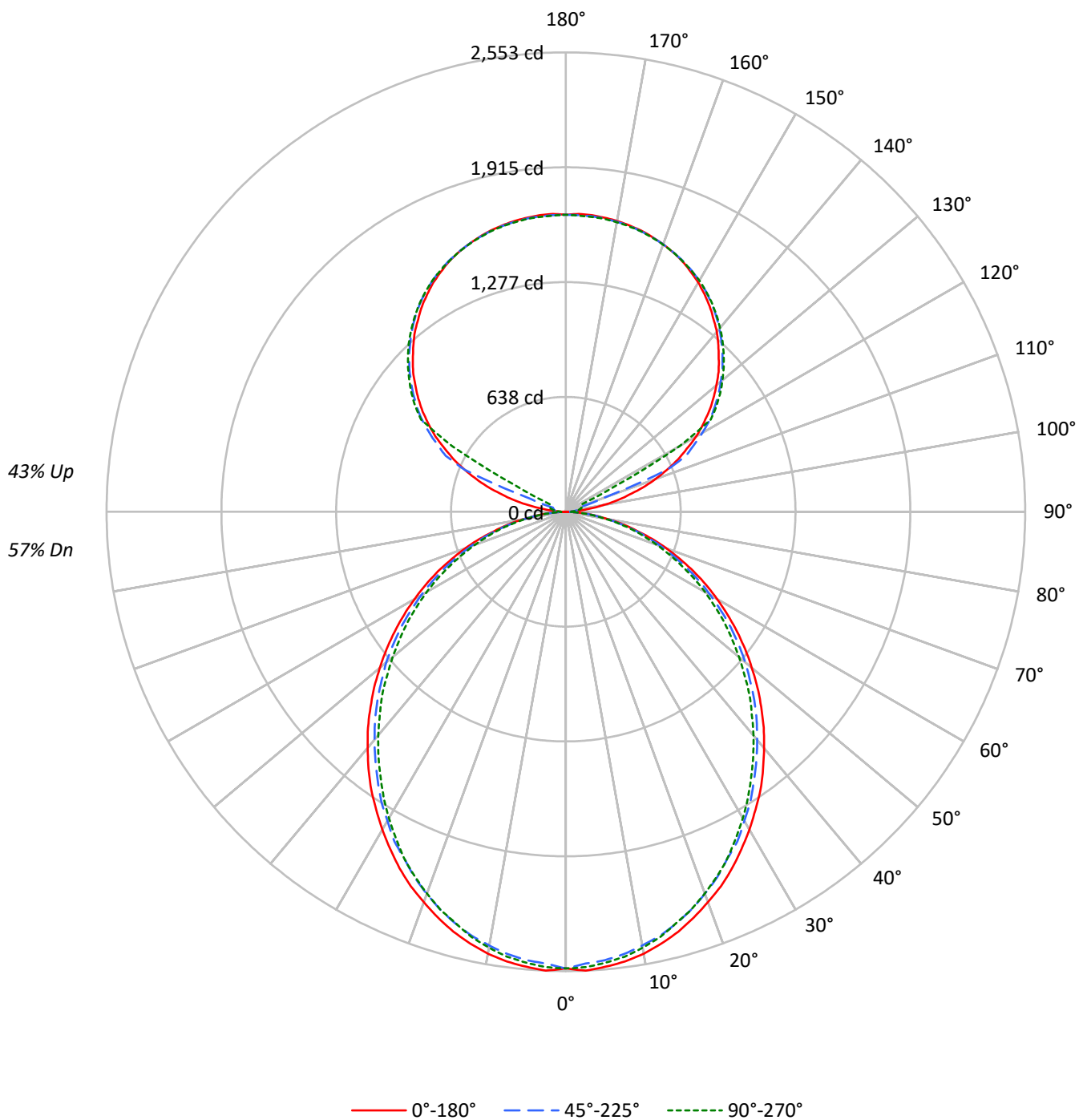
Lumens per Lamp: N/A  
Luminaire Lumens: 11300.0 lumens  
Efficiency: N/A  
Efficacy: 94.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 119.8  
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



TEST NUMBER: P918335

CATALOG NUMBER: DFN2DIP-TR4F0-080D060US930-FLONL

**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 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 63 | 63 | 63 |
| 1   | 99  | 95  | 91  | 88  | 92  | 89  | 85  | 82  | 77 | 74 | 72 | 66 | 64 | 62 | 55 | 54 | 53 |
| 2   | 91  | 83  | 77  | 72  | 84  | 77  | 72  | 67  | 67 | 63 | 59 | 58 | 55 | 52 | 49 | 47 | 45 |
| 3   | 83  | 73  | 66  | 60  | 77  | 68  | 62  | 56  | 59 | 54 | 50 | 51 | 47 | 44 | 43 | 40 | 38 |
| 4   | 76  | 65  | 57  | 50  | 70  | 61  | 53  | 48  | 53 | 47 | 43 | 45 | 41 | 38 | 39 | 35 | 33 |
| 5   | 69  | 58  | 49  | 43  | 64  | 54  | 47  | 41  | 47 | 41 | 37 | 41 | 36 | 33 | 35 | 31 | 29 |
| 6   | 64  | 52  | 44  | 38  | 59  | 49  | 41  | 36  | 43 | 37 | 32 | 37 | 32 | 29 | 32 | 28 | 25 |
| 7   | 59  | 47  | 39  | 33  | 55  | 44  | 37  | 31  | 39 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 |
| 8   | 55  | 43  | 35  | 29  | 51  | 40  | 33  | 28  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 23 | 20 |
| 9   | 51  | 39  | 31  | 26  | 48  | 37  | 30  | 25  | 32 | 27 | 23 | 28 | 24 | 20 | 25 | 21 | 18 |
| 10  | 48  | 36  | 28  | 24  | 45  | 34  | 27  | 22  | 30 | 24 | 20 | 26 | 22 | 18 | 23 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2016 | 2016 | 2016 |
| 5°  | 2019 | 1988 | 2001 |
| 10° | 2003 | 1961 | 1974 |
| 15° | 1974 | 1929 | 1932 |
| 20° | 1934 | 1884 | 1888 |
| 25° | 1894 | 1830 | 1838 |
| 30° | 1845 | 1780 | 1774 |
| 35° | 1798 | 1722 | 1707 |
| 40° | 1740 | 1662 | 1643 |
| 45° | 1682 | 1602 | 1577 |
| 50° | 1619 | 1540 | 1501 |
| 55° | 1553 | 1467 | 1431 |
| 60° | 1478 | 1381 | 1351 |
| 65° | 1397 | 1293 | 1256 |
| 70° | 1293 | 1184 | 1155 |
| 75° | 1150 | 1054 | 1061 |
| 80° | 977  | 889  | 881  |
| 85° | 707  | 603  | 584  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1682 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 238.9   | 2.1       |
| 10°-20°   | 672.1   | 5.9       |
| 20°-30°   | 987.7   | 8.7       |
| 30°-40°   | 1147.1  | 10.2      |
| 40°-50°   | 1145.7  | 10.1      |
| 50°-60°   | 999.0   | 8.8       |
| 60°-70°   | 738.5   | 6.5       |
| 70°-80°   | 417.8   | 3.7       |
| 80°-90°   | 113.2   | 1.0       |
| 90°-100°  | 54.4    | 0.5       |
| 100°-110° | 202.9   | 1.8       |
| 110°-120° | 538.2   | 4.8       |
| 120°-130° | 892.7   | 7.9       |
| 130°-140° | 948.2   | 8.4       |
| 140°-150° | 881.3   | 7.8       |
| 150°-160° | 708.5   | 6.3       |
| 160°-170° | 456.5   | 4.0       |
| 170°-180° | 157.1   | 1.4       |
| 0°-30°    | 1898.6  | 16.8      |
| 0°-40°    | 3045.8  | 27.0      |
| 0°-60°    | 5190.5  | 45.9      |
| 0°-90°    | 6460.1  | 57.2      |
| 90°-120°  | 795.6   | 7.0       |
| 90°-150°  | 3517.8  | 31.1      |
| 90°-180°  | 4840.0  | 42.8      |
| 0°-180°   | 11300.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2538 | 2538  | 2538 | 2538  | 2538 |      |
| 5°   | 2538 | 2528  | 2501 | 2521  | 2516 | 241  |
| 15°  | 2416 | 2402  | 2370 | 2379  | 2367 | 680  |
| 25°  | 2186 | 2167  | 2126 | 2130  | 2126 | 1006 |
| 35°  | 1886 | 1862  | 1823 | 1808  | 1796 | 1178 |
| 45°  | 1535 | 1518  | 1481 | 1455  | 1445 | 1185 |
| 55°  | 1162 | 1147  | 1118 | 1088  | 1076 | 1039 |
| 65°  | 784  | 769   | 744  | 722   | 710  | 775  |
| 75°  | 410  | 405   | 393  | 378   | 383  | 438  |
| 85°  | 100  | 98    | 95   | 88    | 85   | 112  |
| 90°  | 1    | 14    | 24   | 30    | 32   | 10   |
| 95°  | 78   | 38    | 47   | 53    | 51   | 92   |
| 105° | 363  | 399   | 73   | 86    | 91   | 388  |
| 115° | 687  | 707   | 737  | 184   | 98   | 676  |
| 125° | 971  | 987   | 1009 | 1018  | 1021 | 866  |
| 135° | 1202 | 1221  | 1232 | 1244  | 1241 | 928  |
| 145° | 1394 | 1393  | 1413 | 1422  | 1416 | 872  |
| 155° | 1535 | 1524  | 1539 | 1546  | 1536 | 707  |
| 165° | 1618 | 1610  | 1614 | 1622  | 1614 | 457  |
| 175° | 1654 | 1646  | 1648 | 1657  | 1645 | 157  |
| 180° | 1651 | 1651  | 1651 | 1651  | 1651 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2537.9 | 2537.9 | 2537.9 | 2537.9 | 2537.9 |
| 2.5°   | 2552.6 | 2540.5 | 2513.6 | 2537.9 | 2533.2 |
| 5°     | 2537.9 | 2528.3 | 2501.4 | 2520.8 | 2516.2 |
| 7.5°   | 2520.8 | 2506.3 | 2479.4 | 2499.1 | 2494.2 |
| 10°    | 2494.2 | 2477.0 | 2447.8 | 2467.2 | 2460.0 |
| 12.5°  | 2457.4 | 2442.9 | 2413.6 | 2425.8 | 2420.9 |
| 15°    | 2416.0 | 2401.5 | 2369.6 | 2379.4 | 2367.3 |
| 17.5°  | 2364.7 | 2350.2 | 2318.3 | 2330.5 | 2318.3 |
| 20°    | 2308.5 | 2294.0 | 2259.8 | 2267.1 | 2257.5 |
| 22.5°  | 2252.6 | 2230.6 | 2198.7 | 2198.7 | 2193.8 |
| 25°    | 2186.5 | 2167.1 | 2125.7 | 2130.4 | 2125.7 |
| 27.5°  | 2113.3 | 2096.2 | 2064.6 | 2057.3 | 2045.2 |
| 30°    | 2040.3 | 2020.6 | 1984.1 | 1976.9 | 1967.0 |
| 32.5°  | 1962.1 | 1947.6 | 1908.5 | 1893.7 | 1883.9 |
| 35°    | 1886.4 | 1862.1 | 1823.0 | 1808.2 | 1796.1 |
| 37.5°  | 1801.0 | 1779.0 | 1739.9 | 1722.8 | 1710.7 |
| 40°    | 1713.3 | 1693.5 | 1654.5 | 1632.7 | 1622.9 |
| 42.5°  | 1627.8 | 1608.1 | 1569.3 | 1544.7 | 1530.2 |
| 45°    | 1535.1 | 1518.0 | 1481.2 | 1454.6 | 1444.8 |
| 47.5°  | 1444.8 | 1427.7 | 1388.5 | 1361.6 | 1347.1 |
| 50°    | 1349.5 | 1337.3 | 1303.1 | 1268.9 | 1256.8 |
| 52.5°  | 1256.8 | 1239.7 | 1208.1 | 1181.2 | 1164.1 |
| 55°    | 1161.7 | 1147.0 | 1117.8 | 1088.5 | 1076.3 |
| 57.5°  | 1066.5 | 1054.3 | 1022.5 | 993.2  | 983.3  |
| 60°    | 971.2  | 961.6  | 927.4  | 900.5  | 893.2  |
| 62.5°  | 878.5  | 861.4  | 837.1  | 812.8  | 802.9  |
| 65°    | 783.5  | 768.7  | 744.4  | 722.4  | 710.2  |
| 67.5°  | 685.8  | 673.4  | 651.7  | 634.6  | 624.8  |
| 70°    | 595.5  | 585.6  | 563.7  | 546.6  | 537.0  |
| 72.5°  | 502.8  | 493.0  | 480.8  | 463.7  | 456.5  |
| 75°    | 409.9  | 405.2  | 392.8  | 378.3  | 383.2  |
| 77.5°  | 327.0  | 317.2  | 312.3  | 305.0  | 297.7  |
| 80°    | 244.2  | 241.6  | 236.7  | 229.4  | 224.5  |
| 82.5°  | 166.0  | 166.0  | 163.6  | 153.8  | 153.8  |
| 85°    | 100.0  | 97.6   | 95.3   | 87.8   | 85.4   |
| 87.5°  | 44.0   | 39.1   | 34.2   | 26.9   | 24.4   |
| 90°    | 1.1    | 14.3   | 23.8   | 29.9   | 32.2   |
| 92.5°  | 29.9   | 25.1   | 28.6   | 31.1   | 32.2   |
| 95°    | 77.6   | 38.2   | 46.6   | 52.7   | 51.4   |
| 97.5°  | 139.7  | 41.8   | 60.8   | 64.6   | 65.7   |
| 100°   | 211.5  | 47.8   | 68.1   | 77.6   | 80.0   |
| 102.5° | 290.2  | 288.0  | 70.5   | 83.6   | 87.2   |
| 105°   | 363.1  | 399.0  | 72.9   | 85.9   | 90.8   |
| 107.5° | 448.0  | 477.8  | 75.3   | 88.4   | 93.2   |
| 110°   | 529.3  | 554.2  | 209.1  | 89.7   | 94.3   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 605.7  | 627.1  | 606.8  | 91.9   | 95.6   |
| 115°   | 686.9  | 707.2  | 737.1  | 184.0  | 98.0   |
| 117.5° | 757.3  | 781.2  | 801.6  | 630.7  | 317.7  |
| 120°   | 836.3  | 854.1  | 875.7  | 890.0  | 728.7  |
| 122.5° | 903.0  | 922.2  | 946.2  | 953.2  | 954.6  |
| 125°   | 971.2  | 986.8  | 1009.4 | 1017.8 | 1021.3 |
| 127.5° | 1033.3 | 1050.0 | 1068.0 | 1079.9 | 1081.1 |
| 130°   | 1091.8 | 1111.0 | 1124.1 | 1137.3 | 1136.1 |
| 132.5° | 1151.6 | 1167.2 | 1180.2 | 1191.0 | 1189.8 |
| 135°   | 1201.8 | 1221.0 | 1231.6 | 1243.7 | 1241.2 |
| 137.5° | 1254.3 | 1268.6 | 1280.7 | 1292.6 | 1289.1 |
| 140°   | 1305.6 | 1315.3 | 1328.4 | 1339.1 | 1333.2 |
| 142.5° | 1348.7 | 1357.1 | 1372.6 | 1382.1 | 1376.1 |
| 145°   | 1394.2 | 1392.9 | 1413.2 | 1421.6 | 1415.6 |
| 147.5° | 1433.5 | 1429.9 | 1450.2 | 1456.1 | 1451.5 |
| 150°   | 1471.8 | 1463.4 | 1482.5 | 1489.6 | 1483.7 |
| 152.5° | 1504.0 | 1494.4 | 1512.3 | 1519.6 | 1511.2 |
| 155°   | 1535.0 | 1524.4 | 1538.7 | 1545.8 | 1536.3 |
| 157.5° | 1560.2 | 1550.6 | 1561.4 | 1569.8 | 1560.2 |
| 160°   | 1581.7 | 1574.4 | 1581.7 | 1588.8 | 1580.5 |
| 162.5° | 1600.7 | 1593.6 | 1599.5 | 1607.9 | 1597.2 |
| 165°   | 1617.5 | 1610.4 | 1613.9 | 1622.3 | 1613.9 |
| 167.5° | 1630.6 | 1623.4 | 1627.1 | 1635.5 | 1624.6 |
| 170°   | 1641.4 | 1634.2 | 1636.6 | 1644.9 | 1634.2 |
| 172.5° | 1648.5 | 1641.4 | 1643.8 | 1652.2 | 1641.4 |
| 175°   | 1654.5 | 1646.1 | 1648.5 | 1656.8 | 1644.9 |
| 177.5° | 1656.8 | 1648.5 | 1649.8 | 1658.2 | 1647.4 |
| 180°   | 1650.9 | 1650.9 | 1650.9 | 1650.9 | 1650.9 |

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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 | 10.34            | 11.27 | 11.23 | 12.18 | 13.35 | 9.91           | 10.84 | 10.80 | 11.75 | 12.92 |
|                 | 3H   | 12.00            | 12.84 | 12.91 | 13.76 | 14.95 | 11.53          | 12.37 | 12.44 | 13.29 | 14.48 |
|                 | 4H   | 12.60            | 13.38 | 13.52 | 14.31 | 15.51 | 12.12          | 12.91 | 13.04 | 13.84 | 15.04 |
|                 | 6H   | 13.00            | 13.73 | 13.93 | 14.66 | 15.87 | 12.52          | 13.25 | 13.46 | 14.18 | 15.40 |
|                 | 8H   | 13.11            | 13.80 | 14.04 | 14.75 | 15.96 | 12.63          | 13.32 | 13.57 | 14.28 | 15.49 |
|                 | 12H  | 13.16            | 13.82 | 14.10 | 14.76 | 16.00 | 12.68          | 13.33 | 13.62 | 14.28 | 15.52 |
| 4H              | 2H   | 10.81            | 11.60 | 11.74 | 12.53 | 13.73 | 10.47          | 11.25 | 11.39 | 12.18 | 13.38 |
|                 | 3H   | 12.68            | 13.34 | 13.62 | 14.30 | 15.51 | 12.29          | 12.95 | 13.23 | 13.91 | 15.12 |
|                 | 4H   | 13.40            | 14.00 | 14.35 | 14.95 | 16.19 | 12.99          | 13.59 | 13.94 | 14.55 | 15.79 |
|                 | 6H   | 13.92            | 14.44 | 14.88 | 15.41 | 16.65 | 13.51          | 14.03 | 14.47 | 15.00 | 16.24 |
|                 | 8H   | 14.07            | 14.55 | 15.03 | 15.52 | 16.78 | 13.66          | 14.14 | 14.62 | 15.11 | 16.37 |
|                 | 12H  | 14.15            | 14.58 | 15.13 | 15.57 | 16.83 | 13.72          | 14.16 | 14.70 | 15.15 | 16.41 |
| 8H              | 4H   | 13.60            | 14.09 | 14.56 | 15.06 | 16.31 | 13.24          | 13.73 | 14.20 | 14.70 | 15.95 |
|                 | 6H   | 14.24            | 14.64 | 15.22 | 15.65 | 16.90 | 13.87          | 14.27 | 14.86 | 15.29 | 16.54 |
|                 | 8H   | 14.46            | 14.81 | 15.45 | 15.81 | 17.08 | 14.09          | 14.44 | 15.08 | 15.44 | 16.71 |
|                 | 12H  | 14.59            | 14.90 | 15.59 | 15.90 | 17.21 | 14.21          | 14.52 | 15.21 | 15.51 | 16.83 |
| 12H             | 4H   | 13.59            | 14.03 | 14.57 | 15.02 | 16.27 | 13.24          | 13.68 | 14.22 | 14.66 | 15.92 |
|                 | 6H   | 14.27            | 14.62 | 15.26 | 15.62 | 16.89 | 13.91          | 14.27 | 14.91 | 15.27 | 16.54 |
|                 | 8H   | 14.51            | 14.82 | 15.51 | 15.82 | 17.13 | 14.15          | 14.47 | 15.15 | 15.46 | 16.78 |

END OF REPORT