

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: P920155

Luminaire Tested: DFN2DIP-SQ3F0-080D110US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920155  
REPORT IS A COMBINATION OF REPORTS P901516 AND P898289  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ3F0-080D110US935-RLLONL  
Description: 3 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

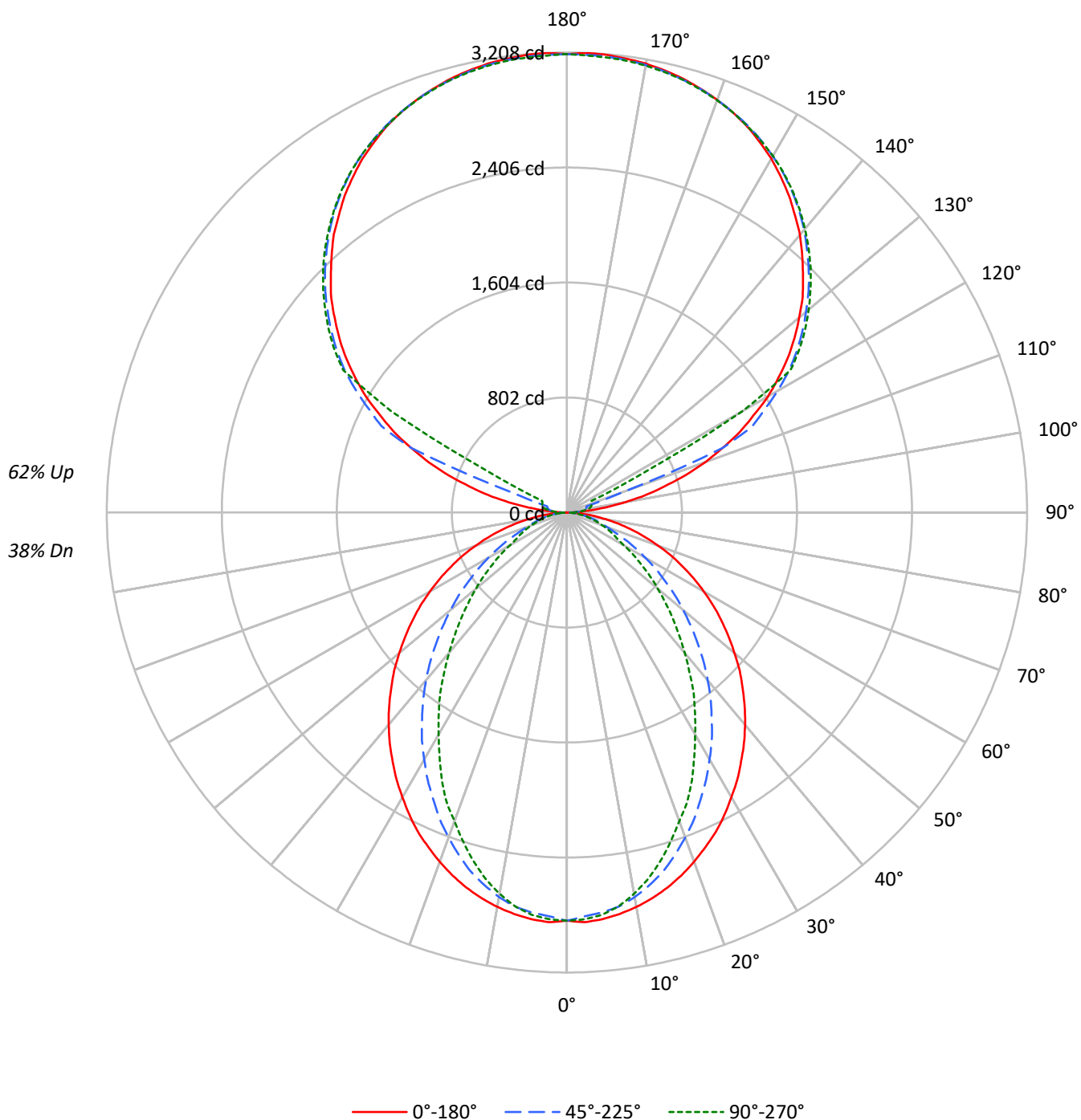
Lumens per Lamp: N/A  
Luminaire Lumens: 15231.0 lumens  
Efficiency: N/A  
Efficacy: 94.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.06' x L: 3.06' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 162.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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   | 104 | 104 | 104 | 104 | 95 | 95 | 95 | 95 | 77 | 77 | 77 | 61 | 61 | 61 | 46 | 46 | 46 |
| 1   | 96  | 91  | 88  | 84  | 87 | 83 | 80 | 77 | 68 | 66 | 64 | 54 | 52 | 51 | 41 | 40 | 39 |
| 2   | 87  | 80  | 74  | 70  | 79 | 73 | 68 | 64 | 60 | 56 | 53 | 48 | 45 | 43 | 36 | 35 | 34 |
| 3   | 80  | 71  | 64  | 58  | 72 | 65 | 59 | 54 | 53 | 49 | 45 | 42 | 39 | 37 | 33 | 31 | 29 |
| 4   | 73  | 63  | 55  | 50  | 66 | 58 | 51 | 46 | 47 | 43 | 39 | 38 | 35 | 32 | 29 | 27 | 25 |
| 5   | 67  | 56  | 48  | 43  | 61 | 51 | 45 | 40 | 43 | 38 | 34 | 34 | 31 | 28 | 27 | 24 | 22 |
| 6   | 62  | 50  | 43  | 37  | 56 | 46 | 39 | 35 | 38 | 33 | 30 | 31 | 27 | 25 | 24 | 22 | 20 |
| 7   | 57  | 46  | 38  | 33  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 28 | 25 | 22 | 22 | 20 | 18 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 32 | 27 | 32 | 27 | 23 | 26 | 22 | 20 | 20 | 18 | 16 |
| 9   | 50  | 38  | 31  | 26  | 45 | 35 | 28 | 24 | 29 | 24 | 21 | 24 | 20 | 18 | 19 | 16 | 14 |
| 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°  | 3262 | 3262 | 3262 |
| 5°  | 3265 | 3208 | 3230 |
| 10° | 3231 | 3143 | 3123 |
| 15° | 3184 | 3037 | 2960 |
| 20° | 3123 | 2892 | 2760 |
| 25° | 3061 | 2729 | 2567 |
| 30° | 2978 | 2563 | 2322 |
| 35° | 2896 | 2384 | 2107 |
| 40° | 2813 | 2200 | 1860 |
| 45° | 2717 | 1995 | 1637 |
| 50° | 2617 | 1789 | 1419 |
| 55° | 2513 | 1569 | 1210 |
| 60° | 2392 | 1339 | 995  |
| 65° | 2252 | 1106 | 894  |
| 70° | 2083 | 888  | 808  |
| 75° | 1871 | 778  | 732  |
| 80° | 1563 | 646  | 631  |
| 85° | 1060 | 421  | 468  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2717 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 266.8   | 1.8       |
| 10°-20°   | 732.4   | 4.8       |
| 20°-30°   | 1028.3  | 6.8       |
| 30°-40°   | 1120.9  | 7.4       |
| 40°-50°   | 1030.3  | 6.8       |
| 50°-60°   | 809.1   | 5.3       |
| 60°-70°   | 526.6   | 3.5       |
| 70°-80°   | 271.1   | 1.8       |
| 80°-90°   | 74.8    | 0.5       |
| 90°-100°  | 105.4   | 0.7       |
| 100°-110° | 392.9   | 2.6       |
| 110°-120° | 1042.0  | 6.8       |
| 120°-130° | 1728.3  | 11.3      |
| 130°-140° | 1835.9  | 12.1      |
| 140°-150° | 1706.2  | 11.2      |
| 150°-160° | 1371.8  | 9.0       |
| 160°-170° | 883.9   | 5.8       |
| 170°-180° | 304.2   | 2.0       |
| 0°-30°    | 2027.6  | 13.3      |
| 0°-40°    | 3148.5  | 20.7      |
| 0°-60°    | 4987.8  | 32.7      |
| 0°-90°    | 5860.4  | 38.5      |
| 90°-120°  | 1540.3  | 10.1      |
| 90°-150°  | 6810.7  | 44.7      |
| 90°-180°  | 9371.0  | 61.5      |
| 0°-180°   | 15231.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2847 | 2847  | 2847 | 2847  | 2847 |      |
| 5°   | 2847 | 2834  | 2800 | 2824  | 2816 | 270  |
| 15°  | 2708 | 2679  | 2592 | 2543  | 2517 | 763  |
| 25°  | 2458 | 2375  | 2205 | 2100  | 2061 | 1130 |
| 35°  | 2118 | 1986  | 1760 | 1597  | 1540 | 1326 |
| 45°  | 1731 | 1559  | 1288 | 1105  | 1043 | 1337 |
| 55°  | 1316 | 1116  | 837  | 683   | 634  | 1176 |
| 65°  | 889  | 680   | 448  | 361   | 353  | 881  |
| 75°  | 474  | 294   | 206  | 188   | 186  | 501  |
| 85°  | 111  | 57    | 49   | 49    | 49   | 127  |
| 90°  | 2    | 28    | 46   | 58    | 62   | 14   |
| 95°  | 150  | 74    | 90   | 102   | 99   | 178  |
| 105° | 703  | 773   | 141  | 166   | 176  | 751  |
| 115° | 1330 | 1369  | 1427 | 356   | 190  | 1309 |
| 125° | 1880 | 1910  | 1954 | 1971  | 1978 | 1677 |
| 135° | 2327 | 2364  | 2384 | 2408  | 2403 | 1797 |
| 145° | 2699 | 2697  | 2736 | 2752  | 2741 | 1688 |
| 155° | 2972 | 2951  | 2979 | 2993  | 2974 | 1370 |
| 165° | 3132 | 3118  | 3125 | 3141  | 3125 | 885  |
| 175° | 3203 | 3187  | 3192 | 3208  | 3185 | 305  |
| 180° | 3196 | 3196  | 3196 | 3196  | 3196 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2846.8 | 2846.8 | 2846.8 | 2846.8 | 2846.8 |
| 2.5°   | 2859.6 | 2846.8 | 2818.4 | 2844.3 | 2839.1 |
| 5°     | 2846.8 | 2834.0 | 2800.3 | 2823.6 | 2815.9 |
| 7.5°   | 2823.6 | 2808.2 | 2772.2 | 2782.3 | 2769.4 |
| 10°    | 2792.6 | 2774.7 | 2723.3 | 2715.3 | 2700.0 |
| 12.5°  | 2754.2 | 2730.9 | 2661.2 | 2645.8 | 2617.4 |
| 15°    | 2707.7 | 2679.3 | 2591.8 | 2542.9 | 2517.1 |
| 17.5°  | 2653.5 | 2612.3 | 2504.0 | 2447.5 | 2406.1 |
| 20°    | 2591.8 | 2540.1 | 2411.4 | 2347.2 | 2290.3 |
| 22.5°  | 2524.8 | 2465.5 | 2316.0 | 2228.5 | 2189.9 |
| 25°    | 2457.8 | 2375.3 | 2205.3 | 2099.8 | 2061.0 |
| 27.5°  | 2378.0 | 2290.3 | 2102.2 | 1981.2 | 1921.8 |
| 30°    | 2293.0 | 2194.9 | 1988.8 | 1857.6 | 1787.9 |
| 32.5°  | 2210.4 | 2091.9 | 1880.8 | 1726.1 | 1661.6 |
| 35°    | 2117.8 | 1986.3 | 1759.7 | 1597.4 | 1540.5 |
| 37.5°  | 2027.6 | 1885.8 | 1646.3 | 1468.3 | 1404.1 |
| 40°    | 1932.3 | 1777.8 | 1527.7 | 1344.8 | 1277.8 |
| 42.5°  | 1834.4 | 1669.6 | 1409.3 | 1218.6 | 1154.3 |
| 45°    | 1731.3 | 1558.6 | 1288.2 | 1105.1 | 1043.4 |
| 47.5°  | 1633.5 | 1450.6 | 1172.3 | 989.2  | 932.6  |
| 50°    | 1525.2 | 1342.4 | 1058.9 | 881.0  | 827.1  |
| 52.5°  | 1419.4 | 1226.1 | 950.6  | 780.7  | 731.8  |
| 55°    | 1316.4 | 1115.5 | 837.2  | 682.8  | 633.9  |
| 57.5°  | 1210.9 | 1004.8 | 736.9  | 592.6  | 551.3  |
| 60°    | 1102.6 | 896.6  | 631.1  | 499.9  | 458.7  |
| 62.5°  | 997.1  | 791.0  | 541.0  | 417.4  | 396.9  |
| 65°    | 888.9  | 680.0  | 448.2  | 360.8  | 352.8  |
| 67.5°  | 785.8  | 577.0  | 360.8  | 316.8  | 309.2  |
| 70°    | 677.6  | 476.7  | 298.8  | 273.0  | 262.7  |
| 72.5°  | 574.5  | 383.7  | 249.9  | 229.4  | 224.1  |
| 75°    | 474.0  | 293.6  | 206.1  | 188.0  | 185.6  |
| 77.5°  | 373.7  | 208.5  | 162.4  | 152.0  | 146.8  |
| 80°    | 280.7  | 149.6  | 123.6  | 113.4  | 113.4  |
| 82.5°  | 195.7  | 100.6  | 85.0   | 79.8   | 79.8   |
| 85°    | 110.7  | 56.6   | 48.9   | 48.9   | 48.9   |
| 87.5°  | 41.2   | 20.5   | 20.5   | 18.1   | 18.1   |
| 90°    | 2.2    | 27.7   | 46.1   | 57.9   | 62.3   |
| 92.5°  | 57.9   | 48.6   | 55.4   | 60.2   | 62.3   |
| 95°    | 150.2  | 73.9   | 90.1   | 101.9  | 99.4   |
| 97.5°  | 270.5  | 81.0   | 117.8  | 124.9  | 127.2  |
| 100°   | 409.5  | 92.6   | 131.8  | 150.2  | 154.9  |
| 102.5° | 561.9  | 557.5  | 136.5  | 161.8  | 168.9  |
| 105°   | 703.1  | 772.6  | 141.2  | 166.4  | 175.8  |
| 107.5° | 867.4  | 925.0  | 145.9  | 171.1  | 180.5  |
| 110°   | 1024.7 | 1073.1 | 404.8  | 173.6  | 182.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1172.8 | 1214.2 | 1174.9 | 178.0  | 185.1  |
| 115°   | 1329.8 | 1369.1 | 1427.1 | 356.2  | 189.8  |
| 117.5° | 1466.4 | 1512.5 | 1552.0 | 1221.1 | 615.2  |
| 120°   | 1619.0 | 1653.6 | 1695.4 | 1723.1 | 1410.8 |
| 122.5° | 1748.4 | 1785.5 | 1831.9 | 1845.6 | 1848.1 |
| 125°   | 1880.2 | 1910.5 | 1954.4 | 1970.6 | 1977.5 |
| 127.5° | 2000.5 | 2032.9 | 2067.8 | 2090.8 | 2093.1 |
| 130°   | 2113.9 | 2151.0 | 2176.3 | 2201.8 | 2199.7 |
| 132.5° | 2229.6 | 2259.8 | 2285.1 | 2305.9 | 2303.8 |
| 135°   | 2326.8 | 2363.9 | 2384.4 | 2407.9 | 2403.1 |
| 137.5° | 2428.4 | 2456.2 | 2479.5 | 2502.6 | 2495.7 |
| 140°   | 2527.9 | 2546.5 | 2571.8 | 2592.6 | 2581.1 |
| 142.5° | 2611.3 | 2627.5 | 2657.5 | 2675.9 | 2664.4 |
| 145°   | 2699.2 | 2696.7 | 2736.0 | 2752.3 | 2740.7 |
| 147.5° | 2775.3 | 2768.5 | 2807.7 | 2819.3 | 2810.2 |
| 150°   | 2849.5 | 2833.3 | 2870.3 | 2884.1 | 2872.5 |
| 152.5° | 2911.8 | 2893.4 | 2928.0 | 2942.0 | 2925.8 |
| 155°   | 2972.0 | 2951.3 | 2979.1 | 2992.8 | 2974.4 |
| 157.5° | 3020.6 | 3002.1 | 3023.0 | 3039.2 | 3020.6 |
| 160°   | 3062.3 | 3048.3 | 3062.3 | 3076.0 | 3059.8 |
| 162.5° | 3099.1 | 3085.4 | 3096.9 | 3113.1 | 3092.3 |
| 165°   | 3131.5 | 3117.8 | 3124.6 | 3140.8 | 3124.6 |
| 167.5° | 3157.0 | 3143.1 | 3150.2 | 3166.4 | 3145.6 |
| 170°   | 3177.9 | 3163.9 | 3168.6 | 3184.8 | 3163.9 |
| 172.5° | 3191.6 | 3177.9 | 3182.6 | 3198.8 | 3177.9 |
| 175°   | 3203.2 | 3187.0 | 3191.6 | 3207.9 | 3184.8 |
| 177.5° | 3207.9 | 3191.6 | 3194.1 | 3210.3 | 3189.5 |
| 180°   | 3196.4 | 3196.4 | 3196.4 | 3196.4 | 3196.4 |

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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 | 10.04            | 10.78 | 11.10 | 11.84 | 13.27 | 6.00           | 6.75 | 7.06  | 7.80  | 9.23  |
|                 | 3H   | 11.71            | 12.37 | 12.77 | 13.44 | 14.88 | 7.18           | 7.84 | 8.24  | 8.91  | 10.35 |
|                 | 4H   | 12.31            | 12.94 | 13.39 | 14.01 | 15.46 | 7.62           | 8.25 | 8.70  | 9.32  | 10.77 |
|                 | 6H   | 12.72            | 13.30 | 13.81 | 14.37 | 15.84 | 7.93           | 8.51 | 9.02  | 9.58  | 11.05 |
|                 | 8H   | 12.84            | 13.40 | 13.93 | 14.48 | 15.94 | 8.01           | 8.57 | 9.10  | 9.65  | 11.11 |
|                 | 12H  | 12.90            | 13.42 | 14.00 | 14.50 | 15.99 | 8.05           | 8.58 | 9.15  | 9.65  | 11.14 |
| 4H              | 2H   | 10.05            | 10.68 | 11.13 | 11.74 | 13.20 | 6.58           | 7.21 | 7.67  | 8.28  | 9.73  |
|                 | 3H   | 11.86            | 12.39 | 12.95 | 13.48 | 14.95 | 7.92           | 8.44 | 9.01  | 9.54  | 11.00 |
|                 | 4H   | 12.55            | 13.03 | 13.64 | 14.11 | 15.60 | 8.46           | 8.94 | 9.55  | 10.02 | 11.51 |
|                 | 6H   | 13.05            | 13.47 | 14.16 | 14.57 | 16.05 | 8.87           | 9.28 | 9.97  | 10.38 | 11.87 |
|                 | 8H   | 13.22            | 13.61 | 14.33 | 14.71 | 16.21 | 8.99           | 9.37 | 10.09 | 10.47 | 11.97 |
|                 | 12H  | 13.31            | 13.66 | 14.43 | 14.77 | 16.27 | 9.05           | 9.39 | 10.17 | 10.51 | 12.01 |
| 8H              | 4H   | 12.51            | 12.89 | 13.61 | 13.99 | 15.49 | 8.73           | 9.11 | 9.83  | 10.21 | 11.71 |
|                 | 6H   | 13.06            | 13.38 | 14.19 | 14.52 | 16.02 | 9.24           | 9.55 | 10.36 | 10.69 | 12.19 |
|                 | 8H   | 13.28            | 13.56 | 14.41 | 14.68 | 16.19 | 9.42           | 9.70 | 10.55 | 10.82 | 12.34 |
|                 | 12H  | 13.41            | 13.65 | 14.54 | 14.77 | 16.32 | 9.53           | 9.77 | 10.67 | 10.89 | 12.44 |
| 12H             | 4H   | 12.45            | 12.80 | 13.58 | 13.91 | 15.42 | 8.73           | 9.08 | 9.85  | 10.19 | 11.69 |
|                 | 6H   | 13.04            | 13.32 | 14.17 | 14.44 | 15.95 | 9.28           | 9.56 | 10.41 | 10.68 | 12.20 |
|                 | 8H   | 13.25            | 13.50 | 14.39 | 14.62 | 16.17 | 9.48           | 9.73 | 10.62 | 10.85 | 12.40 |

END OF REPORT