

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: P905364

Luminaire Tested: DFN2DIP-HX3F0-070D090US835-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905364  
REPORT IS A COMBINATION OF REPORTS P899293 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-070D090US835-FLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

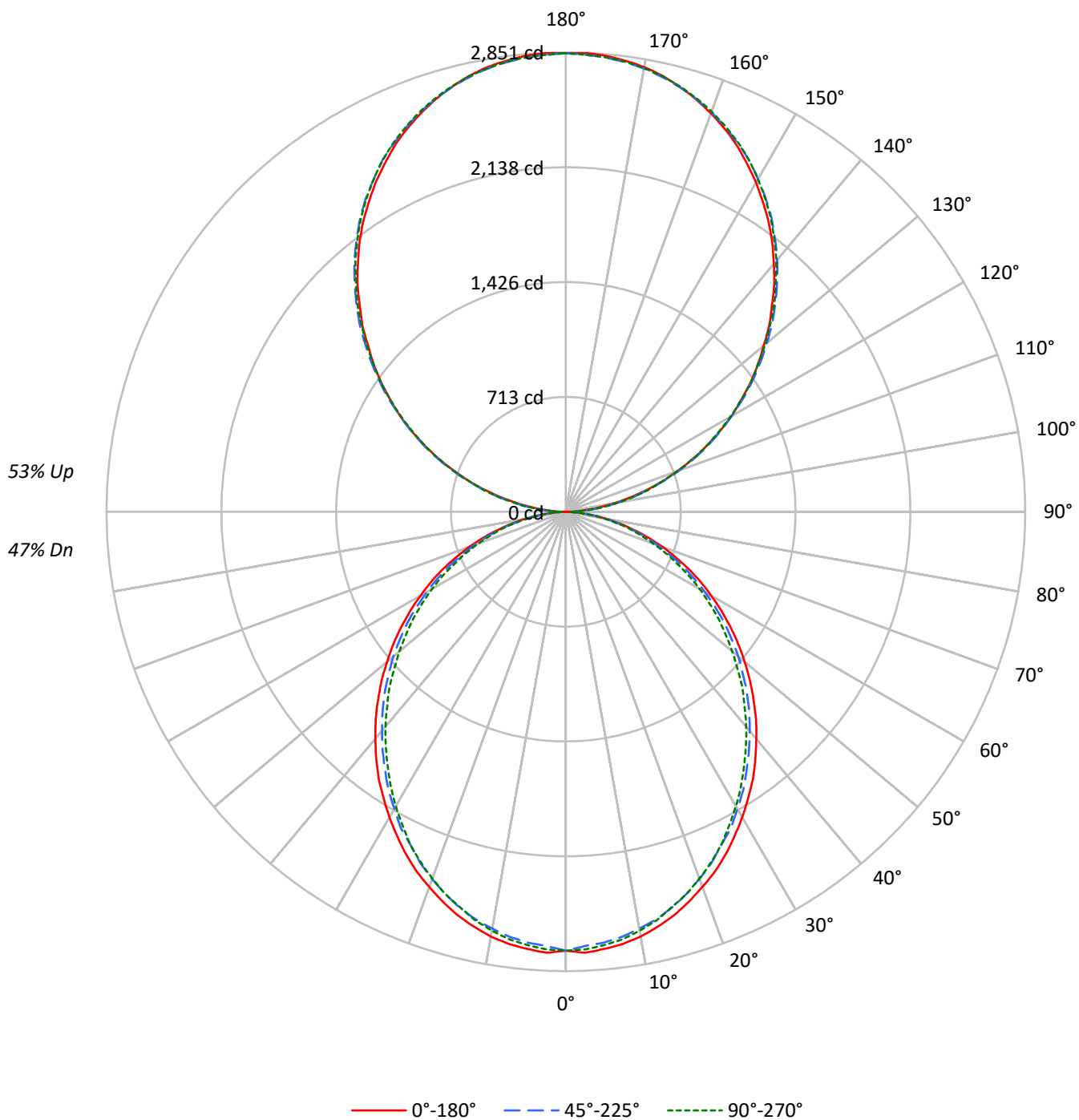
Lumens per Lamp: N/A  
Luminaire Lumens: 14895.0 lumens  
Efficiency: N/A  
Efficacy: 106.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 140.3  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9789  
Total Harmonic Distortion (THDi): 0.074  
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: P905364

CATALOG NUMBER: DFN2DIP-HX3F0-070D090US835-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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 67 | 67 | 67 | 53 | 53 | 53 |
| 1   | 97  | 93  | 89  | 85  | 89 | 85 | 82 | 79 | 71 | 69 | 67 | 59 | 57 | 55 | 47 | 46 | 45 |
| 2   | 88  | 81  | 75  | 70  | 81 | 75 | 69 | 65 | 63 | 59 | 55 | 51 | 49 | 46 | 41 | 39 | 38 |
| 3   | 81  | 71  | 64  | 58  | 74 | 66 | 59 | 54 | 55 | 50 | 47 | 45 | 42 | 39 | 37 | 34 | 32 |
| 4   | 74  | 63  | 55  | 49  | 67 | 58 | 51 | 46 | 49 | 44 | 40 | 41 | 37 | 34 | 33 | 30 | 28 |
| 5   | 68  | 56  | 48  | 42  | 62 | 52 | 45 | 39 | 44 | 38 | 34 | 36 | 32 | 29 | 29 | 26 | 24 |
| 6   | 62  | 50  | 42  | 36  | 57 | 47 | 39 | 34 | 39 | 34 | 30 | 33 | 29 | 25 | 27 | 24 | 21 |
| 7   | 58  | 45  | 37  | 32  | 53 | 42 | 35 | 30 | 36 | 30 | 26 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 53  | 41  | 33  | 28  | 49 | 38 | 31 | 27 | 33 | 27 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 38  | 30  | 25  | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 21 | 18 | 15 |
| 10  | 46  | 34  | 27  | 22  | 43 | 32 | 26 | 21 | 28 | 22 | 19 | 23 | 19 | 16 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3155 | 3155 | 3155 |
| 5°  | 3159 | 3109 | 3130 |
| 10° | 3132 | 3065 | 3086 |
| 15° | 3084 | 3012 | 3018 |
| 20° | 3020 | 2940 | 2949 |
| 25° | 2957 | 2854 | 2869 |
| 30° | 2878 | 2774 | 2767 |
| 35° | 2803 | 2679 | 2660 |
| 40° | 2711 | 2584 | 2558 |
| 45° | 2619 | 2488 | 2453 |
| 50° | 2518 | 2388 | 2333 |
| 55° | 2413 | 2272 | 2221 |
| 60° | 2293 | 2134 | 2093 |
| 65° | 2163 | 1991 | 1942 |
| 70° | 1997 | 1817 | 1779 |
| 75° | 1767 | 1607 | 1627 |
| 80° | 1490 | 1341 | 1339 |
| 85° | 1057 | 888  | 869  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2678 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 256.4   | 1.7       |
| 10°-20°   | 721.3   | 4.8       |
| 20°-30°   | 1060.0  | 7.1       |
| 30°-40°   | 1231.1  | 8.3       |
| 40°-50°   | 1229.6  | 8.3       |
| 50°-60°   | 1072.2  | 7.2       |
| 60°-70°   | 792.6   | 5.3       |
| 70°-80°   | 448.4   | 3.0       |
| 80°-90°   | 126.5   | 0.8       |
| 90°-100°  | 176.1   | 1.2       |
| 100°-110° | 559.6   | 3.8       |
| 110°-120° | 957.7   | 6.4       |
| 120°-130° | 1259.5  | 8.5       |
| 130°-140° | 1413.8  | 9.5       |
| 140°-150° | 1386.4  | 9.3       |
| 150°-160° | 1163.0  | 7.8       |
| 160°-170° | 771.2   | 5.2       |
| 170°-180° | 269.6   | 1.8       |
| 0°-30°    | 2037.7  | 13.7      |
| 0°-40°    | 3268.8  | 21.9      |
| 0°-60°    | 5570.6  | 37.4      |
| 0°-90°    | 6938.1  | 46.6      |
| 90°-120°  | 1693.5  | 11.4      |
| 90°-150°  | 5753.1  | 38.6      |
| 90°-180°  | 7957.0  | 53.4      |
| 0°-180°   | 14895.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2724 | 2724  | 2724 | 2724  | 2724 |      |
| 5°   | 2724 | 2714  | 2685 | 2705  | 2700 | 259  |
| 15°  | 2593 | 2577  | 2543 | 2554  | 2541 | 730  |
| 25°  | 2347 | 2326  | 2281 | 2286  | 2281 | 1080 |
| 35°  | 2025 | 1998  | 1956 | 1941  | 1928 | 1264 |
| 45°  | 1648 | 1629  | 1590 | 1561  | 1550 | 1271 |
| 55°  | 1247 | 1231  | 1200 | 1168  | 1155 | 1115 |
| 65°  | 841  | 825   | 799  | 775   | 762  | 831  |
| 75°  | 440  | 435   | 422  | 406   | 411  | 470  |
| 85°  | 107  | 105   | 102  | 94    | 92   | 120  |
| 90°  | 3    | 31    | 84   | 79    | 82   | 14   |
| 95°  | 125  | 149   | 154  | 154   | 149  | 139  |
| 105° | 517  | 523   | 529  | 533   | 533  | 545  |
| 115° | 961  | 975   | 970  | 968   | 961  | 951  |
| 125° | 1398 | 1419  | 1412 | 1405  | 1402 | 1249 |
| 135° | 1808 | 1835  | 1840 | 1837  | 1830 | 1398 |
| 145° | 2195 | 2212  | 2226 | 2228  | 2219 | 1372 |
| 155° | 2510 | 2517  | 2525 | 2537  | 2529 | 1155 |
| 165° | 2730 | 2728  | 2728 | 2745  | 2733 | 770  |
| 175° | 2841 | 2834  | 2829 | 2846  | 2832 | 270  |
| 180° | 2846 | 2846  | 2846 | 2846  | 2846 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2723.7 | 2723.7 | 2723.7 | 2723.7 | 2723.7 |
| 2.5°   | 2739.6 | 2726.5 | 2697.6 | 2723.7 | 2718.7 |
| 5°     | 2723.7 | 2713.5 | 2684.6 | 2705.4 | 2700.4 |
| 7.5°   | 2705.4 | 2689.8 | 2660.9 | 2682.1 | 2676.8 |
| 10°    | 2676.8 | 2658.4 | 2627.0 | 2647.9 | 2640.1 |
| 12.5°  | 2637.3 | 2621.8 | 2590.4 | 2603.4 | 2598.1 |
| 15°    | 2592.9 | 2577.3 | 2543.1 | 2553.7 | 2540.6 |
| 17.5°  | 2537.8 | 2522.3 | 2488.1 | 2501.2 | 2488.1 |
| 20°    | 2477.5 | 2462.0 | 2425.3 | 2433.1 | 2422.8 |
| 22.5°  | 2417.5 | 2393.9 | 2359.7 | 2359.7 | 2354.4 |
| 25°    | 2346.7 | 2325.8 | 2281.4 | 2286.4 | 2281.4 |
| 27.5°  | 2268.0 | 2249.7 | 2215.8 | 2208.0 | 2194.9 |
| 30°    | 2189.7 | 2168.5 | 2129.4 | 2121.6 | 2111.0 |
| 32.5°  | 2105.7 | 2090.2 | 2048.2 | 2032.4 | 2021.8 |
| 35°    | 2024.6 | 1998.5 | 1956.5 | 1940.7 | 1927.6 |
| 37.5°  | 1932.9 | 1909.3 | 1867.3 | 1849.0 | 1835.9 |
| 40°    | 1838.7 | 1817.6 | 1775.6 | 1752.3 | 1741.7 |
| 42.5°  | 1747.0 | 1725.9 | 1684.2 | 1657.8 | 1642.2 |
| 45°    | 1647.5 | 1629.2 | 1589.7 | 1561.1 | 1550.5 |
| 47.5°  | 1550.5 | 1532.2 | 1490.2 | 1461.3 | 1445.8 |
| 50°    | 1448.3 | 1435.2 | 1398.5 | 1361.9 | 1348.8 |
| 52.5°  | 1348.8 | 1330.5 | 1296.6 | 1267.7 | 1249.3 |
| 55°    | 1246.8 | 1231.0 | 1199.6 | 1168.2 | 1155.1 |
| 57.5°  | 1144.6 | 1131.5 | 1097.3 | 1065.9 | 1055.4 |
| 60°    | 1042.3 | 1032.0 | 995.4  | 966.5  | 958.7  |
| 62.5°  | 942.8  | 924.5  | 898.4  | 872.3  | 861.7  |
| 65°    | 840.9  | 825.0  | 798.9  | 775.3  | 762.2  |
| 67.5°  | 736.1  | 722.8  | 699.4  | 681.1  | 670.5  |
| 70°    | 639.1  | 628.6  | 604.9  | 586.6  | 576.3  |
| 72.5°  | 539.6  | 529.1  | 516.0  | 497.7  | 489.9  |
| 75°    | 439.9  | 434.9  | 421.5  | 406.0  | 411.3  |
| 77.5°  | 351.0  | 340.4  | 335.1  | 327.3  | 319.6  |
| 80°    | 262.0  | 259.3  | 254.0  | 246.2  | 240.9  |
| 82.5°  | 178.1  | 178.1  | 175.6  | 165.1  | 165.1  |
| 85°    | 107.3  | 104.8  | 102.3  | 94.2   | 91.7   |
| 87.5°  | 47.2   | 42.0   | 36.7   | 28.9   | 26.1   |
| 90°    | 2.6    | 30.9   | 84.1   | 78.9   | 81.5   |
| 92.5°  | 53.2   | 72.1   | 74.7   | 77.2   | 77.2   |
| 95°    | 125.3  | 149.3  | 153.6  | 153.6  | 149.3  |
| 97.5°  | 208.5  | 230.8  | 240.3  | 240.3  | 240.3  |
| 100°   | 304.6  | 324.4  | 331.2  | 331.2  | 328.7  |
| 102.5° | 405.9  | 420.5  | 429.9  | 432.5  | 429.9  |
| 105°   | 516.6  | 523.4  | 528.6  | 532.9  | 532.9  |
| 107.5° | 626.4  | 636.7  | 636.7  | 638.4  | 626.4  |
| 110°   | 732.8  | 746.6  | 746.6  | 746.6  | 739.7  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 847.8  | 862.4  | 859.8  | 853.0  | 847.8  |
| 115°   | 961.1  | 974.8  | 970.5  | 968.0  | 961.1  |
| 117.5° | 1073.5 | 1092.4 | 1080.4 | 1073.5 | 1066.6 |
| 120°   | 1186.8 | 1205.6 | 1186.8 | 1186.8 | 1179.0 |
| 122.5° | 1289.7 | 1313.8 | 1301.8 | 1294.9 | 1289.7 |
| 125°   | 1397.9 | 1419.3 | 1412.5 | 1404.7 | 1402.2 |
| 127.5° | 1503.4 | 1530.0 | 1520.6 | 1510.3 | 1503.4 |
| 130°   | 1602.1 | 1633.0 | 1628.7 | 1623.5 | 1614.1 |
| 132.5° | 1712.8 | 1736.8 | 1738.5 | 1726.5 | 1719.7 |
| 135°   | 1808.0 | 1834.6 | 1839.8 | 1837.2 | 1830.4 |
| 137.5° | 1914.4 | 1935.9 | 1940.2 | 1938.5 | 1928.2 |
| 140°   | 2008.0 | 2029.4 | 2041.4 | 2041.4 | 2032.0 |
| 142.5° | 2104.1 | 2125.5 | 2132.4 | 2135.0 | 2125.5 |
| 145°   | 2195.1 | 2212.2 | 2225.9 | 2228.5 | 2219.1 |
| 147.5° | 2276.6 | 2298.0 | 2308.3 | 2312.6 | 2303.2 |
| 150°   | 2360.7 | 2375.3 | 2384.7 | 2392.4 | 2384.7 |
| 152.5° | 2435.3 | 2449.9 | 2461.9 | 2471.4 | 2461.9 |
| 155°   | 2510.0 | 2516.8 | 2524.6 | 2536.6 | 2528.9 |
| 157.5° | 2574.3 | 2579.5 | 2583.8 | 2600.9 | 2588.9 |
| 160°   | 2631.8 | 2637.0 | 2639.6 | 2654.1 | 2643.8 |
| 162.5° | 2685.0 | 2685.0 | 2687.6 | 2703.9 | 2691.9 |
| 165°   | 2730.5 | 2727.9 | 2727.9 | 2745.1 | 2733.1 |
| 167.5° | 2771.7 | 2764.0 | 2764.0 | 2781.1 | 2769.1 |
| 170°   | 2802.6 | 2795.7 | 2793.2 | 2810.3 | 2795.7 |
| 172.5° | 2824.0 | 2817.2 | 2814.6 | 2831.8 | 2817.2 |
| 175°   | 2841.2 | 2834.3 | 2829.2 | 2846.4 | 2831.8 |
| 177.5° | 2850.6 | 2843.8 | 2838.6 | 2853.2 | 2838.6 |
| 180°   | 2846.4 | 2846.4 | 2846.4 | 2846.4 | 2846.4 |

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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 | 10.89            | 11.73 | 11.88 | 12.72 | 14.04 | 10.46          | 11.30 | 11.45 | 12.29 | 13.61 |
|                 | 3H   | 12.54            | 13.29 | 13.54 | 14.30 | 15.64 | 12.08          | 12.82 | 13.07 | 13.83 | 15.17 |
|                 | 4H   | 13.13            | 13.83 | 14.13 | 14.84 | 16.19 | 12.66          | 13.36 | 13.67 | 14.37 | 15.72 |
|                 | 6H   | 13.52            | 14.17 | 14.54 | 15.18 | 16.54 | 13.05          | 13.70 | 14.07 | 14.71 | 16.07 |
|                 | 8H   | 13.62            | 14.24 | 14.64 | 15.27 | 16.63 | 13.15          | 13.77 | 14.17 | 14.80 | 16.16 |
|                 | 12H  | 13.66            | 14.25 | 14.69 | 15.28 | 16.66 | 13.19          | 13.78 | 14.22 | 14.80 | 16.18 |
| 4H              | 2H   | 11.35            | 12.06 | 12.36 | 13.07 | 14.41 | 11.01          | 11.71 | 12.02 | 12.72 | 14.07 |
|                 | 3H   | 13.20            | 13.79 | 14.23 | 14.83 | 16.19 | 12.81          | 13.40 | 13.84 | 14.44 | 15.80 |
|                 | 4H   | 13.91            | 14.45 | 14.94 | 15.48 | 16.87 | 13.51          | 14.05 | 14.54 | 15.08 | 16.46 |
|                 | 6H   | 14.42            | 14.88 | 15.46 | 15.94 | 17.32 | 14.01          | 14.48 | 15.05 | 15.53 | 16.91 |
|                 | 8H   | 14.56            | 15.00 | 15.60 | 16.04 | 17.44 | 14.15          | 14.59 | 15.20 | 15.64 | 17.03 |
|                 | 12H  | 14.63            | 15.02 | 15.69 | 16.08 | 17.48 | 14.21          | 14.61 | 15.27 | 15.67 | 17.07 |
| 8H              | 4H   | 14.10            | 14.53 | 15.14 | 15.58 | 16.98 | 13.74          | 14.18 | 14.79 | 15.22 | 16.62 |
|                 | 6H   | 14.72            | 15.08 | 15.79 | 16.17 | 17.56 | 14.36          | 14.72 | 15.43 | 15.81 | 17.20 |
|                 | 8H   | 14.94            | 15.25 | 16.01 | 16.33 | 17.74 | 14.57          | 14.89 | 15.65 | 15.96 | 17.37 |
|                 | 12H  | 15.06            | 15.34 | 16.14 | 16.41 | 17.86 | 14.68          | 14.96 | 15.76 | 16.03 | 17.48 |
| 12H             | 4H   | 14.08            | 14.48 | 15.15 | 15.54 | 16.94 | 13.74          | 14.13 | 14.80 | 15.19 | 16.59 |
|                 | 6H   | 14.75            | 15.07 | 15.82 | 16.14 | 17.55 | 14.40          | 14.72 | 15.48 | 15.79 | 17.20 |
|                 | 8H   | 14.98            | 15.26 | 16.06 | 16.33 | 17.78 | 14.63          | 14.91 | 15.71 | 15.98 | 17.43 |

END OF REPORT