

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: P905503

Luminaire Tested: DFN2DIP-HX4F0-080D120US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905503  
REPORT IS A COMBINATION OF REPORTS P899452 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-080D120US835-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

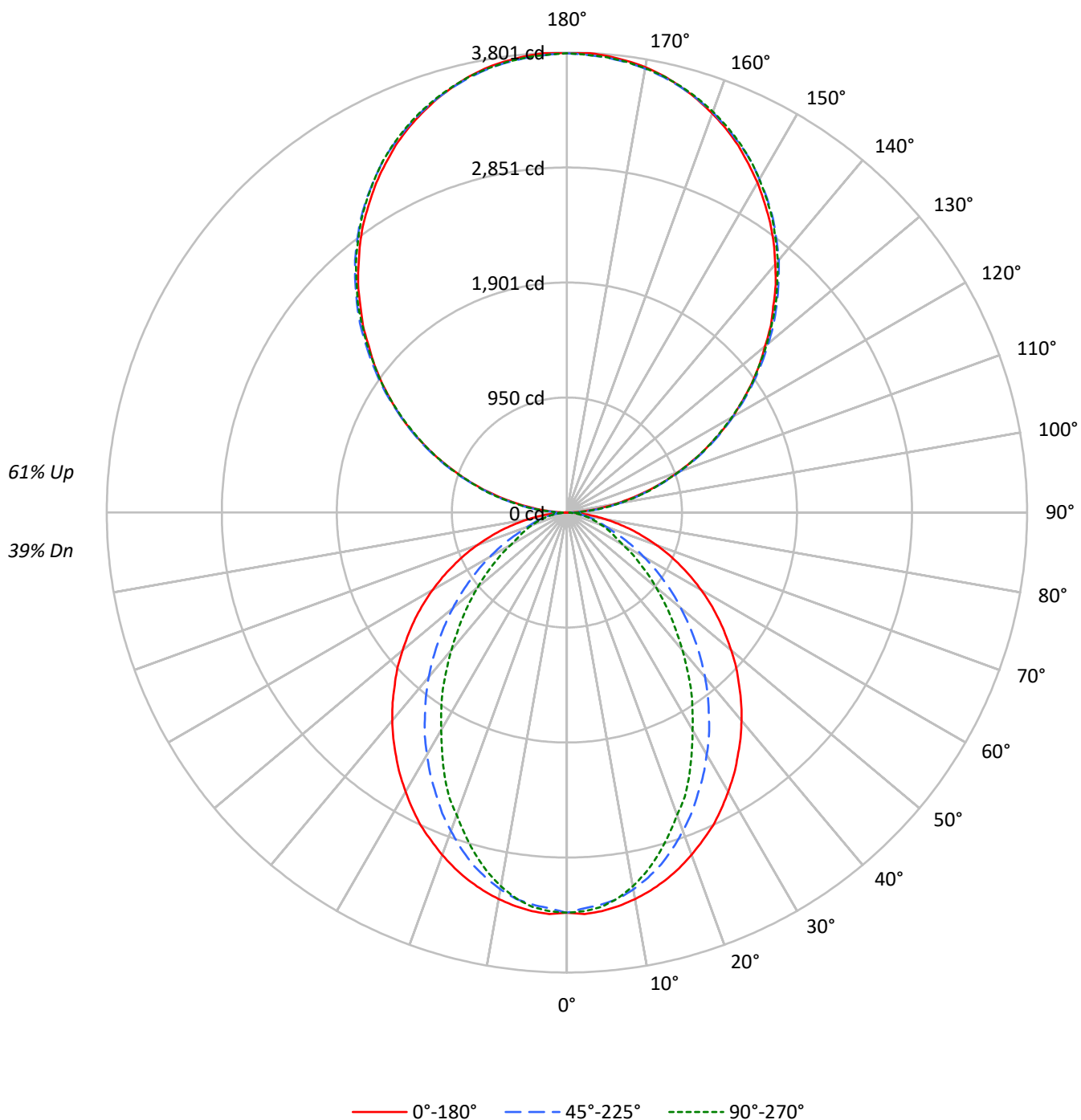
Lumens per Lamp: N/A  
Luminaire Lumens: 17420.0 lumens  
Efficiency: N/A  
Efficacy: 116.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 149.9  
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

TEST NUMBER: P905503

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US835-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P905503

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US835-RLLFLL

**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   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 96  | 92  | 88  | 85  | 87 | 83 | 80 | 78 | 68 | 66 | 64 | 54 | 53 | 51 | 41 | 40 | 40 |
| 2   | 87  | 80  | 75  | 70  | 79 | 73 | 68 | 64 | 60 | 57 | 54 | 48 | 46 | 44 | 37 | 35 | 34 |
| 3   | 80  | 71  | 64  | 58  | 73 | 65 | 59 | 54 | 53 | 49 | 46 | 43 | 40 | 37 | 33 | 31 | 29 |
| 4   | 73  | 63  | 55  | 50  | 66 | 58 | 51 | 46 | 48 | 43 | 39 | 38 | 35 | 32 | 30 | 27 | 26 |
| 5   | 67  | 56  | 48  | 43  | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 28 | 27 | 24 | 22 |
| 6   | 62  | 51  | 43  | 37  | 56 | 46 | 40 | 35 | 39 | 33 | 30 | 31 | 28 | 25 | 25 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 29 | 25 | 22 | 22 | 20 | 18 |
| 8   | 53  | 41  | 34  | 29  | 49 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 21 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 29 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 17 | 15 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 22 | 27 | 22 | 19 | 22 | 19 | 16 | 18 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2459 | 2459 | 2459 |
| 5°  | 2463 | 2420 | 2435 |
| 10° | 2438 | 2373 | 2356 |
| 15° | 2405 | 2294 | 2234 |
| 20° | 2361 | 2186 | 2083 |
| 25° | 2316 | 2065 | 1938 |
| 30° | 2255 | 1941 | 1754 |
| 35° | 2195 | 1808 | 1593 |
| 40° | 2135 | 1670 | 1407 |
| 45° | 2064 | 1517 | 1239 |
| 50° | 1991 | 1362 | 1075 |
| 55° | 1915 | 1197 | 917  |
| 60° | 1827 | 1024 | 755  |
| 65° | 1726 | 848  | 680  |
| 70° | 1603 | 684  | 616  |
| 75° | 1449 | 604  | 560  |
| 80° | 1226 | 507  | 486  |
| 85° | 857  | 340  | 366  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2862 cd/sqm

TEST NUMBER: P905503

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US835-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 309.9   | 1.8       |
| 10°-20°   | 850.7   | 4.9       |
| 20°-30°   | 1194.3  | 6.9       |
| 30°-40°   | 1301.9  | 7.5       |
| 40°-50°   | 1196.6  | 6.9       |
| 50°-60°   | 939.7   | 5.4       |
| 60°-70°   | 611.7   | 3.5       |
| 70°-80°   | 314.9   | 1.8       |
| 80°-90°   | 91.2    | 0.5       |
| 90°-100°  | 234.8   | 1.3       |
| 100°-110° | 746.2   | 4.3       |
| 110°-120° | 1276.9  | 7.3       |
| 120°-130° | 1679.4  | 9.6       |
| 130°-140° | 1885.0  | 10.8      |
| 140°-150° | 1848.5  | 10.6      |
| 150°-160° | 1550.6  | 8.9       |
| 160°-170° | 1028.3  | 5.9       |
| 170°-180° | 359.4   | 2.1       |
| 0°-30°    | 2354.9  | 13.5      |
| 0°-40°    | 3656.8  | 21.0      |
| 0°-60°    | 5793.1  | 33.3      |
| 0°-90°    | 6810.8  | 39.1      |
| 90°-120°  | 2257.9  | 13.0      |
| 90°-150°  | 7670.8  | 44.0      |
| 90°-180°  | 10609.0 | 60.9      |
| 0°-180°   | 17420.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3306 | 3306  | 3306 | 3306  | 3306 |      |
| 5°   | 3306 | 3292  | 3252 | 3279  | 3270 | 314  |
| 15°  | 3145 | 3112  | 3010 | 2953  | 2924 | 886  |
| 25°  | 2855 | 2759  | 2561 | 2439  | 2394 | 1313 |
| 35°  | 2460 | 2307  | 2044 | 1855  | 1789 | 1540 |
| 45°  | 2011 | 1810  | 1496 | 1284  | 1212 | 1553 |
| 55°  | 1529 | 1296  | 972  | 793   | 736  | 1366 |
| 65°  | 1032 | 790   | 521  | 419   | 410  | 1024 |
| 75°  | 550  | 341   | 239  | 218   | 216  | 582  |
| 85°  | 129  | 66    | 57   | 57    | 57   | 148  |
| 90°  | 3    | 41    | 112  | 105   | 109  | 17   |
| 95°  | 167  | 199   | 205  | 205   | 199  | 186  |
| 105° | 689  | 698   | 705  | 710   | 710  | 727  |
| 115° | 1281 | 1300  | 1294 | 1291  | 1281 | 1267 |
| 125° | 1864 | 1892  | 1883 | 1873  | 1870 | 1666 |
| 135° | 2411 | 2446  | 2453 | 2450  | 2440 | 1863 |
| 145° | 2927 | 2950  | 2968 | 2971  | 2959 | 1829 |
| 155° | 3347 | 3356  | 3366 | 3382  | 3372 | 1540 |
| 165° | 3641 | 3637  | 3637 | 3660  | 3644 | 1027 |
| 175° | 3788 | 3779  | 3772 | 3795  | 3776 | 360  |
| 180° | 3795 | 3795  | 3795 | 3795  | 3795 |      |

TEST NUMBER: P905503

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US835-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3306.4 | 3306.4 | 3306.4 | 3306.4 | 3306.4 |
| 2.5°   | 3321.3 | 3306.4 | 3273.4 | 3303.5 | 3297.5 |
| 5°     | 3306.4 | 3291.5 | 3252.4 | 3279.4 | 3270.5 |
| 7.5°   | 3279.4 | 3261.6 | 3219.7 | 3231.5 | 3216.5 |
| 10°    | 3243.5 | 3222.6 | 3162.9 | 3153.7 | 3135.9 |
| 12.5°  | 3198.8 | 3171.8 | 3090.8 | 3073.0 | 3040.0 |
| 15°    | 3144.8 | 3111.8 | 3010.2 | 2953.4 | 2923.5 |
| 17.5°  | 3081.9 | 3034.0 | 2908.3 | 2842.6 | 2794.6 |
| 20°    | 3010.2 | 2950.2 | 2800.7 | 2726.1 | 2660.0 |
| 22.5°  | 2932.4 | 2863.5 | 2689.9 | 2588.3 | 2543.5 |
| 25°    | 2854.6 | 2758.8 | 2561.3 | 2438.8 | 2393.7 |
| 27.5°  | 2761.9 | 2660.0 | 2441.6 | 2301.0 | 2232.1 |
| 30°    | 2663.2 | 2549.2 | 2309.9 | 2157.5 | 2076.5 |
| 32.5°  | 2567.3 | 2429.6 | 2184.5 | 2004.8 | 1929.9 |
| 35°    | 2459.7 | 2307.0 | 2043.8 | 1855.3 | 1789.2 |
| 37.5°  | 2354.9 | 2190.2 | 1912.1 | 1705.4 | 1630.8 |
| 40°    | 2244.2 | 2064.8 | 1774.3 | 1561.9 | 1484.1 |
| 42.5°  | 2130.5 | 1939.1 | 1636.8 | 1415.3 | 1340.6 |
| 45°    | 2010.8 | 1810.2 | 1496.2 | 1283.5 | 1211.8 |
| 47.5°  | 1897.2 | 1684.8 | 1361.6 | 1148.9 | 1083.2 |
| 50°    | 1771.4 | 1559.1 | 1229.9 | 1023.2 | 960.6  |
| 52.5°  | 1648.6 | 1424.1 | 1104.1 | 906.7  | 849.9  |
| 55°    | 1528.9 | 1295.6 | 972.4  | 793.0  | 736.2  |
| 57.5°  | 1406.4 | 1167.0 | 855.9  | 688.3  | 640.3  |
| 60°    | 1280.6 | 1041.3 | 733.0  | 580.6  | 532.7  |
| 62.5°  | 1158.1 | 918.7  | 628.3  | 484.8  | 461.0  |
| 65°    | 1032.4 | 789.8  | 520.6  | 419.1  | 409.8  |
| 67.5°  | 912.7  | 670.2  | 419.1  | 367.9  | 359.1  |
| 70°    | 787.0  | 553.7  | 347.0  | 317.1  | 305.1  |
| 72.5°  | 667.3  | 445.7  | 290.2  | 266.4  | 260.3  |
| 75°    | 550.5  | 341.0  | 239.4  | 218.4  | 215.6  |
| 77.5°  | 434.0  | 242.2  | 188.6  | 176.5  | 170.5  |
| 80°    | 326.0  | 173.7  | 143.5  | 131.7  | 131.7  |
| 82.5°  | 227.3  | 116.8  | 98.7   | 92.7   | 92.7   |
| 85°    | 128.6  | 65.7   | 56.8   | 56.8   | 56.8   |
| 87.5°  | 47.9   | 23.8   | 23.8   | 21.0   | 21.0   |
| 90°    | 3.4    | 41.2   | 112.1  | 105.3  | 108.7  |
| 92.5°  | 70.9   | 96.1   | 99.5   | 103.0  | 103.0  |
| 95°    | 167.0  | 199.1  | 204.8  | 204.8  | 199.1  |
| 97.5°  | 278.0  | 307.8  | 320.4  | 320.4  | 320.4  |
| 100°   | 406.2  | 432.5  | 441.6  | 441.6  | 438.2  |
| 102.5° | 541.2  | 560.6  | 573.2  | 576.7  | 573.2  |
| 105°   | 688.8  | 697.9  | 704.8  | 710.5  | 710.5  |
| 107.5° | 835.2  | 849.0  | 849.0  | 851.2  | 835.2  |
| 110°   | 977.1  | 995.4  | 995.4  | 995.4  | 986.3  |

TEST NUMBER: P905503

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US835-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1130.4 | 1149.9 | 1146.4 | 1137.3 | 1130.4 |
| 115°   | 1281.4 | 1299.8 | 1294.0 | 1290.6 | 1281.4 |
| 117.5° | 1431.3 | 1456.5 | 1440.5 | 1431.3 | 1422.2 |
| 120°   | 1582.4 | 1607.5 | 1582.4 | 1582.4 | 1572.1 |
| 122.5° | 1719.7 | 1751.7 | 1735.7 | 1726.5 | 1719.7 |
| 125°   | 1863.8 | 1892.4 | 1883.3 | 1873.0 | 1869.5 |
| 127.5° | 2004.6 | 2040.0 | 2027.4 | 2013.7 | 2004.6 |
| 130°   | 2136.1 | 2177.3 | 2171.6 | 2164.7 | 2152.1 |
| 132.5° | 2283.7 | 2315.8 | 2318.0 | 2302.0 | 2292.9 |
| 135°   | 2410.7 | 2446.2 | 2453.1 | 2449.6 | 2440.5 |
| 137.5° | 2552.6 | 2581.2 | 2586.9 | 2584.6 | 2570.9 |
| 140°   | 2677.3 | 2705.9 | 2721.9 | 2721.9 | 2709.3 |
| 142.5° | 2805.5 | 2834.1 | 2843.2 | 2846.6 | 2834.1 |
| 145°   | 2926.7 | 2949.6 | 2967.9 | 2971.4 | 2958.8 |
| 147.5° | 3035.4 | 3064.0 | 3077.8 | 3083.5 | 3070.9 |
| 150°   | 3147.6 | 3167.0 | 3179.6 | 3189.9 | 3179.6 |
| 152.5° | 3247.1 | 3266.5 | 3282.6 | 3295.2 | 3282.6 |
| 155°   | 3346.6 | 3355.8 | 3366.1 | 3382.1 | 3371.8 |
| 157.5° | 3432.5 | 3439.3 | 3445.0 | 3467.9 | 3451.9 |
| 160°   | 3509.1 | 3516.0 | 3519.4 | 3538.9 | 3525.1 |
| 162.5° | 3580.0 | 3580.0 | 3583.5 | 3605.2 | 3589.2 |
| 165°   | 3640.7 | 3637.3 | 3637.3 | 3660.1 | 3644.1 |
| 167.5° | 3695.6 | 3685.3 | 3685.3 | 3708.2 | 3692.2 |
| 170°   | 3736.8 | 3727.6 | 3724.2 | 3747.1 | 3727.6 |
| 172.5° | 3765.4 | 3756.2 | 3752.8 | 3775.7 | 3756.2 |
| 175°   | 3788.3 | 3779.1 | 3772.3 | 3795.1 | 3775.7 |
| 177.5° | 3800.9 | 3791.7 | 3784.8 | 3804.3 | 3784.8 |
| 180°   | 3795.1 | 3795.1 | 3795.1 | 3795.1 | 3795.1 |

TEST NUMBER: P905503

CATALOG NUMBER: DFN2DIP-HX4F0-080D120US835-RLFL

**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 | 9.16             | 9.91  | 10.21 | 10.96 | 12.38 | 5.13           | 5.88 | 6.18 | 6.93  | 8.36  |
|                 | 3H   | 10.83            | 11.50 | 11.89 | 12.56 | 14.00 | 6.32           | 6.99 | 7.38 | 8.05  | 9.49  |
|                 | 4H   | 11.44            | 12.07 | 12.51 | 13.13 | 14.58 | 6.77           | 7.40 | 7.84 | 8.46  | 9.91  |
|                 | 6H   | 11.86            | 12.44 | 12.94 | 13.51 | 14.96 | 7.08           | 7.67 | 8.17 | 8.73  | 10.19 |
|                 | 8H   | 11.98            | 12.54 | 13.07 | 13.62 | 15.07 | 7.17           | 7.73 | 8.26 | 8.81  | 10.26 |
|                 | 12H  | 12.04            | 12.57 | 13.13 | 13.64 | 15.12 | 7.21           | 7.74 | 8.30 | 8.82  | 10.29 |
| 4H              | 2H   | 9.17             | 9.80  | 10.25 | 10.87 | 12.31 | 5.72           | 6.35 | 6.80 | 7.42  | 8.86  |
|                 | 3H   | 10.99            | 11.52 | 12.08 | 12.61 | 14.07 | 7.06           | 7.59 | 8.15 | 8.68  | 10.14 |
|                 | 4H   | 11.68            | 12.16 | 12.77 | 13.25 | 14.73 | 7.61           | 8.09 | 8.70 | 9.17  | 10.65 |
|                 | 6H   | 12.19            | 12.61 | 13.29 | 13.71 | 15.19 | 8.03           | 8.44 | 9.13 | 9.54  | 11.02 |
|                 | 8H   | 12.37            | 12.75 | 13.47 | 13.85 | 15.34 | 8.16           | 8.54 | 9.25 | 9.64  | 11.13 |
|                 | 12H  | 12.46            | 12.81 | 13.58 | 13.92 | 15.41 | 8.22           | 8.57 | 9.33 | 9.68  | 11.17 |
| 8H              | 4H   | 11.64            | 12.03 | 12.74 | 13.13 | 14.62 | 7.88           | 8.27 | 8.98 | 9.37  | 10.86 |
|                 | 6H   | 12.21            | 12.53 | 13.33 | 13.66 | 15.15 | 8.40           | 8.72 | 9.52 | 9.86  | 11.35 |
|                 | 8H   | 12.42            | 12.70 | 13.55 | 13.82 | 15.33 | 8.59           | 8.87 | 9.72 | 9.99  | 11.50 |
|                 | 12H  | 12.56            | 12.81 | 13.69 | 13.92 | 15.47 | 8.71           | 8.96 | 9.84 | 10.07 | 11.62 |
| 12H             | 4H   | 11.59            | 11.94 | 12.71 | 13.05 | 14.55 | 7.89           | 8.24 | 9.00 | 9.34  | 10.84 |
|                 | 6H   | 12.18            | 12.46 | 13.31 | 13.58 | 15.09 | 8.45           | 8.73 | 9.58 | 9.85  | 11.36 |
|                 | 8H   | 12.40            | 12.65 | 13.53 | 13.76 | 15.31 | 8.66           | 8.91 | 9.79 | 10.02 | 11.57 |

END OF REPORT