

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: P922009

Luminaire Tested: DFN2DIP-PN2F0-050D030US940-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922009  
REPORT IS A COMBINATION OF REPORTS P900997 AND P897905  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-050D030US940-FLLONL  
Description: 2 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

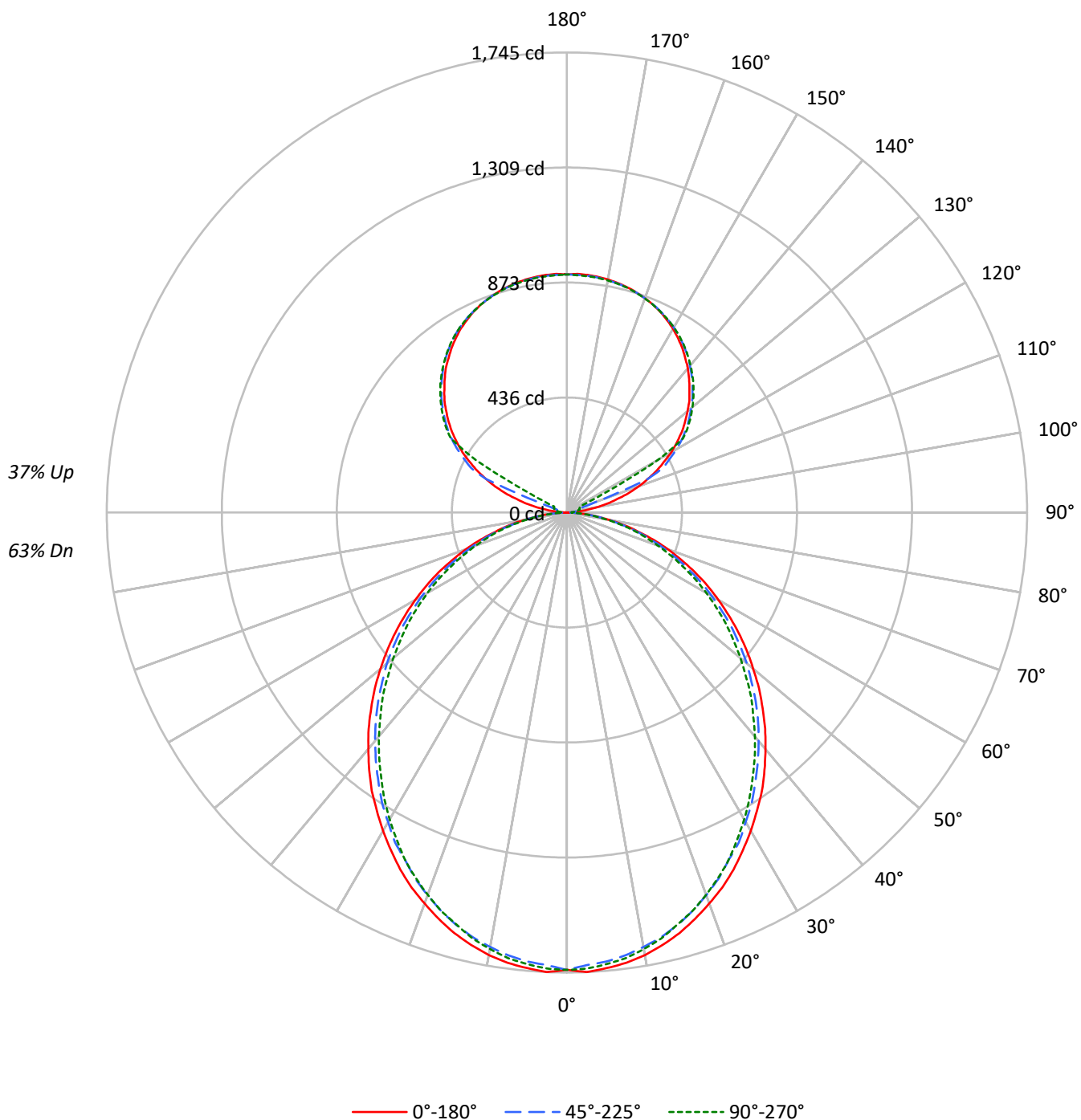
Lumens per Lamp: N/A  
Luminaire Lumens: 7062.4 lumens  
Efficiency: N/A  
Efficacy: 101.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 69.9  
Input Voltage (V): 120  
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

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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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 90 | 90 | 90 | 78 | 78 | 78 | 68 | 68 | 68 |
| 1   | 101 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 79 | 77 | 74 | 69 | 67 | 65 | 60 | 58 | 57 |
| 2   | 92  | 84  | 78  | 72  | 86  | 79  | 73  | 69  | 69 | 65 | 62 | 61 | 58 | 55 | 53 | 50 | 48 |
| 3   | 84  | 74  | 66  | 60  | 78  | 70  | 63  | 57  | 61 | 56 | 52 | 54 | 50 | 46 | 47 | 44 | 41 |
| 4   | 77  | 65  | 57  | 51  | 71  | 62  | 54  | 49  | 55 | 49 | 44 | 48 | 43 | 40 | 42 | 38 | 35 |
| 5   | 70  | 58  | 50  | 44  | 66  | 55  | 48  | 42  | 49 | 43 | 38 | 43 | 38 | 34 | 38 | 34 | 31 |
| 6   | 65  | 53  | 44  | 38  | 61  | 50  | 42  | 37  | 44 | 38 | 33 | 39 | 34 | 30 | 34 | 30 | 27 |
| 7   | 60  | 47  | 39  | 34  | 56  | 45  | 38  | 32  | 40 | 34 | 30 | 35 | 31 | 27 | 31 | 27 | 24 |
| 8   | 56  | 43  | 35  | 30  | 52  | 41  | 34  | 29  | 37 | 31 | 26 | 33 | 28 | 24 | 29 | 25 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 37  | 30  | 26  | 34 | 28 | 24 | 30 | 25 | 22 | 27 | 23 | 20 |
| 10  | 49  | 36  | 29  | 24  | 46  | 34  | 28  | 23  | 31 | 25 | 21 | 28 | 23 | 20 | 25 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3757 | 3757 | 3757 |
| 5°  | 3757 | 3697 | 3725 |
| 10° | 3721 | 3639 | 3669 |
| 15° | 3660 | 3571 | 3584 |
| 20° | 3580 | 3480 | 3498 |
| 25° | 3501 | 3373 | 3399 |
| 30° | 3402 | 3272 | 3276 |
| 35° | 3308 | 3155 | 3145 |
| 40° | 3194 | 3036 | 3020 |
| 45° | 3080 | 2916 | 2892 |
| 50° | 2954 | 2791 | 2744 |
| 55° | 2823 | 2645 | 2607 |
| 60° | 2673 | 2474 | 2450 |
| 65° | 2509 | 2295 | 2264 |
| 70° | 2301 | 2078 | 2064 |
| 75° | 2016 | 1817 | 1871 |
| 80° | 1668 | 1484 | 1518 |
| 85° | 1132 | 938  | 951  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3080 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 163.3  | 2.3       |
| 10°-20°   | 459.4  | 6.5       |
| 20°-30°   | 675.2  | 9.6       |
| 30°-40°   | 784.2  | 11.1      |
| 40°-50°   | 783.2  | 11.1      |
| 50°-60°   | 682.9  | 9.7       |
| 60°-70°   | 504.8  | 7.1       |
| 70°-80°   | 285.6  | 4.0       |
| 80°-90°   | 77.0   | 1.1       |
| 90°-100°  | 29.8   | 0.4       |
| 100°-110° | 111.0  | 1.6       |
| 110°-120° | 294.3  | 4.2       |
| 120°-130° | 488.2  | 6.9       |
| 130°-140° | 518.5  | 7.3       |
| 140°-150° | 481.9  | 6.8       |
| 150°-160° | 387.5  | 5.5       |
| 160°-170° | 249.7  | 3.5       |
| 170°-180° | 85.9   | 1.2       |
| 0°-30°    | 1297.9 | 18.4      |
| 0°-40°    | 2082.0 | 29.5      |
| 0°-60°    | 3548.1 | 50.2      |
| 0°-90°    | 4415.6 | 62.5      |
| 90°-120°  | 435.1  | 6.2       |
| 90°-150°  | 1923.7 | 27.2      |
| 90°-180°  | 2647.0 | 37.5      |
| 0°-180°   | 7062.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1735 | 1735  | 1735 | 1735  | 1735 |      |
| 5°   | 1735 | 1728  | 1710 | 1723  | 1720 | 165  |
| 15°  | 1651 | 1642  | 1620 | 1627  | 1618 | 465  |
| 25°  | 1495 | 1481  | 1453 | 1456  | 1453 | 688  |
| 35°  | 1290 | 1273  | 1246 | 1236  | 1228 | 805  |
| 45°  | 1049 | 1038  | 1012 | 994   | 988  | 810  |
| 55°  | 794  | 784   | 764  | 744   | 736  | 710  |
| 65°  | 536  | 526   | 509  | 494   | 485  | 530  |
| 75°  | 280  | 277   | 268  | 259   | 262  | 299  |
| 85°  | 68   | 67    | 65   | 60    | 58   | 76   |
| 90°  | 1    | 8     | 13   | 16    | 18   | 7    |
| 95°  | 42   | 21    | 25   | 29    | 28   | 50   |
| 105° | 199  | 218   | 40   | 47    | 50   | 212  |
| 115° | 376  | 387   | 403  | 101   | 54   | 370  |
| 125° | 531  | 540   | 552  | 557   | 559  | 474  |
| 135° | 657  | 668   | 674  | 680   | 679  | 508  |
| 145° | 762  | 762   | 773  | 777   | 774  | 477  |
| 155° | 840  | 834   | 841  | 845   | 840  | 387  |
| 165° | 884  | 881   | 883  | 887   | 883  | 250  |
| 175° | 905  | 900   | 902  | 906   | 900  | 86   |
| 180° | 903  | 903   | 903  | 903   | 903  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1734.8 | 1734.8 | 1734.8 | 1734.8 | 1734.8 |
| 2.5°   | 1744.9 | 1736.6 | 1718.2 | 1734.8 | 1731.7 |
| 5°     | 1734.8 | 1728.3 | 1709.9 | 1723.1 | 1720.0 |
| 7.5°   | 1723.1 | 1713.2 | 1694.9 | 1708.3 | 1705.0 |
| 10°    | 1705.0 | 1693.3 | 1673.3 | 1686.5 | 1681.6 |
| 12.5°  | 1679.8 | 1669.9 | 1649.9 | 1658.2 | 1654.8 |
| 15°    | 1651.4 | 1641.5 | 1619.8 | 1626.6 | 1618.2 |
| 17.5°  | 1616.4 | 1606.5 | 1584.7 | 1593.0 | 1584.7 |
| 20°    | 1578.1 | 1568.2 | 1544.8 | 1549.7 | 1543.2 |
| 22.5°  | 1539.8 | 1524.7 | 1503.0 | 1503.0 | 1499.6 |
| 25°    | 1494.7 | 1481.4 | 1453.0 | 1456.3 | 1453.0 |
| 27.5°  | 1444.6 | 1432.9 | 1411.3 | 1406.3 | 1398.0 |
| 30°    | 1394.6 | 1381.3 | 1356.3 | 1351.3 | 1344.6 |
| 32.5°  | 1341.2 | 1331.3 | 1304.6 | 1294.5 | 1287.8 |
| 35°    | 1289.5 | 1272.9 | 1246.2 | 1236.1 | 1227.8 |
| 37.5°  | 1231.1 | 1216.1 | 1189.4 | 1177.7 | 1169.4 |
| 40°    | 1171.2 | 1157.7 | 1131.0 | 1116.1 | 1109.4 |
| 42.5°  | 1112.8 | 1099.3 | 1072.7 | 1055.9 | 1046.0 |
| 45°    | 1049.4 | 1037.7 | 1012.5 | 994.3  | 987.6  |
| 47.5°  | 987.6  | 975.9  | 949.2  | 930.8  | 920.9  |
| 50°    | 922.5  | 914.2  | 890.8  | 867.5  | 859.1  |
| 52.5°  | 859.1  | 847.4  | 825.8  | 807.4  | 795.8  |
| 55°    | 794.2  | 784.1  | 764.0  | 744.0  | 735.8  |
| 57.5°  | 729.0  | 720.7  | 698.9  | 678.9  | 672.2  |
| 60°    | 663.9  | 657.4  | 634.0  | 615.5  | 610.6  |
| 62.5°  | 600.6  | 588.9  | 572.2  | 555.5  | 548.8  |
| 65°    | 535.6  | 525.5  | 508.8  | 493.8  | 485.4  |
| 67.5°  | 468.9  | 460.4  | 445.5  | 433.8  | 427.0  |
| 70°    | 407.1  | 400.4  | 385.3  | 373.6  | 367.1  |
| 72.5°  | 343.8  | 337.0  | 328.7  | 317.0  | 312.0  |
| 75°    | 280.2  | 277.0  | 268.5  | 258.6  | 262.0  |
| 77.5°  | 223.6  | 216.8  | 213.5  | 208.5  | 203.6  |
| 80°    | 166.9  | 165.1  | 161.8  | 156.9  | 153.5  |
| 82.5°  | 113.4  | 113.4  | 111.8  | 105.1  | 105.1  |
| 85°    | 68.3   | 66.7   | 65.1   | 60.0   | 58.4   |
| 87.5°  | 30.1   | 26.8   | 23.4   | 18.4   | 16.7   |
| 90°    | 0.6    | 7.8    | 13.0   | 16.4   | 17.6   |
| 92.5°  | 16.4   | 13.7   | 15.7   | 17.0   | 17.6   |
| 95°    | 42.4   | 20.9   | 25.4   | 28.8   | 28.1   |
| 97.5°  | 76.4   | 22.9   | 33.3   | 35.3   | 35.9   |
| 100°   | 115.7  | 26.1   | 37.3   | 42.4   | 43.8   |
| 102.5° | 158.7  | 157.5  | 38.5   | 45.7   | 47.7   |
| 105°   | 198.6  | 218.2  | 39.9   | 47.0   | 49.7   |
| 107.5° | 245.0  | 261.3  | 41.2   | 48.3   | 51.0   |
| 110°   | 289.4  | 303.1  | 114.3  | 49.0   | 51.6   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 331.3 | 343.0 | 331.9 | 50.3  | 52.3  |
| 115°   | 375.6 | 386.7 | 403.1 | 100.6 | 53.6  |
| 117.5° | 414.2 | 427.2 | 438.4 | 344.9 | 173.8 |
| 120°   | 457.3 | 467.1 | 478.8 | 486.7 | 398.5 |
| 122.5° | 493.8 | 504.4 | 517.5 | 521.3 | 522.0 |
| 125°   | 531.1 | 539.6 | 552.1 | 556.6 | 558.6 |
| 127.5° | 565.1 | 574.2 | 584.1 | 590.6 | 591.2 |
| 130°   | 597.1 | 607.6 | 614.7 | 621.9 | 621.3 |
| 132.5° | 629.7 | 638.3 | 645.4 | 651.3 | 650.7 |
| 135°   | 657.2 | 667.7 | 673.5 | 680.1 | 678.8 |
| 137.5° | 685.9 | 693.8 | 700.3 | 706.9 | 704.9 |
| 140°   | 714.0 | 719.3 | 726.4 | 732.3 | 729.1 |
| 142.5° | 737.6 | 742.2 | 750.6 | 755.8 | 752.6 |
| 145°   | 762.4 | 761.7 | 772.8 | 777.4 | 774.1 |
| 147.5° | 783.9 | 781.9 | 793.1 | 796.3 | 793.7 |
| 150°   | 804.9 | 800.3 | 810.7 | 814.6 | 811.4 |
| 152.5° | 822.4 | 817.3 | 827.1 | 831.0 | 826.4 |
| 155°   | 839.5 | 833.7 | 841.4 | 845.3 | 840.2 |
| 157.5° | 853.2 | 848.0 | 853.9 | 858.4 | 853.2 |
| 160°   | 865.0 | 861.0 | 865.0 | 868.9 | 864.2 |
| 162.5° | 875.4 | 871.5 | 874.8 | 879.3 | 873.4 |
| 165°   | 884.5 | 880.7 | 882.6 | 887.2 | 882.6 |
| 167.5° | 891.7 | 887.8 | 889.7 | 894.4 | 888.5 |
| 170°   | 897.6 | 893.7 | 895.0 | 899.6 | 893.7 |
| 172.5° | 901.5 | 897.6 | 898.9 | 903.5 | 897.6 |
| 175°   | 904.7 | 900.2 | 901.5 | 906.1 | 899.6 |
| 177.5° | 906.1 | 901.5 | 902.2 | 906.8 | 900.9 |
| 180°   | 902.9 | 902.9 | 902.9 | 902.9 | 902.9 |

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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 | 12.84            | 13.82 | 13.68 | 14.69 | 15.77 | 12.40          | 13.38 | 13.24 | 14.25 | 15.33 |
|                 | 3H   | 14.49            | 15.37 | 15.34 | 16.24 | 17.35 | 14.00          | 14.89 | 14.86 | 15.76 | 16.87 |
|                 | 4H   | 15.07            | 15.90 | 15.94 | 16.78 | 17.90 | 14.58          | 15.42 | 15.45 | 16.30 | 17.42 |
|                 | 6H   | 15.46            | 16.23 | 16.34 | 17.11 | 18.25 | 14.97          | 15.74 | 15.85 | 16.63 | 17.76 |
|                 | 8H   | 15.56            | 16.29 | 16.45 | 17.20 | 18.33 | 15.07          | 15.80 | 15.96 | 16.71 | 17.84 |
|                 | 12H  | 15.60            | 16.30 | 16.50 | 17.20 | 18.36 | 15.11          | 15.81 | 16.00 | 16.71 | 17.86 |
| 4H              | 2H   | 13.30            | 14.14 | 14.18 | 15.02 | 16.14 | 12.95          | 13.79 | 13.83 | 14.67 | 15.79 |
|                 | 3H   | 15.16            | 15.85 | 16.04 | 16.77 | 17.90 | 14.76          | 15.45 | 15.64 | 16.37 | 17.50 |
|                 | 4H   | 15.86            | 16.50 | 16.76 | 17.40 | 18.56 | 15.44          | 16.08 | 16.34 | 16.99 | 18.15 |
|                 | 6H   | 16.36            | 16.91 | 17.27 | 17.84 | 19.00 | 15.94          | 16.49 | 16.85 | 17.42 | 18.59 |
|                 | 8H   | 16.50            | 17.02 | 17.42 | 17.95 | 19.12 | 16.08          | 16.60 | 17.00 | 17.52 | 18.70 |
|                 | 12H  | 16.57            | 17.04 | 17.51 | 17.98 | 19.16 | 16.14          | 16.60 | 17.08 | 17.55 | 18.73 |
| 8H              | 4H   | 16.05            | 16.57 | 16.97 | 17.50 | 18.67 | 15.69          | 16.20 | 16.60 | 17.13 | 18.30 |
|                 | 6H   | 16.67            | 17.09 | 17.61 | 18.06 | 19.23 | 16.29          | 16.72 | 17.24 | 17.69 | 18.86 |
|                 | 8H   | 16.87            | 17.25 | 17.83 | 18.21 | 19.40 | 16.49          | 16.87 | 17.45 | 17.83 | 19.02 |
|                 | 12H  | 17.00            | 17.33 | 17.95 | 18.28 | 19.52 | 16.60          | 16.93 | 17.56 | 17.89 | 19.13 |
| 12H             | 4H   | 16.04            | 16.51 | 16.98 | 17.45 | 18.63 | 15.68          | 16.15 | 16.62 | 17.09 | 18.27 |
|                 | 6H   | 16.69            | 17.07 | 17.64 | 18.03 | 19.22 | 16.33          | 16.71 | 17.28 | 17.67 | 18.86 |
|                 | 8H   | 16.92            | 17.26 | 17.88 | 18.21 | 19.45 | 16.56          | 16.89 | 17.51 | 17.84 | 19.08 |

END OF REPORT