

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: P903004

Luminaire Tested: DFN2DIP-PN3F0-050D030US830-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903004  
REPORT IS A COMBINATION OF REPORTS P899515 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-050D030US830-FLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

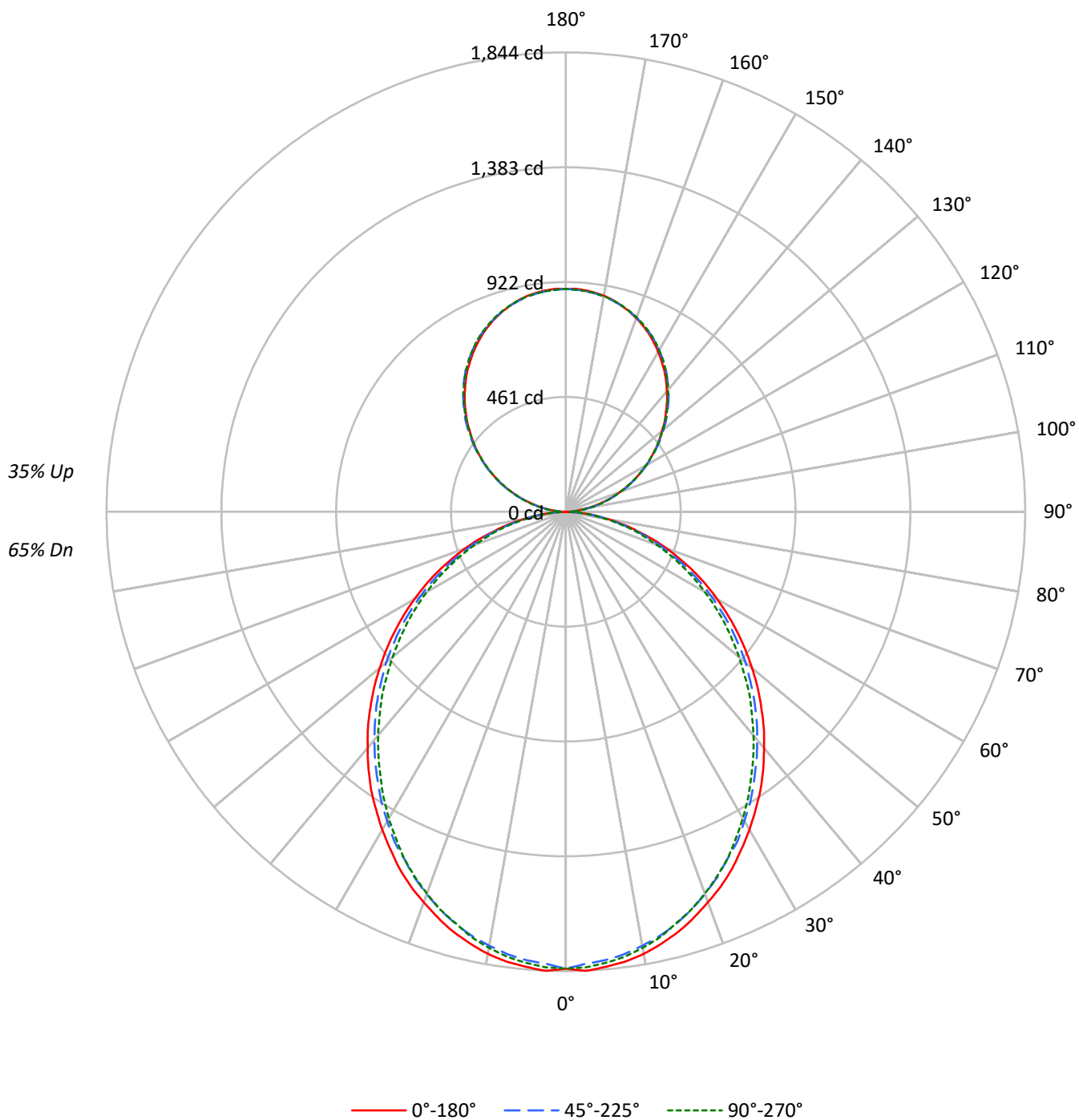
Lumens per Lamp: N/A  
Luminaire Lumens: 7168.0 lumens  
Efficiency: N/A  
Efficacy: 104.9 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 68.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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: P903004

CATALOG NUMBER: DFN2DIP-PN3F0-050D030US830-FLLFL

**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   | 111 | 111 | 111 | 111 | 104 | 104 | 104 | 104 | 92 | 92 | 92 | 80 | 80 | 80 | 70 | 70 | 70 |
| 1   | 101 | 97  | 93  | 89  | 95  | 91  | 88  | 84  | 81 | 78 | 75 | 71 | 69 | 67 | 62 | 60 | 59 |
| 2   | 92  | 85  | 78  | 73  | 86  | 80  | 74  | 69  | 71 | 66 | 63 | 62 | 59 | 56 | 55 | 52 | 50 |
| 3   | 84  | 74  | 67  | 61  | 79  | 70  | 63  | 58  | 62 | 57 | 53 | 55 | 51 | 47 | 48 | 45 | 42 |
| 4   | 77  | 66  | 58  | 52  | 72  | 62  | 55  | 49  | 55 | 50 | 45 | 49 | 44 | 41 | 43 | 40 | 37 |
| 5   | 71  | 59  | 50  | 44  | 66  | 56  | 48  | 42  | 50 | 44 | 39 | 44 | 39 | 35 | 39 | 35 | 32 |
| 6   | 65  | 53  | 45  | 39  | 61  | 50  | 43  | 37  | 45 | 39 | 34 | 40 | 35 | 31 | 35 | 31 | 28 |
| 7   | 60  | 48  | 40  | 34  | 57  | 45  | 38  | 33  | 41 | 35 | 30 | 36 | 31 | 28 | 32 | 28 | 25 |
| 8   | 56  | 44  | 36  | 30  | 53  | 41  | 34  | 29  | 37 | 31 | 27 | 33 | 28 | 25 | 30 | 26 | 22 |
| 9   | 52  | 40  | 32  | 27  | 49  | 38  | 31  | 26  | 34 | 28 | 24 | 31 | 26 | 22 | 27 | 23 | 20 |
| 10  | 49  | 37  | 29  | 24  | 46  | 35  | 28  | 23  | 32 | 26 | 22 | 28 | 24 | 20 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2144 | 2144 | 2144 |
| 5°  | 2146 | 2112 | 2127 |
| 10° | 2127 | 2082 | 2097 |
| 15° | 2095 | 2046 | 2051 |
| 20° | 2051 | 1997 | 2005 |
| 25° | 2008 | 1939 | 1950 |
| 30° | 1954 | 1884 | 1882 |
| 35° | 1902 | 1820 | 1809 |
| 40° | 1839 | 1756 | 1740 |
| 45° | 1777 | 1691 | 1669 |
| 50° | 1708 | 1622 | 1587 |
| 55° | 1636 | 1543 | 1512 |
| 60° | 1554 | 1450 | 1426 |
| 65° | 1465 | 1352 | 1323 |
| 70° | 1351 | 1234 | 1213 |
| 75° | 1194 | 1092 | 1111 |
| 80° | 1004 | 910  | 916  |
| 85° | 708  | 602  | 597  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 1777 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 172.6  | 2.4       |
| 10°-20°   | 485.6  | 6.8       |
| 20°-30°   | 713.7  | 10.0      |
| 30°-40°   | 828.9  | 11.6      |
| 40°-50°   | 827.8  | 11.5      |
| 50°-60°   | 721.8  | 10.1      |
| 60°-70°   | 533.6  | 7.4       |
| 70°-80°   | 301.9  | 4.2       |
| 80°-90°   | 82.2   | 1.1       |
| 90°-100°  | 55.3   | 0.8       |
| 100°-110° | 175.8  | 2.5       |
| 110°-120° | 300.9  | 4.2       |
| 120°-130° | 395.7  | 5.5       |
| 130°-140° | 444.2  | 6.2       |
| 140°-150° | 435.6  | 6.1       |
| 150°-160° | 365.4  | 5.1       |
| 160°-170° | 242.3  | 3.4       |
| 170°-180° | 84.7   | 1.2       |
| 0°-30°    | 1371.9 | 19.1      |
| 0°-40°    | 2200.7 | 30.7      |
| 0°-60°    | 3750.4 | 52.3      |
| 0°-90°    | 4668.1 | 65.1      |
| 90°-120°  | 532.1  | 7.4       |
| 90°-150°  | 1807.5 | 25.2      |
| 90°-180°  | 2500.0 | 34.9      |
| 0°-180°   | 7168.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1834 | 1834  | 1834 | 1834  | 1834 |      |
| 5°   | 1834 | 1827  | 1807 | 1821  | 1818 | 174  |
| 15°  | 1746 | 1735  | 1712 | 1719  | 1710 | 492  |
| 25°  | 1580 | 1566  | 1536 | 1539  | 1536 | 727  |
| 35°  | 1363 | 1346  | 1317 | 1307  | 1298 | 851  |
| 45°  | 1109 | 1097  | 1070 | 1051  | 1044 | 856  |
| 55°  | 839  | 829   | 808  | 786   | 778  | 750  |
| 65°  | 566  | 555   | 538  | 522   | 513  | 560  |
| 75°  | 296  | 293   | 284  | 273   | 277  | 316  |
| 85°  | 72   | 70    | 69   | 63    | 62   | 81   |
| 90°  | 1    | 10    | 26   | 25    | 26   | 7    |
| 95°  | 39   | 47    | 48   | 48    | 47   | 44   |
| 105° | 162  | 164   | 166  | 167   | 167  | 171  |
| 115° | 302  | 306   | 305  | 304   | 302  | 299  |
| 125° | 439  | 446   | 444  | 441   | 440  | 392  |
| 135° | 568  | 576   | 578  | 577   | 575  | 439  |
| 145° | 690  | 695   | 699  | 700   | 697  | 431  |
| 155° | 789  | 791   | 793  | 797   | 795  | 363  |
| 165° | 858  | 857   | 857  | 862   | 859  | 242  |
| 175° | 893  | 890   | 889  | 894   | 890  | 85   |
| 180° | 894  | 894   | 894  | 894   | 894  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.7 | 1833.7 | 1833.7 | 1833.7 | 1833.7 |
| 2.5°   | 1844.4 | 1835.6 | 1816.2 | 1833.7 | 1830.4 |
| 5°     | 1833.7 | 1826.8 | 1807.3 | 1821.4 | 1818.1 |
| 7.5°   | 1821.4 | 1810.9 | 1791.5 | 1805.7 | 1802.1 |
| 10°    | 1802.1 | 1789.8 | 1768.7 | 1782.6 | 1777.4 |
| 12.5°  | 1775.6 | 1765.1 | 1744.0 | 1752.8 | 1749.2 |
| 15°    | 1745.6 | 1735.1 | 1712.1 | 1719.3 | 1710.4 |
| 17.5°  | 1708.5 | 1698.1 | 1675.1 | 1683.9 | 1675.1 |
| 20°    | 1668.0 | 1657.6 | 1632.9 | 1638.0 | 1631.2 |
| 22.5°  | 1627.6 | 1611.7 | 1588.7 | 1588.7 | 1585.1 |
| 25°    | 1579.9 | 1565.8 | 1535.9 | 1539.3 | 1535.9 |
| 27.5°  | 1526.9 | 1514.6 | 1491.8 | 1486.5 | 1477.7 |
| 30°    | 1474.1 | 1460.0 | 1433.6 | 1428.3 | 1421.3 |
| 32.5°  | 1417.7 | 1407.2 | 1378.9 | 1368.3 | 1361.2 |
| 35°    | 1363.0 | 1345.5 | 1317.2 | 1306.6 | 1297.8 |
| 37.5°  | 1301.3 | 1285.4 | 1257.2 | 1244.8 | 1236.0 |
| 40°    | 1237.9 | 1223.7 | 1195.4 | 1179.7 | 1172.6 |
| 42.5°  | 1176.2 | 1162.0 | 1133.9 | 1116.1 | 1105.6 |
| 45°    | 1109.2 | 1096.8 | 1070.3 | 1051.0 | 1043.9 |
| 47.5°  | 1043.9 | 1031.5 | 1003.3 | 983.8  | 973.4  |
| 50°    | 975.1  | 966.3  | 941.6  | 916.9  | 908.0  |
| 52.5°  | 908.0  | 895.7  | 872.9  | 853.5  | 841.1  |
| 55°    | 839.4  | 828.8  | 807.6  | 786.5  | 777.7  |
| 57.5°  | 770.5  | 761.8  | 738.8  | 717.7  | 710.5  |
| 60°    | 701.7  | 694.8  | 670.1  | 650.6  | 645.5  |
| 62.5°  | 634.8  | 622.5  | 604.8  | 587.2  | 580.1  |
| 65°    | 566.1  | 555.4  | 537.8  | 522.0  | 513.1  |
| 67.5°  | 495.6  | 486.6  | 470.9  | 458.5  | 451.4  |
| 70°    | 430.3  | 423.2  | 407.3  | 394.9  | 388.0  |
| 72.5°  | 363.4  | 356.2  | 347.4  | 335.1  | 329.8  |
| 75°    | 296.1  | 292.8  | 283.8  | 273.3  | 276.9  |
| 77.5°  | 236.3  | 229.1  | 225.6  | 220.4  | 215.2  |
| 80°    | 176.4  | 174.6  | 171.0  | 165.8  | 162.2  |
| 82.5°  | 119.9  | 119.9  | 118.2  | 111.1  | 111.1  |
| 85°    | 72.2   | 70.5   | 68.8   | 63.4   | 61.7   |
| 87.5°  | 31.8   | 28.3   | 24.7   | 19.4   | 17.6   |
| 90°    | 0.8    | 9.7    | 26.4   | 24.8   | 25.6   |
| 92.5°  | 16.7   | 22.6   | 23.5   | 24.2   | 24.2   |
| 95°    | 39.4   | 46.9   | 48.3   | 48.3   | 46.9   |
| 97.5°  | 65.5   | 72.5   | 75.5   | 75.5   | 75.5   |
| 100°   | 95.7   | 101.9  | 104.1  | 104.1  | 103.3  |
| 102.5° | 127.5  | 132.1  | 135.1  | 135.9  | 135.1  |
| 105°   | 162.3  | 164.5  | 166.1  | 167.4  | 167.4  |
| 107.5° | 196.8  | 200.0  | 200.0  | 200.6  | 196.8  |
| 110°   | 230.3  | 234.6  | 234.6  | 234.6  | 232.4  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 266.4 | 271.0 | 270.1 | 268.0 | 266.4 |
| 115°   | 302.0 | 306.2 | 304.9 | 304.2 | 302.0 |
| 117.5° | 337.2 | 343.2 | 339.4 | 337.2 | 335.1 |
| 120°   | 372.9 | 378.8 | 372.9 | 372.9 | 370.4 |
| 122.5° | 405.2 | 412.7 | 409.0 | 406.8 | 405.2 |
| 125°   | 439.2 | 445.9 | 443.7 | 441.3 | 440.5 |
| 127.5° | 472.3 | 480.7 | 477.8 | 474.5 | 472.3 |
| 130°   | 503.3 | 513.0 | 511.7 | 510.1 | 507.1 |
| 132.5° | 538.1 | 545.6 | 546.2 | 542.4 | 540.3 |
| 135°   | 568.1 | 576.4 | 578.1 | 577.2 | 575.0 |
| 137.5° | 601.4 | 608.2 | 609.5 | 609.1 | 605.8 |
| 140°   | 630.8 | 637.6 | 641.4 | 641.4 | 638.4 |
| 142.5° | 661.1 | 667.8 | 670.0 | 670.8 | 667.8 |
| 145°   | 689.7 | 695.0 | 699.4 | 700.1 | 697.2 |
| 147.5° | 715.3 | 722.0 | 725.2 | 726.6 | 723.6 |
| 150°   | 741.7 | 746.3 | 749.2 | 751.7 | 749.2 |
| 152.5° | 765.2 | 769.7 | 773.5 | 776.5 | 773.5 |
| 155°   | 788.6 | 790.7 | 793.1 | 796.9 | 794.6 |
| 157.5° | 808.8 | 810.4 | 811.8 | 817.2 | 813.4 |
| 160°   | 826.9 | 828.5 | 829.3 | 833.9 | 830.7 |
| 162.5° | 843.6 | 843.6 | 844.4 | 849.5 | 845.7 |
| 165°   | 857.9 | 857.1 | 857.1 | 862.4 | 858.7 |
| 167.5° | 870.8 | 868.4 | 868.4 | 873.7 | 870.0 |
| 170°   | 880.5 | 878.4 | 877.6 | 883.0 | 878.4 |
| 172.5° | 887.2 | 885.1 | 884.3 | 889.7 | 885.1 |
| 175°   | 892.7 | 890.5 | 888.9 | 894.3 | 889.7 |
| 177.5° | 895.6 | 893.4 | 891.8 | 896.5 | 891.8 |
| 180°   | 894.3 | 894.3 | 894.3 | 894.3 | 894.3 |

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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 | 11.17            | 12.19 | 11.99 | 13.03 | 14.06 | 10.73          | 11.75 | 11.55 | 12.59 | 13.62 |
|                 | 3H   | 12.84            | 13.75 | 13.67 | 14.60 | 15.66 | 12.35          | 13.27 | 13.18 | 14.11 | 15.18 |
|                 | 4H   | 13.43            | 14.29 | 14.27 | 15.14 | 16.22 | 12.94          | 13.80 | 13.79 | 14.66 | 15.74 |
|                 | 6H   | 13.83            | 14.63 | 14.69 | 15.49 | 16.58 | 13.34          | 14.14 | 14.20 | 15.00 | 16.09 |
|                 | 8H   | 13.94            | 14.70 | 14.80 | 15.58 | 16.67 | 13.45          | 14.20 | 14.31 | 15.09 | 16.18 |
|                 | 12H  | 13.99            | 14.71 | 14.86 | 15.59 | 16.70 | 13.49          | 14.21 | 14.36 | 15.09 | 16.20 |
| 4H              | 2H   | 11.65            | 12.51 | 12.50 | 13.36 | 14.44 | 11.30          | 12.16 | 12.15 | 13.01 | 14.09 |
|                 | 3H   | 13.52            | 14.24 | 14.38 | 15.13 | 16.22 | 13.12          | 13.84 | 13.98 | 14.73 | 15.82 |
|                 | 4H   | 14.24            | 14.89 | 15.11 | 15.78 | 16.89 | 13.82          | 14.48 | 14.69 | 15.36 | 16.48 |
|                 | 6H   | 14.75            | 15.32 | 15.64 | 16.23 | 17.35 | 14.33          | 14.90 | 15.22 | 15.81 | 16.93 |
|                 | 8H   | 14.90            | 15.43 | 15.80 | 16.34 | 17.47 | 14.48          | 15.01 | 15.37 | 15.91 | 17.05 |
|                 | 12H  | 14.98            | 15.46 | 15.89 | 16.38 | 17.52 | 14.54          | 15.02 | 15.46 | 15.94 | 17.08 |
| 8H              | 4H   | 14.44            | 14.97 | 15.33 | 15.87 | 17.01 | 14.07          | 14.60 | 14.96 | 15.50 | 16.64 |
|                 | 6H   | 15.07            | 15.51 | 15.99 | 16.45 | 17.59 | 14.70          | 15.13 | 15.61 | 16.08 | 17.21 |
|                 | 8H   | 15.29            | 15.68 | 16.22 | 16.62 | 17.77 | 14.91          | 15.29 | 15.84 | 16.23 | 17.38 |
|                 | 12H  | 15.42            | 15.77 | 16.36 | 16.70 | 17.90 | 15.02          | 15.37 | 15.96 | 16.30 | 17.50 |
| 12H             | 4H   | 14.43            | 14.91 | 15.34 | 15.83 | 16.97 | 14.07          | 14.55 | 14.98 | 15.47 | 16.61 |
|                 | 6H   | 15.10            | 15.49 | 16.03 | 16.43 | 17.58 | 14.74          | 15.13 | 15.67 | 16.06 | 17.21 |
|                 | 8H   | 15.34            | 15.69 | 16.28 | 16.62 | 17.82 | 14.97          | 15.32 | 15.91 | 16.25 | 17.45 |

END OF REPORT