

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: P916179

Luminaire Tested: DFN2DIP-HX3F0-030D080US930-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P916179  
REPORT IS A COMBINATION OF REPORTS P899272 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-030D080US930-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

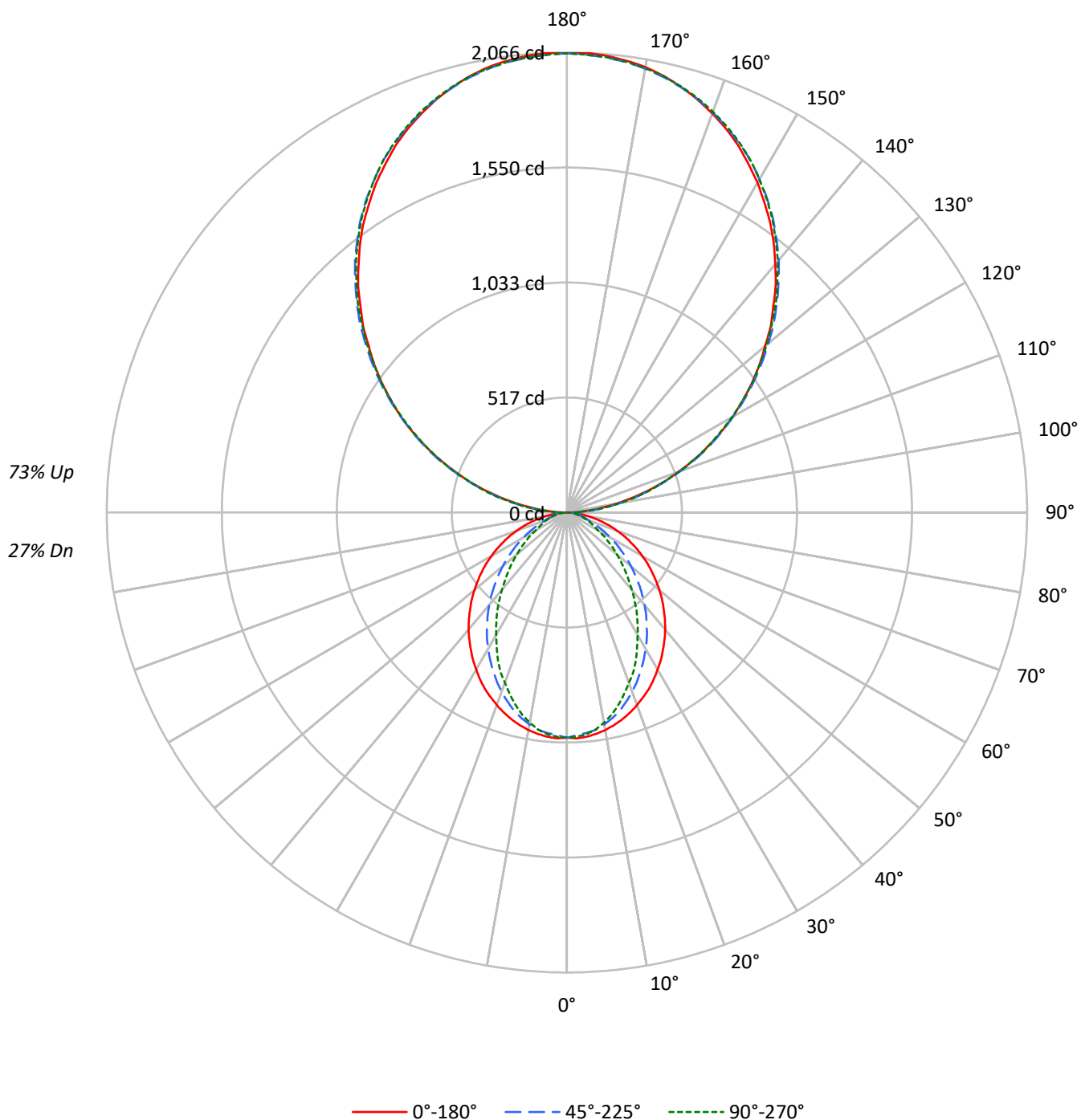
Lumens per Lamp: N/A  
Luminaire Lumens: 7851.3 lumens  
Efficiency: N/A  
Efficacy: 92.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 85  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.983  
Total Harmonic Distortion (THDi): 0.073  
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: P916179

CATALOG NUMBER: DFN2DIP-HX3F0-030D080US930-RLFL

**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   | 102 | 102 | 102 | 102 | 91 | 91 | 91 | 91 | 70 | 70 | 70 | 52 | 52 | 52 | 35 | 35 | 35 |
| 1   | 93  | 89  | 85  | 82  | 83 | 79 | 76 | 74 | 62 | 60 | 58 | 46 | 44 | 43 | 31 | 30 | 30 |
| 2   | 85  | 78  | 72  | 67  | 75 | 70 | 65 | 61 | 54 | 51 | 48 | 40 | 38 | 37 | 27 | 26 | 25 |
| 3   | 77  | 68  | 62  | 56  | 69 | 61 | 56 | 51 | 48 | 44 | 41 | 36 | 33 | 31 | 25 | 23 | 22 |
| 4   | 71  | 61  | 53  | 48  | 63 | 54 | 48 | 43 | 43 | 38 | 35 | 32 | 29 | 27 | 22 | 20 | 19 |
| 5   | 65  | 54  | 46  | 41  | 58 | 49 | 42 | 37 | 38 | 34 | 30 | 29 | 26 | 23 | 20 | 18 | 17 |
| 6   | 60  | 48  | 41  | 35  | 53 | 44 | 37 | 32 | 35 | 30 | 26 | 26 | 23 | 20 | 18 | 16 | 15 |
| 7   | 55  | 44  | 36  | 31  | 49 | 39 | 33 | 28 | 31 | 27 | 23 | 24 | 21 | 18 | 17 | 15 | 13 |
| 8   | 51  | 39  | 32  | 27  | 46 | 36 | 29 | 25 | 28 | 24 | 20 | 22 | 18 | 16 | 15 | 13 | 12 |
| 9   | 48  | 36  | 29  | 24  | 42 | 33 | 26 | 22 | 26 | 21 | 18 | 20 | 17 | 14 | 14 | 12 | 11 |
| 10  | 44  | 33  | 26  | 21  | 40 | 30 | 24 | 20 | 24 | 19 | 16 | 18 | 15 | 13 | 13 | 11 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1171 | 1171 | 1171 |
| 5°  | 1172 | 1152 | 1159 |
| 10° | 1160 | 1128 | 1121 |
| 15° | 1144 | 1090 | 1062 |
| 20° | 1122 | 1038 | 990  |
| 25° | 1100 | 980  | 920  |
| 30° | 1070 | 920  | 832  |
| 35° | 1041 | 856  | 755  |
| 40° | 1012 | 790  | 666  |
| 45° | 977  | 716  | 586  |
| 50° | 942  | 642  | 508  |
| 55° | 904  | 563  | 433  |
| 60° | 861  | 480  | 356  |
| 65° | 812  | 397  | 319  |
| 70° | 752  | 319  | 288  |
| 75° | 676  | 279  | 261  |
| 80° | 567  | 232  | 224  |
| 85° | 387  | 151  | 165  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 1942 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 94.7   | 1.2       |
| 10°-20°   | 260.1  | 3.3       |
| 20°-30°   | 365.1  | 4.7       |
| 30°-40°   | 398.0  | 5.1       |
| 40°-50°   | 365.8  | 4.7       |
| 50°-60°   | 287.3  | 3.7       |
| 60°-70°   | 187.0  | 2.4       |
| 70°-80°   | 96.3   | 1.2       |
| 80°-90°   | 30.5   | 0.4       |
| 90°-100°  | 127.6  | 1.6       |
| 100°-110° | 405.6  | 5.2       |
| 110°-120° | 694.1  | 8.8       |
| 120°-130° | 912.8  | 11.6      |
| 130°-140° | 1024.6 | 13.0      |
| 140°-150° | 1004.7 | 12.8      |
| 150°-160° | 842.8  | 10.7      |
| 160°-170° | 558.9  | 7.1       |
| 170°-180° | 195.4  | 2.5       |
| 0°-30°    | 720.0  | 9.2       |
| 0°-40°    | 1118.0 | 14.2      |
| 0°-60°    | 1771.2 | 22.6      |
| 0°-90°    | 2084.9 | 26.6      |
| 90°-120°  | 1227.3 | 15.6      |
| 90°-150°  | 4169.4 | 53.1      |
| 90°-180°  | 5766.0 | 73.4      |
| 0°-180°   | 7851.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1011 | 1011  | 1011 | 1011  | 1011 |      |
| 5°   | 1011 | 1006  | 994  | 1003  | 1000 | 96   |
| 15°  | 962  | 951   | 920  | 903   | 894  | 271  |
| 25°  | 873  | 843   | 783  | 746   | 732  | 401  |
| 35°  | 752  | 705   | 625  | 567   | 547  | 471  |
| 45°  | 615  | 553   | 458  | 392   | 370  | 475  |
| 55°  | 467  | 396   | 297  | 242   | 225  | 418  |
| 65°  | 316  | 242   | 159  | 128   | 125  | 313  |
| 75°  | 168  | 104   | 73   | 67    | 66   | 178  |
| 85°  | 39   | 20    | 17   | 17    | 17   | 45   |
| 90°  | 2    | 22    | 61   | 57    | 59   | 8    |
| 95°  | 91   | 108   | 111  | 111   | 108  | 101  |
| 105° | 374  | 379   | 383  | 386   | 386  | 395  |
| 115° | 696  | 706   | 703  | 702   | 696  | 689  |
| 125° | 1013 | 1029  | 1024 | 1018  | 1016 | 905  |
| 135° | 1310 | 1330  | 1333 | 1332  | 1326 | 1013 |
| 145° | 1591 | 1603  | 1613 | 1615  | 1608 | 994  |
| 155° | 1819 | 1824  | 1830 | 1838  | 1833 | 837  |
| 165° | 1979 | 1977  | 1977 | 1989  | 1981 | 558  |
| 175° | 2059 | 2054  | 2050 | 2063  | 2052 | 196  |
| 180° | 2063 | 2063  | 2063 | 2063  | 2063 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1010.9 | 1010.9 | 1010.9 | 1010.9 | 1010.9 |
| 2.5°   | 1015.5 | 1010.9 | 1000.8 | 1010.0 | 1008.2 |
| 5°     | 1010.9 | 1006.3 | 994.4  | 1002.7 | 999.9  |
| 7.5°   | 1002.7 | 997.2  | 984.4  | 988.0  | 983.4  |
| 10°    | 991.6  | 985.3  | 967.0  | 964.2  | 958.8  |
| 12.5°  | 978.0  | 969.7  | 945.0  | 939.5  | 929.4  |
| 15°    | 961.5  | 951.4  | 920.3  | 902.9  | 893.8  |
| 17.5°  | 942.2  | 927.6  | 889.2  | 869.1  | 854.4  |
| 20°    | 920.3  | 902.0  | 856.2  | 833.5  | 813.3  |
| 22.5°  | 896.6  | 875.5  | 822.4  | 791.3  | 777.6  |
| 25°    | 872.8  | 843.4  | 783.1  | 745.6  | 731.8  |
| 27.5°  | 844.4  | 813.3  | 746.5  | 703.5  | 682.4  |
| 30°    | 814.2  | 779.4  | 706.2  | 659.7  | 634.9  |
| 32.5°  | 784.9  | 742.8  | 667.9  | 612.9  | 590.0  |
| 35°    | 752.0  | 705.3  | 624.8  | 567.2  | 547.1  |
| 37.5°  | 720.0  | 669.6  | 584.6  | 521.4  | 498.6  |
| 40°    | 686.2  | 631.3  | 542.5  | 477.5  | 453.8  |
| 42.5°  | 651.3  | 592.9  | 500.4  | 432.7  | 409.9  |
| 45°    | 614.8  | 553.4  | 457.5  | 392.4  | 370.5  |
| 47.5°  | 580.0  | 515.1  | 416.3  | 351.2  | 331.2  |
| 50°    | 541.6  | 476.6  | 376.0  | 312.8  | 293.7  |
| 52.5°  | 504.0  | 435.5  | 337.6  | 277.2  | 259.8  |
| 55°    | 467.4  | 396.1  | 297.3  | 242.5  | 225.1  |
| 57.5°  | 430.0  | 356.8  | 261.7  | 210.4  | 195.8  |
| 60°    | 391.5  | 318.4  | 224.1  | 177.5  | 162.9  |
| 62.5°  | 354.1  | 280.9  | 192.1  | 148.2  | 141.0  |
| 65°    | 315.6  | 241.5  | 159.1  | 128.1  | 125.3  |
| 67.5°  | 279.1  | 204.9  | 128.1  | 112.5  | 109.7  |
| 70°    | 240.6  | 169.3  | 106.1  | 96.9   | 93.3   |
| 72.5°  | 204.0  | 136.2  | 88.7   | 81.4   | 79.6   |
| 75°    | 168.3  | 104.3  | 73.2   | 66.8   | 65.9   |
| 77.5°  | 132.6  | 74.0   | 57.6   | 54.0   | 52.1   |
| 80°    | 99.7   | 53.1   | 43.9   | 40.3   | 40.3   |
| 82.5°  | 69.5   | 35.7   | 30.2   | 28.4   | 28.4   |
| 85°    | 39.3   | 20.1   | 17.4   | 17.4   | 17.4   |
| 87.5°  | 14.7   | 7.3    | 7.3    | 6.4    | 6.4    |
| 90°    | 1.9    | 22.4   | 61.0   | 57.2   | 59.1   |
| 92.5°  | 38.6   | 52.3   | 54.1   | 55.9   | 55.9   |
| 95°    | 90.8   | 108.2  | 111.3  | 111.3  | 108.2  |
| 97.5°  | 151.2  | 167.3  | 174.1  | 174.1  | 174.1  |
| 100°   | 220.8  | 235.1  | 240.0  | 240.0  | 238.1  |
| 102.5° | 294.2  | 304.8  | 311.5  | 313.4  | 311.5  |
| 105°   | 374.4  | 379.4  | 383.1  | 386.2  | 386.2  |
| 107.5° | 454.0  | 461.5  | 461.5  | 462.7  | 454.0  |
| 110°   | 531.1  | 541.0  | 541.0  | 541.0  | 536.1  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 614.4  | 625.0  | 623.1  | 618.2  | 614.4  |
| 115°   | 696.5  | 706.5  | 703.4  | 701.5  | 696.5  |
| 117.5° | 778.0  | 791.7  | 782.9  | 778.0  | 773.0  |
| 120°   | 860.1  | 873.8  | 860.1  | 860.1  | 854.4  |
| 122.5° | 934.7  | 952.1  | 943.4  | 938.4  | 934.7  |
| 125°   | 1013.0 | 1028.6 | 1023.6 | 1018.0 | 1016.2 |
| 127.5° | 1089.6 | 1108.8 | 1102.0 | 1094.5 | 1089.6 |
| 130°   | 1161.1 | 1183.4 | 1180.3 | 1176.6 | 1169.8 |
| 132.5° | 1241.3 | 1258.7 | 1260.0 | 1251.2 | 1246.3 |
| 135°   | 1310.3 | 1329.6 | 1333.3 | 1331.5 | 1326.5 |
| 137.5° | 1387.4 | 1403.0 | 1406.1 | 1404.8 | 1397.3 |
| 140°   | 1455.2 | 1470.7 | 1479.4 | 1479.4 | 1472.6 |
| 142.5° | 1524.9 | 1540.4 | 1545.4 | 1547.3 | 1540.4 |
| 145°   | 1590.8 | 1603.2 | 1613.1 | 1615.0 | 1608.2 |
| 147.5° | 1649.8 | 1665.4 | 1672.8 | 1676.0 | 1669.2 |
| 150°   | 1710.8 | 1721.3 | 1728.2 | 1733.8 | 1728.2 |
| 152.5° | 1764.9 | 1775.5 | 1784.2 | 1791.0 | 1784.2 |
| 155°   | 1819.0 | 1824.0 | 1829.6 | 1838.3 | 1832.7 |
| 157.5° | 1865.6 | 1869.4 | 1872.5 | 1884.9 | 1876.2 |
| 160°   | 1907.3 | 1911.1 | 1912.9 | 1923.5 | 1916.0 |
| 162.5° | 1945.9 | 1945.9 | 1947.7 | 1959.6 | 1950.8 |
| 165°   | 1978.8 | 1976.9 | 1976.9 | 1989.4 | 1980.7 |
| 167.5° | 2008.7 | 2003.1 | 2003.1 | 2015.5 | 2006.8 |
| 170°   | 2031.1 | 2026.1 | 2024.2 | 2036.7 | 2026.1 |
| 172.5° | 2046.6 | 2041.7 | 2039.8 | 2052.2 | 2041.7 |
| 175°   | 2059.0 | 2054.1 | 2050.3 | 2062.8 | 2052.2 |
| 177.5° | 2065.9 | 2060.9 | 2057.2 | 2067.8 | 2057.2 |
| 180°   | 2062.8 | 2062.8 | 2062.8 | 2062.8 | 2062.8 |

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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 | 4.92             | 5.59 | 6.06 | 6.72 | 8.29  | 0.89           | 1.56 | 2.03 | 2.69 | 4.26 |
|                 | 3H   | 6.58             | 7.17 | 7.72 | 8.31 | 9.90  | 2.07           | 2.66 | 3.21 | 3.80 | 5.39 |
|                 | 4H   | 7.17             | 7.74 | 8.33 | 8.88 | 10.47 | 2.51           | 3.07 | 3.66 | 4.21 | 5.80 |
|                 | 6H   | 7.58             | 8.10 | 8.74 | 9.24 | 10.84 | 2.81           | 3.34 | 3.98 | 4.48 | 6.08 |
|                 | 8H   | 7.70             | 8.19 | 8.86 | 9.35 | 10.94 | 2.90           | 3.40 | 4.07 | 4.55 | 6.15 |
|                 | 12H  | 7.75             | 8.22 | 8.92 | 9.37 | 10.99 | 2.94           | 3.41 | 4.11 | 4.55 | 6.17 |
| 4H              | 2H   | 4.92             | 5.48 | 6.08 | 6.62 | 8.21  | 1.46           | 2.03 | 2.63 | 3.17 | 4.76 |
|                 | 3H   | 6.72             | 7.19 | 7.89 | 8.36 | 9.96  | 2.79           | 3.27 | 3.96 | 4.43 | 6.03 |
|                 | 4H   | 7.40             | 7.84 | 8.57 | 8.99 | 10.61 | 3.33           | 3.77 | 4.50 | 4.92 | 6.54 |
|                 | 6H   | 7.90             | 8.27 | 9.08 | 9.44 | 11.06 | 3.74           | 4.11 | 4.91 | 5.28 | 6.90 |
|                 | 8H   | 8.07             | 8.41 | 9.24 | 9.58 | 11.21 | 3.86           | 4.21 | 5.04 | 5.37 | 7.00 |
|                 | 12H  | 8.15             | 8.47 | 9.34 | 9.64 | 11.28 | 3.92           | 4.23 | 5.11 | 5.41 | 7.04 |
| 8H              | 4H   | 7.36             | 7.70 | 8.53 | 8.87 | 10.50 | 3.60           | 3.94 | 4.77 | 5.11 | 6.74 |
|                 | 6H   | 7.91             | 8.19 | 9.10 | 9.40 | 11.03 | 4.10           | 4.39 | 5.30 | 5.60 | 7.22 |
|                 | 8H   | 8.12             | 8.37 | 9.32 | 9.55 | 11.20 | 4.29           | 4.54 | 5.49 | 5.72 | 7.37 |
|                 | 12H  | 8.24             | 8.46 | 9.45 | 9.64 | 11.32 | 4.40           | 4.62 | 5.60 | 5.80 | 7.48 |
| 12H             | 4H   | 7.30             | 7.62 | 8.49 | 8.79 | 10.43 | 3.59           | 3.91 | 4.78 | 5.08 | 6.72 |
|                 | 6H   | 7.88             | 8.13 | 9.08 | 9.32 | 10.96 | 4.15           | 4.40 | 5.35 | 5.58 | 7.23 |
|                 | 8H   | 8.09             | 8.31 | 9.29 | 9.49 | 11.17 | 4.35           | 4.57 | 5.55 | 5.75 | 7.43 |

END OF REPORT