

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: P906862

Luminaire Tested: DFN2DIP-SQ4F0-110D100US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906862  
REPORT IS A COMBINATION OF REPORTS P900142 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-110D100US835-RLFL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

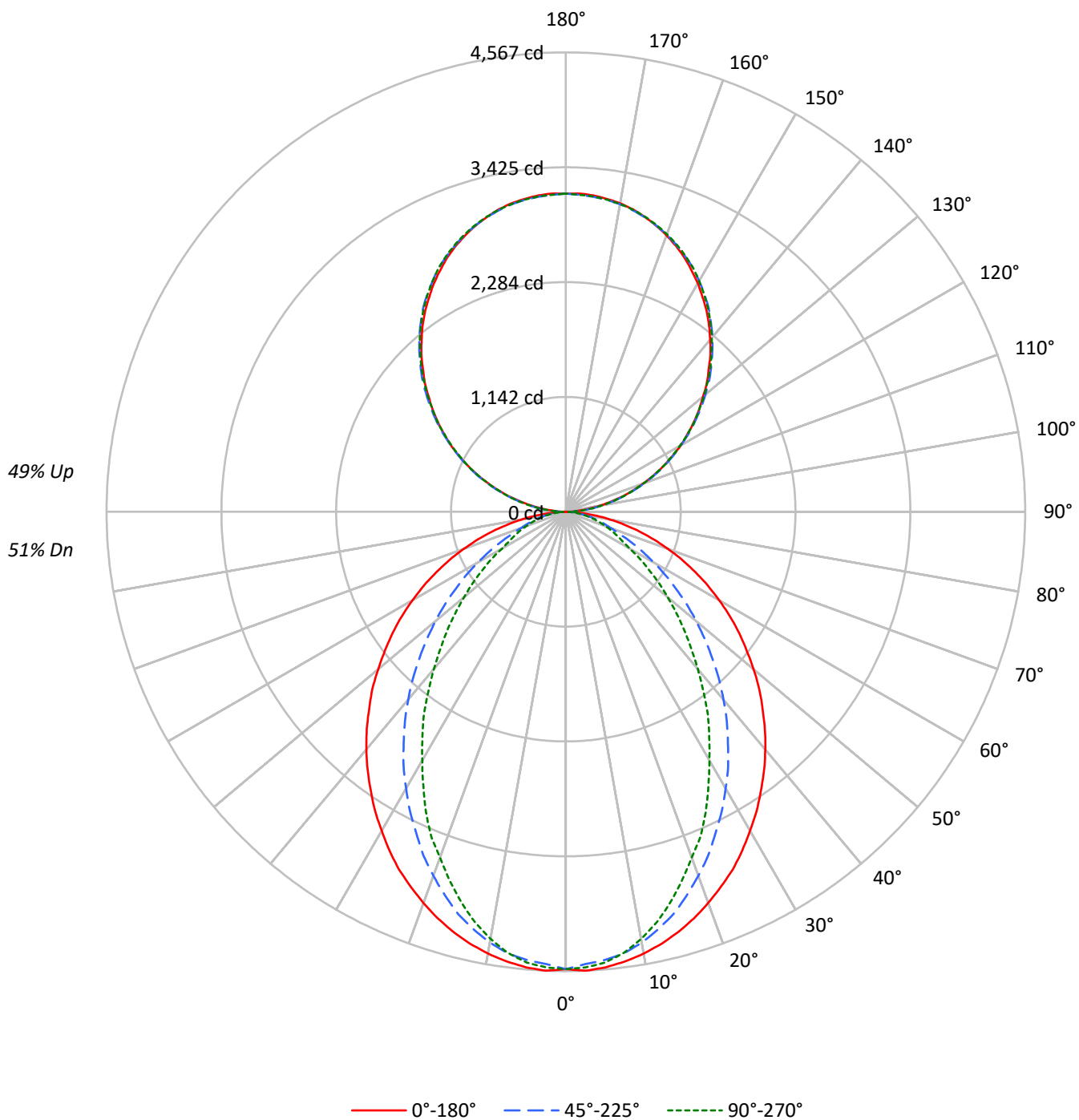
Lumens per Lamp: N/A  
Luminaire Lumens: 18200.0 lumens  
Efficiency: N/A  
Efficacy: 101.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 179.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P906862

CATALOG NUMBER: DFN2DIP-SQ4F0-110D100US835-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P906862

CATALOG NUMBER: DFN2DIP-SQ4F0-110D100US835-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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 84 | 84 | 84 | 70 | 70 | 70 | 57 | 57 | 57 |
| 1   | 99  | 94  | 91  | 87  | 91 | 87 | 84 | 81 | 74 | 72 | 70 | 63 | 61 | 59 | 52 | 50 | 49 |
| 2   | 90  | 83  | 77  | 72  | 83 | 77 | 72 | 68 | 66 | 62 | 59 | 56 | 53 | 50 | 46 | 44 | 42 |
| 3   | 83  | 73  | 66  | 61  | 76 | 68 | 62 | 57 | 59 | 54 | 50 | 50 | 46 | 43 | 41 | 39 | 37 |
| 4   | 76  | 65  | 58  | 52  | 70 | 61 | 54 | 49 | 52 | 47 | 43 | 44 | 41 | 37 | 37 | 34 | 32 |
| 5   | 70  | 58  | 51  | 45  | 64 | 55 | 48 | 42 | 47 | 42 | 38 | 40 | 36 | 33 | 34 | 31 | 28 |
| 6   | 64  | 53  | 45  | 39  | 59 | 49 | 42 | 37 | 43 | 37 | 33 | 36 | 32 | 29 | 31 | 28 | 25 |
| 7   | 60  | 48  | 40  | 34  | 55 | 45 | 38 | 33 | 39 | 33 | 29 | 33 | 29 | 26 | 28 | 25 | 23 |
| 8   | 55  | 43  | 36  | 31  | 51 | 41 | 34 | 29 | 36 | 30 | 26 | 31 | 26 | 23 | 26 | 23 | 20 |
| 9   | 52  | 40  | 32  | 27  | 48 | 37 | 31 | 26 | 33 | 27 | 24 | 28 | 24 | 21 | 24 | 21 | 18 |
| 10  | 48  | 37  | 29  | 25  | 45 | 34 | 28 | 24 | 30 | 25 | 21 | 26 | 22 | 19 | 22 | 19 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3190 | 3190 | 3190 |
| 5°  | 3195 | 3140 | 3160 |
| 10° | 3163 | 3079 | 3058 |
| 15° | 3120 | 2978 | 2900 |
| 20° | 3062 | 2838 | 2706 |
| 25° | 3003 | 2681 | 2518 |
| 30° | 2924 | 2521 | 2280 |
| 35° | 2846 | 2348 | 2070 |
| 40° | 2767 | 2169 | 1830 |
| 45° | 2675 | 1970 | 1612 |
| 50° | 2580 | 1770 | 1399 |
| 55° | 2481 | 1555 | 1195 |
| 60° | 2367 | 1331 | 984  |
| 65° | 2234 | 1103 | 887  |
| 70° | 2074 | 890  | 804  |
| 75° | 1873 | 786  | 734  |
| 80° | 1582 | 662  | 640  |
| 85° | 1102 | 445  | 487  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2675 cd/sqm

TEST NUMBER: P906862

CATALOG NUMBER: DFN2DIP-SQ4F0-110D100US835-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 426.1   | 2.3       |
| 10°-20°   | 1169.7  | 6.4       |
| 20°-30°   | 1642.2  | 9.0       |
| 30°-40°   | 1790.1  | 9.8       |
| 40°-50°   | 1645.3  | 9.0       |
| 50°-60°   | 1292.1  | 7.1       |
| 60°-70°   | 841.1   | 4.6       |
| 70°-80°   | 432.9   | 2.4       |
| 80°-90°   | 119.5   | 0.7       |
| 90°-100°  | 195.7   | 1.1       |
| 100°-110° | 621.8   | 3.4       |
| 110°-120° | 1064.1  | 5.8       |
| 120°-130° | 1399.5  | 7.7       |
| 130°-140° | 1570.9  | 8.6       |
| 140°-150° | 1540.4  | 8.5       |
| 150°-160° | 1292.2  | 7.1       |
| 160°-170° | 856.9   | 4.7       |
| 170°-180° | 299.5   | 1.6       |
| 0°-30°    | 3238.0  | 17.8      |
| 0°-40°    | 5028.1  | 27.6      |
| 0°-60°    | 7965.5  | 43.8      |
| 0°-90°    | 9359.0  | 51.4      |
| 90°-120°  | 1881.6  | 10.3      |
| 90°-150°  | 6392.4  | 35.1      |
| 90°-180°  | 8841.0  | 48.6      |
| 0°-180°   | 18200.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4546 | 4546  | 4546 | 4546  | 4546 |      |
| 5°   | 4546 | 4526  | 4472 | 4509  | 4497 | 431  |
| 15°  | 4324 | 4279  | 4139 | 4061  | 4020 | 1218 |
| 25°  | 3925 | 3793  | 3522 | 3353  | 3291 | 1805 |
| 35°  | 3382 | 3172  | 2810 | 2551  | 2460 | 2117 |
| 45°  | 2765 | 2489  | 2057 | 1765  | 1666 | 2135 |
| 55°  | 2102 | 1781  | 1337 | 1090  | 1012 | 1879 |
| 65°  | 1420 | 1086  | 716  | 576   | 564  | 1407 |
| 75°  | 757  | 469   | 329  | 300   | 296  | 801  |
| 85°  | 177  | 90    | 78   | 78    | 78   | 203  |
| 90°  | 3    | 34    | 93   | 88    | 91   | 18   |
| 95°  | 139  | 166   | 171  | 171   | 166  | 155  |
| 105° | 574  | 582   | 587  | 592   | 592  | 606  |
| 115° | 1068 | 1083  | 1078 | 1076  | 1068 | 1056 |
| 125° | 1553 | 1577  | 1569 | 1561  | 1558 | 1388 |
| 135° | 2009 | 2038  | 2044 | 2041  | 2034 | 1553 |
| 145° | 2439 | 2458  | 2473 | 2476  | 2466 | 1524 |
| 155° | 2789 | 2796  | 2805 | 2818  | 2810 | 1284 |
| 165° | 3034 | 3031  | 3031 | 3050  | 3037 | 856  |
| 175° | 3157 | 3149  | 3144 | 3163  | 3146 | 300  |
| 180° | 3163 | 3163  | 3163 | 3163  | 3163 |      |

TEST NUMBER: P906862

CATALOG NUMBER: DFN2DIP-SQ4F0-110D100US835-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4546.3 | 4546.3 | 4546.3 | 4546.3 | 4546.3 |
| 2.5°   | 4566.8 | 4546.3 | 4500.9 | 4542.4 | 4534.1 |
| 5°     | 4546.3 | 4525.8 | 4472.1 | 4509.2 | 4497.0 |
| 7.5°   | 4509.2 | 4484.7 | 4427.1 | 4443.3 | 4422.7 |
| 10°    | 4459.9 | 4431.0 | 4349.0 | 4336.3 | 4311.9 |
| 12.5°  | 4398.3 | 4361.2 | 4249.9 | 4225.4 | 4180.0 |
| 15°    | 4324.1 | 4278.7 | 4139.0 | 4060.9 | 4019.8 |
| 17.5°  | 4237.7 | 4171.8 | 3998.9 | 3908.5 | 3842.6 |
| 20°    | 4139.0 | 4056.5 | 3850.9 | 3748.3 | 3657.5 |
| 22.5°  | 4032.1 | 3937.3 | 3698.6 | 3558.9 | 3497.3 |
| 25°    | 3925.1 | 3793.3 | 3521.8 | 3353.3 | 3291.3 |
| 27.5°  | 3797.7 | 3657.5 | 3357.2 | 3163.8 | 3069.1 |
| 30°    | 3661.9 | 3505.2 | 3176.1 | 2966.5 | 2855.2 |
| 32.5°  | 3530.1 | 3340.6 | 3003.6 | 2756.6 | 2653.6 |
| 35°    | 3382.1 | 3172.1 | 2810.3 | 2551.0 | 2460.2 |
| 37.5°  | 3238.1 | 3011.5 | 2629.1 | 2344.9 | 2242.4 |
| 40°    | 3085.7 | 2839.1 | 2439.7 | 2147.6 | 2040.7 |
| 42.5°  | 2929.4 | 2666.2 | 2250.7 | 1946.0 | 1843.4 |
| 45°    | 2764.9 | 2489.0 | 2057.3 | 1764.8 | 1666.2 |
| 47.5°  | 2608.6 | 2316.6 | 1872.2 | 1579.7 | 1489.4 |
| 50°    | 2435.7 | 2143.7 | 1691.1 | 1406.9 | 1320.9 |
| 52.5°  | 2266.8 | 1958.2 | 1518.2 | 1246.7 | 1168.5 |
| 55°    | 2102.2 | 1781.4 | 1337.0 | 1090.4 | 1012.3 |
| 57.5°  | 1933.8 | 1604.6 | 1176.8 | 946.4  | 880.4  |
| 60°    | 1760.9 | 1431.8 | 1007.9 | 798.4  | 732.5  |
| 62.5°  | 1592.4 | 1263.3 | 863.9  | 666.6  | 633.8  |
| 65°    | 1419.5 | 1086.0 | 715.9  | 576.2  | 563.5  |
| 67.5°  | 1255.0 | 921.5  | 576.2  | 505.9  | 493.7  |
| 70°    | 1082.1 | 761.3  | 477.1  | 436.1  | 419.5  |
| 72.5°  | 917.5  | 612.9  | 399.0  | 366.2  | 357.9  |
| 75°    | 756.9  | 468.8  | 329.1  | 300.3  | 296.4  |
| 77.5°  | 596.7  | 333.1  | 259.3  | 242.7  | 234.4  |
| 80°    | 448.3  | 238.8  | 197.3  | 181.2  | 181.2  |
| 82.5°  | 312.5  | 160.6  | 135.8  | 127.5  | 127.5  |
| 85°    | 176.8  | 90.4   | 78.1   | 78.1   | 78.1   |
| 87.5°  | 65.9   | 32.7   | 32.7   | 28.8   | 28.8   |
| 90°    | 2.9    | 34.3   | 93.4   | 87.7   | 90.6   |
| 92.5°  | 59.1   | 80.1   | 83.0   | 85.8   | 85.8   |
| 95°    | 139.2  | 165.9  | 170.7  | 170.7  | 165.9  |
| 97.5°  | 231.7  | 256.5  | 267.0  | 267.0  | 267.0  |
| 100°   | 338.5  | 360.4  | 368.0  | 368.0  | 365.2  |
| 102.5° | 451.0  | 467.2  | 477.7  | 480.5  | 477.7  |
| 105°   | 574.0  | 581.6  | 587.3  | 592.1  | 592.1  |
| 107.5° | 696.0  | 707.5  | 707.5  | 709.4  | 696.0  |
| 110°   | 814.3  | 829.5  | 829.5  | 829.5  | 821.9  |

TEST NUMBER: P906862

CATALOG NUMBER: DFN2DIP-SQ4F0-110D100US835-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 942.0  | 958.2  | 955.4  | 947.7  | 942.0  |
| 115°   | 1067.9 | 1083.1 | 1078.4 | 1075.5 | 1067.9 |
| 117.5° | 1192.8 | 1213.8 | 1200.4 | 1192.8 | 1185.1 |
| 120°   | 1318.6 | 1339.6 | 1318.6 | 1318.6 | 1310.1 |
| 122.5° | 1433.0 | 1459.7 | 1446.4 | 1438.8 | 1433.0 |
| 125°   | 1553.2 | 1577.0 | 1569.4 | 1560.8 | 1558.0 |
| 127.5° | 1670.5 | 1700.0 | 1689.5 | 1678.1 | 1670.5 |
| 130°   | 1780.1 | 1814.4 | 1809.7 | 1803.9 | 1793.5 |
| 132.5° | 1903.1 | 1929.8 | 1931.7 | 1918.4 | 1910.7 |
| 135°   | 2008.9 | 2038.5 | 2044.2 | 2041.4 | 2033.7 |
| 137.5° | 2127.2 | 2151.0 | 2155.8 | 2153.9 | 2142.4 |
| 140°   | 2231.1 | 2254.9 | 2268.3 | 2268.3 | 2257.8 |
| 142.5° | 2337.9 | 2361.7 | 2369.3 | 2372.2 | 2361.7 |
| 145°   | 2438.9 | 2458.0 | 2473.3 | 2476.1 | 2465.6 |
| 147.5° | 2529.5 | 2553.4 | 2564.8 | 2569.6 | 2559.1 |
| 150°   | 2623.0 | 2639.2 | 2649.7 | 2658.2 | 2649.7 |
| 152.5° | 2705.9 | 2722.1 | 2735.5 | 2746.0 | 2735.5 |
| 155°   | 2788.9 | 2796.5 | 2805.1 | 2818.4 | 2809.8 |
| 157.5° | 2860.4 | 2866.1 | 2870.9 | 2889.9 | 2876.6 |
| 160°   | 2924.3 | 2930.0 | 2932.8 | 2949.0 | 2937.6 |
| 162.5° | 2983.4 | 2983.4 | 2986.2 | 3004.3 | 2991.0 |
| 165°   | 3033.9 | 3031.0 | 3031.0 | 3050.1 | 3036.8 |
| 167.5° | 3079.7 | 3071.1 | 3071.1 | 3090.2 | 3076.8 |
| 170°   | 3114.0 | 3106.4 | 3103.5 | 3122.6 | 3106.4 |
| 172.5° | 3137.8 | 3130.2 | 3127.3 | 3146.4 | 3130.2 |
| 175°   | 3156.9 | 3149.3 | 3143.6 | 3162.6 | 3146.4 |
| 177.5° | 3167.4 | 3159.8 | 3154.0 | 3170.2 | 3154.0 |
| 180°   | 3162.6 | 3162.6 | 3162.6 | 3162.6 | 3162.6 |

TEST NUMBER: P906862

CATALOG NUMBER: DFN2DIP-SQ4F0-110D100US835-RLLFLL

**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 | 11.32            | 12.16 | 12.27 | 13.13 | 14.38 | 7.28           | 8.12  | 8.23  | 9.09  | 10.34 |
|                 | 3H   | 13.00            | 13.76 | 13.97 | 14.73 | 16.01 | 8.47           | 9.22  | 9.43  | 10.20 | 11.47 |
|                 | 4H   | 13.62            | 14.33 | 14.59 | 15.30 | 16.59 | 8.92           | 9.63  | 9.90  | 10.61 | 11.90 |
|                 | 6H   | 14.04            | 14.70 | 15.03 | 15.68 | 16.98 | 9.25           | 9.90  | 10.23 | 10.88 | 12.18 |
|                 | 8H   | 14.17            | 14.79 | 15.16 | 15.79 | 17.09 | 9.34           | 9.96  | 10.33 | 10.96 | 12.25 |
|                 | 12H  | 14.23            | 14.83 | 15.23 | 15.82 | 17.14 | 9.38           | 9.97  | 10.38 | 10.96 | 12.28 |
| 4H              | 2H   | 11.34            | 12.05 | 12.32 | 13.03 | 14.31 | 7.88           | 8.59  | 8.86  | 9.57  | 10.85 |
|                 | 3H   | 13.18            | 13.77 | 14.17 | 14.77 | 16.07 | 9.23           | 9.82  | 10.22 | 10.83 | 12.13 |
|                 | 4H   | 13.87            | 14.41 | 14.87 | 15.41 | 16.73 | 9.78           | 10.32 | 10.78 | 11.32 | 12.64 |
|                 | 6H   | 14.39            | 14.86 | 15.40 | 15.88 | 17.20 | 10.20          | 10.67 | 11.21 | 11.69 | 13.01 |
|                 | 8H   | 14.57            | 15.00 | 15.58 | 16.02 | 17.35 | 10.33          | 10.77 | 11.35 | 11.78 | 13.12 |
|                 | 12H  | 14.67            | 15.06 | 15.70 | 16.09 | 17.43 | 10.40          | 10.79 | 11.43 | 11.82 | 13.16 |
| 8H              | 4H   | 13.84            | 14.27 | 14.85 | 15.29 | 16.62 | 10.07          | 10.50 | 11.08 | 11.51 | 12.85 |
|                 | 6H   | 14.41            | 14.77 | 15.45 | 15.83 | 17.16 | 10.59          | 10.94 | 11.62 | 12.00 | 13.33 |
|                 | 8H   | 14.63            | 14.95 | 15.68 | 15.99 | 17.34 | 10.78          | 11.09 | 11.82 | 12.14 | 13.49 |
|                 | 12H  | 14.77            | 15.05 | 15.82 | 16.09 | 17.48 | 10.90          | 11.18 | 11.95 | 12.21 | 13.61 |
| 12H             | 4H   | 13.79            | 14.18 | 14.82 | 15.21 | 16.55 | 10.07          | 10.46 | 11.10 | 11.49 | 12.83 |
|                 | 6H   | 14.39            | 14.70 | 15.43 | 15.75 | 17.10 | 10.64          | 10.95 | 11.68 | 11.99 | 13.35 |
|                 | 8H   | 14.61            | 14.89 | 15.66 | 15.93 | 17.32 | 10.85          | 11.13 | 11.90 | 12.16 | 13.56 |

END OF REPORT