

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: P922019

Luminaire Tested: DFN2DIP-PN2F0-050D050US940-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922019  
REPORT IS A COMBINATION OF REPORTS P901018 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-050D050US940-RLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

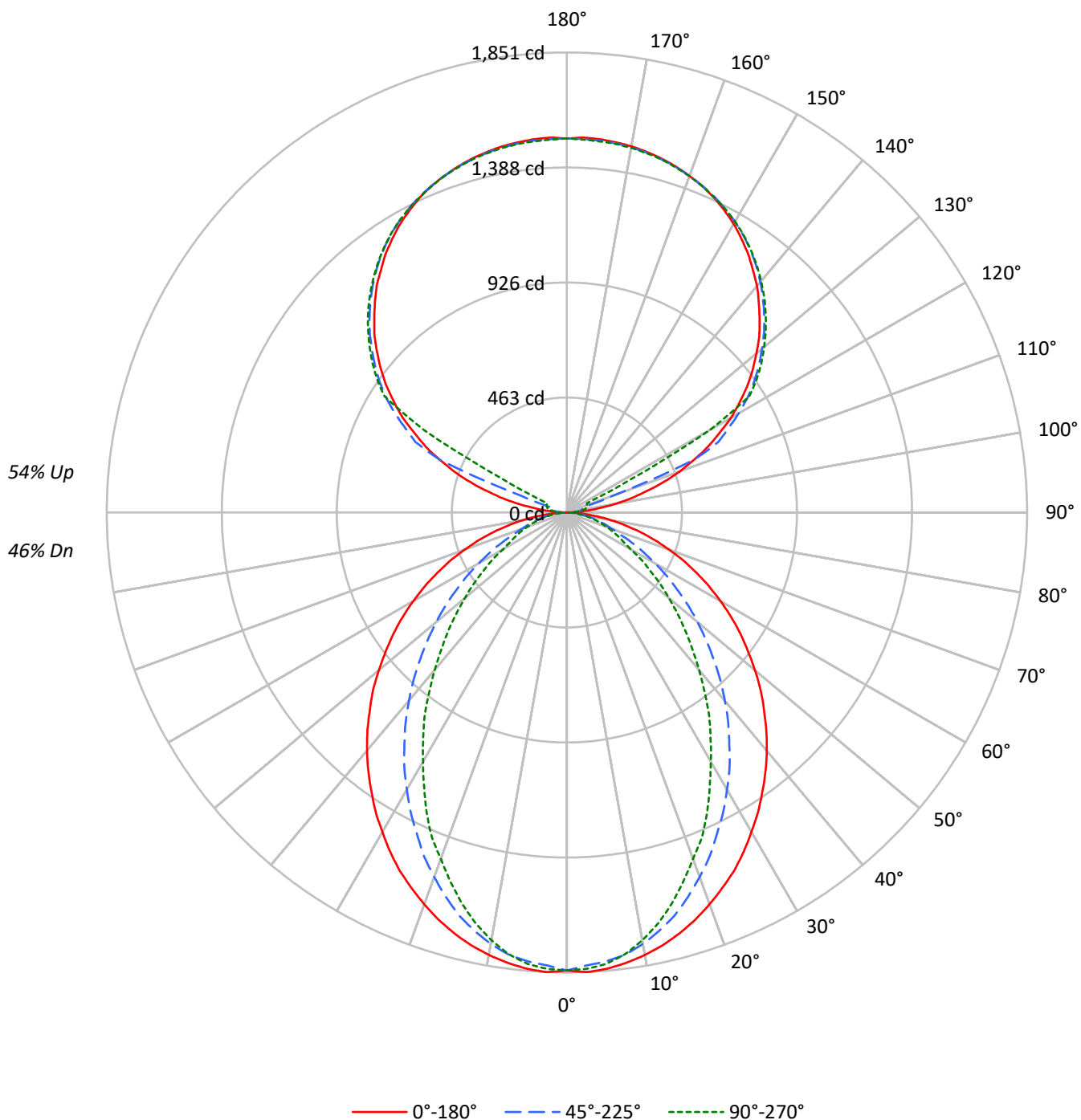
Lumens per Lamp: N/A  
Luminaire Lumens: 8203.8 lumens  
Efficiency: N/A  
Efficacy: 89.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 92.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9821  
Total Harmonic Distortion (THDi): 0.08  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P922019

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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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3991 | 3991 | 3991 |
| 5°  | 3991 | 3919 | 3947 |
| 10° | 3945 | 3834 | 3813 |
| 15° | 3885 | 3699 | 3609 |
| 20° | 3806 | 3516 | 3361 |
| 25° | 3726 | 3313 | 3121 |
| 30° | 3621 | 3106 | 2819 |
| 35° | 3517 | 2884 | 2554 |
| 40° | 3411 | 2654 | 2252 |
| 45° | 3289 | 2402 | 1977 |
| 50° | 3162 | 2147 | 1710 |
| 55° | 3028 | 1876 | 1454 |
| 60° | 2874 | 1594 | 1191 |
| 65° | 2695 | 1309 | 1066 |
| 70° | 2479 | 1043 | 956  |
| 75° | 2207 | 903  | 858  |
| 80° | 1816 | 734  | 726  |
| 85° | 1188 | 457  | 516  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 3289 cd/sqm

TEST NUMBER: P922019

CATALOG NUMBER: DFN2DIP-PN2F0-050D050US940-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 172.7  | 2.1       |
| 10°-20°   | 474.1  | 5.8       |
| 20°-30°   | 665.6  | 8.1       |
| 30°-40°   | 725.6  | 8.8       |
| 40°-50°   | 666.9  | 8.1       |
| 50°-60°   | 523.7  | 6.4       |
| 60°-70°   | 340.9  | 4.2       |
| 70°-80°   | 175.5  | 2.1       |
| 80°-90°   | 47.5   | 0.6       |
| 90°-100°  | 49.6   | 0.6       |
| 100°-110° | 185.0  | 2.3       |
| 110°-120° | 490.6  | 6.0       |
| 120°-130° | 813.6  | 9.9       |
| 130°-140° | 864.3  | 10.5      |
| 140°-150° | 803.2  | 9.8       |
| 150°-160° | 645.8  | 7.9       |
| 160°-170° | 416.1  | 5.1       |
| 170°-180° | 143.2  | 1.7       |
| <hr/>     |        |           |
| 0°-30°    | 1312.4 | 16.0      |
| 0°-40°    | 2038.0 | 24.8      |
| 0°-60°    | 3228.6 | 39.4      |
| 0°-90°    | 3792.4 | 46.2      |
| 90°-120°  | 725.2  | 8.8       |
| 90°-150°  | 3206.2 | 39.1      |
| 90°-180°  | 4411.0 | 53.8      |
| 0°-180°   | 8203.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1843 | 1843  | 1843 | 1843  | 1843 |      |
| 5°   | 1843 | 1834  | 1813 | 1828  | 1823 | 175  |
| 15°  | 1753 | 1734  | 1678 | 1646  | 1629 | 494  |
| 25°  | 1591 | 1538  | 1427 | 1359  | 1334 | 732  |
| 35°  | 1371 | 1286  | 1139 | 1034  | 997  | 858  |
| 45°  | 1121 | 1009  | 834  | 715   | 675  | 865  |
| 55°  | 852  | 722   | 542  | 442   | 410  | 761  |
| 65°  | 575  | 440   | 290  | 234   | 228  | 570  |
| 75°  | 307  | 190   | 133  | 122   | 120  | 324  |
| 85°  | 72   | 37    | 32   | 32    | 32   | 82   |
| 90°  | 1    | 13    | 22   | 27    | 29   | 8    |
| 95°  | 71   | 35    | 42   | 48    | 47   | 84   |
| 105° | 331  | 364   | 66   | 78    | 83   | 354  |
| 115° | 626  | 644   | 672  | 168   | 89   | 616  |
| 125° | 885  | 899   | 920  | 928   | 931  | 789  |
| 135° | 1095 | 1113  | 1122 | 1134  | 1131 | 846  |
| 145° | 1271 | 1270  | 1288 | 1296  | 1290 | 795  |
| 155° | 1399 | 1389  | 1402 | 1409  | 1400 | 645  |
| 165° | 1474 | 1468  | 1471 | 1478  | 1471 | 416  |
| 175° | 1508 | 1500  | 1502 | 1510  | 1499 | 144  |
| 180° | 1505 | 1505  | 1505 | 1505  | 1505 |      |

TEST NUMBER: P922019

CATALOG NUMBER: DFN2DIP-PN2F0-050D050US940-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1842.7 | 1842.7 | 1842.7 | 1842.7 | 1842.7 |
| 2.5°   | 1851.0 | 1842.7 | 1824.4 | 1841.1 | 1837.7 |
| 5°     | 1842.7 | 1834.4 | 1812.7 | 1827.6 | 1822.7 |
| 7.5°   | 1827.6 | 1817.8 | 1794.4 | 1801.0 | 1792.6 |
| 10°    | 1807.7 | 1796.0 | 1762.7 | 1757.7 | 1747.7 |
| 12.5°  | 1782.7 | 1767.7 | 1722.6 | 1712.7 | 1694.2 |
| 15°    | 1752.7 | 1734.3 | 1677.7 | 1646.0 | 1629.3 |
| 17.5°  | 1717.6 | 1691.0 | 1620.9 | 1584.2 | 1557.5 |
| 20°    | 1677.7 | 1644.2 | 1560.8 | 1519.3 | 1482.5 |
| 22.5°  | 1634.3 | 1595.9 | 1499.1 | 1442.5 | 1417.6 |
| 25°    | 1590.9 | 1537.5 | 1427.4 | 1359.1 | 1334.0 |
| 27.5°  | 1539.3 | 1482.5 | 1360.8 | 1282.4 | 1244.0 |
| 30°    | 1484.3 | 1420.8 | 1287.4 | 1202.4 | 1157.3 |
| 32.5°  | 1430.8 | 1354.1 | 1217.5 | 1117.3 | 1075.6 |
| 35°    | 1370.8 | 1285.8 | 1139.1 | 1033.9 | 997.2  |
| 37.5°  | 1312.4 | 1220.7 | 1065.7 | 950.5  | 908.9  |
| 40°    | 1250.7 | 1150.8 | 988.8  | 870.5  | 827.2  |
| 42.5°  | 1187.4 | 1080.7 | 912.2  | 788.7  | 747.2  |
| 45°    | 1120.7 | 1008.9 | 833.8  | 715.3  | 675.3  |
| 47.5°  | 1057.3 | 939.0  | 758.8  | 640.3  | 603.7  |
| 50°    | 987.3  | 868.9  | 685.5  | 570.2  | 535.4  |
| 52.5°  | 918.8  | 793.7  | 615.4  | 505.3  | 473.7  |
| 55°    | 852.1  | 722.0  | 541.9  | 441.9  | 410.3  |
| 57.5°  | 783.8  | 650.4  | 477.0  | 383.6  | 356.9  |
| 60°    | 713.7  | 580.3  | 408.5  | 323.6  | 296.9  |
| 62.5°  | 645.4  | 512.0  | 350.2  | 270.2  | 256.9  |
| 65°    | 575.3  | 440.2  | 290.2  | 233.5  | 228.5  |
| 67.5°  | 508.6  | 373.5  | 233.5  | 205.1  | 200.1  |
| 70°    | 438.6  | 308.5  | 193.4  | 176.7  | 170.0  |
| 72.5°  | 371.9  | 248.4  | 161.8  | 148.5  | 145.1  |
| 75°    | 306.8  | 190.0  | 133.4  | 121.7  | 120.1  |
| 77.5°  | 241.8  | 135.0  | 105.1  | 98.4   | 95.0   |
| 80°    | 181.7  | 96.8   | 80.0   | 73.4   | 73.4   |
| 82.5°  | 126.7  | 65.1   | 55.0   | 51.6   | 51.6   |
| 85°    | 71.7   | 36.6   | 31.7   | 31.7   | 31.7   |
| 87.5°  | 26.8   | 13.3   | 13.3   | 11.7   | 11.7   |
| 90°    | 1.1    | 13.0   | 21.8   | 27.3   | 29.3   |
| 92.5°  | 27.3   | 22.9   | 26.1   | 28.4   | 29.3   |
| 95°    | 70.7   | 34.8   | 42.4   | 48.0   | 46.8   |
| 97.5°  | 127.3  | 38.2   | 55.5   | 58.9   | 59.8   |
| 100°   | 192.8  | 43.6   | 62.1   | 70.7   | 72.9   |
| 102.5° | 264.6  | 262.4  | 64.3   | 76.2   | 79.5   |
| 105°   | 331.0  | 363.7  | 66.4   | 78.4   | 82.8   |
| 107.5° | 408.3  | 435.4  | 68.7   | 80.5   | 85.0   |
| 110°   | 482.4  | 505.2  | 190.6  | 81.7   | 86.0   |

TEST NUMBER: P922019

CATALOG NUMBER: DFN2DIP-PN2F0-050D050US940-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 552.1  | 571.6  | 553.1  | 83.8   | 87.1   |
| 115°   | 626.1  | 644.5  | 671.8  | 167.7  | 89.3   |
| 117.5° | 690.3  | 712.0  | 730.7  | 574.8  | 289.6  |
| 120°   | 762.1  | 778.5  | 798.1  | 811.2  | 664.1  |
| 122.5° | 823.0  | 840.5  | 862.4  | 868.9  | 870.0  |
| 125°   | 885.1  | 899.4  | 920.1  | 927.6  | 930.9  |
| 127.5° | 941.7  | 957.0  | 973.5  | 984.3  | 985.3  |
| 130°   | 995.1  | 1012.6 | 1024.5 | 1036.5 | 1035.5 |
| 132.5° | 1049.6 | 1063.8 | 1075.7 | 1085.6 | 1084.5 |
| 135°   | 1095.4 | 1112.9 | 1122.5 | 1133.5 | 1131.3 |
| 137.5° | 1143.2 | 1156.3 | 1167.2 | 1178.1 | 1174.9 |
| 140°   | 1190.0 | 1198.8 | 1210.7 | 1220.5 | 1215.1 |
| 142.5° | 1229.3 | 1237.0 | 1251.1 | 1259.7 | 1254.3 |
| 145°   | 1270.7 | 1269.5 | 1288.0 | 1295.7 | 1290.2 |
| 147.5° | 1306.5 | 1303.2 | 1321.8 | 1327.2 | 1322.9 |
| 150°   | 1341.4 | 1333.8 | 1351.2 | 1357.7 | 1352.3 |
| 152.5° | 1370.7 | 1362.1 | 1378.4 | 1385.0 | 1377.3 |
| 155°   | 1399.1 | 1389.4 | 1402.4 | 1408.9 | 1400.3 |
| 157.5° | 1421.9 | 1413.3 | 1423.1 | 1430.7 | 1421.9 |
| 160°   | 1441.6 | 1435.0 | 1441.6 | 1448.0 | 1440.5 |
| 162.5° | 1458.9 | 1452.5 | 1457.9 | 1465.5 | 1455.7 |
| 165°   | 1474.2 | 1467.8 | 1471.0 | 1478.5 | 1471.0 |
| 167.5° | 1486.2 | 1479.6 | 1483.0 | 1490.6 | 1480.8 |
| 170°   | 1496.0 | 1489.4 | 1491.7 | 1499.2 | 1489.4 |
| 172.5° | 1502.5 | 1496.0 | 1498.3 | 1505.8 | 1496.0 |
| 175°   | 1508.0 | 1500.3 | 1502.5 | 1510.1 | 1499.2 |
| 177.5° | 1510.1 | 1502.5 | 1503.7 | 1511.3 | 1501.5 |
| 180°   | 1504.7 | 1504.7 | 1504.7 | 1504.7 | 1504.7 |

TEST NUMBER: P922019

CATALOG NUMBER: DFN2DIP-PN2F0-050D050US940-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 | 11.48            | 12.28 | 12.47 | 13.28 | 14.61 | 7.44           | 8.24  | 8.44  | 9.25  | 10.57 |
|                 | 3H   | 13.13            | 13.85 | 14.14 | 14.86 | 16.21 | 8.61           | 9.33  | 9.62  | 10.34 | 11.69 |
|                 | 4H   | 13.72            | 14.40 | 14.74 | 15.42 | 16.77 | 9.05           | 9.73  | 10.07 | 10.74 | 12.10 |
|                 | 6H   | 14.13            | 14.75 | 15.16 | 15.77 | 17.14 | 9.36           | 9.98  | 10.38 | 11.00 | 12.36 |
|                 | 8H   | 14.24            | 14.84 | 15.28 | 15.87 | 17.24 | 9.44           | 10.03 | 10.47 | 11.06 | 12.43 |
|                 | 12H  | 14.30            | 14.86 | 15.34 | 15.89 | 17.28 | 9.47           | 10.03 | 10.51 | 11.06 | 12.45 |
| 4H              | 2H   | 11.49            | 12.16 | 12.51 | 13.18 | 14.53 | 8.03           | 8.70  | 9.05  | 9.72  | 11.07 |
|                 | 3H   | 13.29            | 13.85 | 14.32 | 14.90 | 16.26 | 9.35           | 9.92  | 10.39 | 10.96 | 12.33 |
|                 | 4H   | 13.96            | 14.48 | 15.00 | 15.51 | 16.91 | 9.88           | 10.40 | 10.92 | 11.43 | 12.83 |
|                 | 6H   | 14.46            | 14.90 | 15.51 | 15.96 | 17.35 | 10.28          | 10.73 | 11.33 | 11.78 | 13.17 |
|                 | 8H   | 14.62            | 15.03 | 15.67 | 16.08 | 17.49 | 10.40          | 10.81 | 11.45 | 11.87 | 13.27 |
|                 | 12H  | 14.70            | 15.08 | 15.77 | 16.14 | 17.55 | 10.46          | 10.83 | 11.52 | 11.89 | 13.30 |
| 8H              | 4H   | 13.93            | 14.34 | 14.98 | 15.39 | 16.79 | 10.15          | 10.56 | 11.20 | 11.61 | 13.02 |
|                 | 6H   | 14.47            | 14.81 | 15.54 | 15.90 | 17.30 | 10.64          | 10.98 | 11.72 | 12.08 | 13.48 |
|                 | 8H   | 14.67            | 14.97 | 15.75 | 16.05 | 17.47 | 10.82          | 11.12 | 11.90 | 12.20 | 13.62 |
|                 | 12H  | 14.79            | 15.06 | 15.88 | 16.13 | 17.59 | 10.93          | 11.19 | 12.01 | 12.26 | 13.72 |
| 12H             | 4H   | 13.88            | 14.25 | 14.94 | 15.31 | 16.72 | 10.15          | 10.52 | 11.22 | 11.59 | 13.00 |
|                 | 6H   | 14.44            | 14.74 | 15.52 | 15.82 | 17.24 | 10.69          | 10.99 | 11.77 | 12.06 | 13.48 |
|                 | 8H   | 14.65            | 14.91 | 15.73 | 15.98 | 17.44 | 10.88          | 11.14 | 11.97 | 12.22 | 13.68 |

END OF REPORT