

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: P927117

Luminaire Tested: DFN2DIP-HX4F0-100D110US830-RLLFLL

Issue Date: 12/12/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P927117  
REPORT IS A COMBINATION OF REPORTS P899438 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-100D110US830-RLFL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

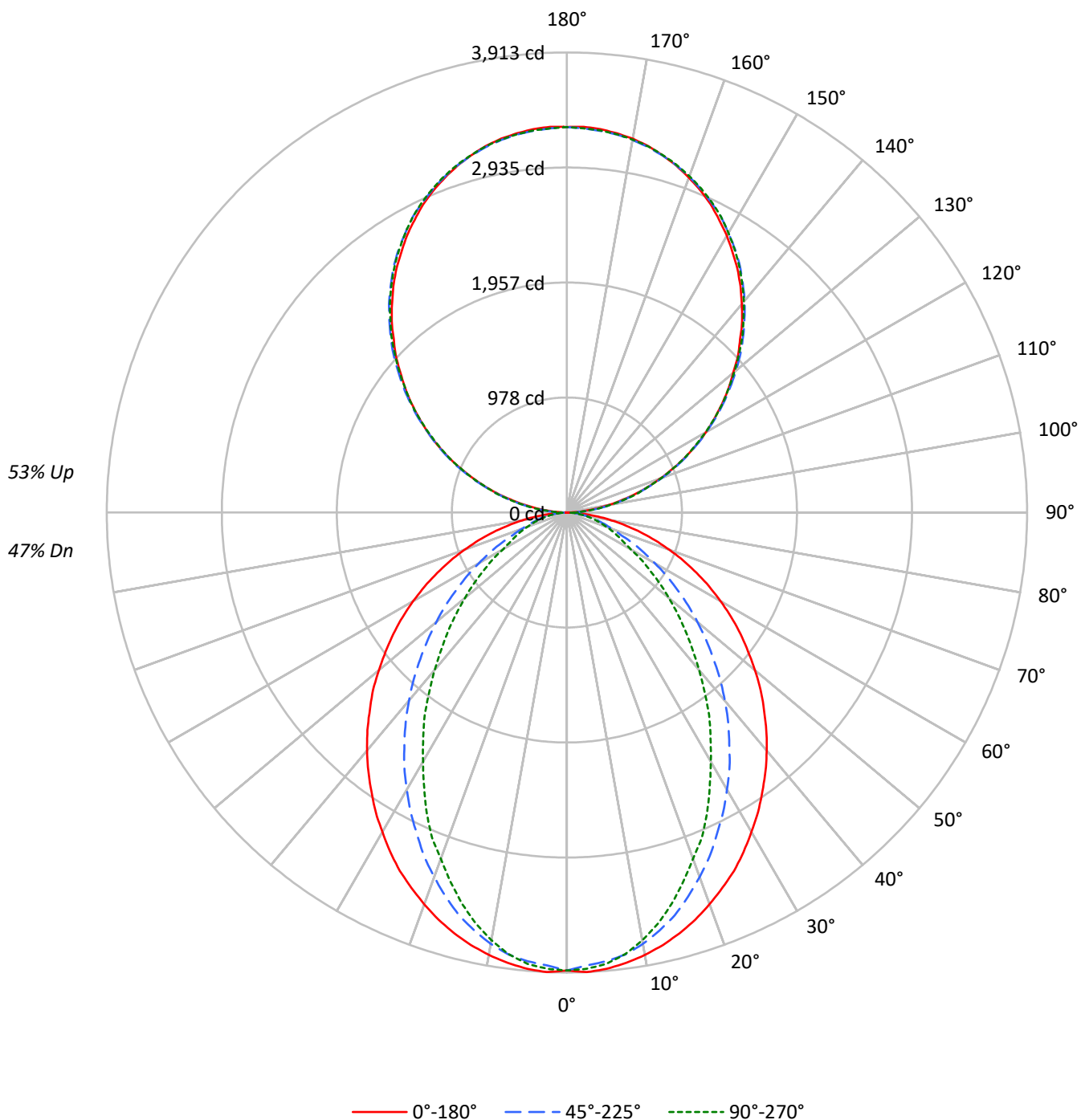
Lumens per Lamp: N/A  
Luminaire Lumens: 17186.5 lumens  
Efficiency: N/A  
Efficacy: 92.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.54' x L: 4.09' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 186.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P927117

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US830-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P927117

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US830-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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 67 | 67 | 67 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 48 | 47 | 46 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 71 | 66 | 64 | 60 | 57 | 53 | 50 | 48 | 42 | 41 | 39 |
| 3   | 82  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 57 | 52 | 48 | 47 | 44 | 41 | 38 | 36 | 34 |
| 4   | 75  | 64  | 57  | 51  | 69 | 60 | 53 | 48 | 51 | 46 | 42 | 42 | 38 | 35 | 34 | 32 | 30 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 64  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 32 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 23 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 21 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2896 | 2896 | 2896 |
| 5°  | 2901 | 2851 | 2869 |
| 10° | 2873 | 2795 | 2776 |
| 15° | 2834 | 2703 | 2631 |
| 20° | 2781 | 2576 | 2454 |
| 25° | 2728 | 2433 | 2284 |
| 30° | 2656 | 2287 | 2067 |
| 35° | 2586 | 2130 | 1876 |
| 40° | 2515 | 1968 | 1658 |
| 45° | 2432 | 1787 | 1460 |
| 50° | 2346 | 1605 | 1267 |
| 55° | 2256 | 1410 | 1081 |
| 60° | 2153 | 1206 | 890  |
| 65° | 2033 | 999  | 801  |
| 70° | 1889 | 806  | 725  |
| 75° | 1707 | 711  | 660  |
| 80° | 1444 | 598  | 573  |
| 85° | 1010 | 400  | 431  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2472 cd/sqm

TEST NUMBER: P927117

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US830-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 365.1   | 2.1       |
| 10°-20°   | 1002.2  | 5.8       |
| 20°-30°   | 1407.1  | 8.2       |
| 30°-40°   | 1533.8  | 8.9       |
| 40°-50°   | 1409.7  | 8.2       |
| 50°-60°   | 1107.1  | 6.4       |
| 60°-70°   | 720.6   | 4.2       |
| 70°-80°   | 370.9   | 2.2       |
| 80°-90°   | 104.0   | 0.6       |
| 90°-100°  | 202.9   | 1.2       |
| 100°-110° | 644.7   | 3.8       |
| 110°-120° | 1103.2  | 6.4       |
| 120°-130° | 1450.9  | 8.4       |
| 130°-140° | 1628.6  | 9.5       |
| 140°-150° | 1597.0  | 9.3       |
| 150°-160° | 1339.7  | 7.8       |
| 160°-170° | 888.4   | 5.2       |
| 170°-180° | 310.5   | 1.8       |
| 0°-30°    | 2774.3  | 16.1      |
| 0°-40°    | 4308.1  | 25.1      |
| 0°-60°    | 6825.0  | 39.7      |
| 0°-90°    | 8020.5  | 46.7      |
| 90°-120°  | 1950.8  | 11.4      |
| 90°-150°  | 6627.3  | 38.6      |
| 90°-180°  | 9166.0  | 53.3      |
| 0°-180°   | 17186.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3895 | 3895  | 3895 | 3895  | 3895 |      |
| 5°   | 3895 | 3878  | 3832 | 3864  | 3853 | 369  |
| 15°  | 3705 | 3666  | 3546 | 3479  | 3444 | 1044 |
| 25°  | 3363 | 3250  | 3018 | 2873  | 2820 | 1547 |
| 35°  | 2898 | 2718  | 2408 | 2186  | 2108 | 1814 |
| 45°  | 2369 | 2133  | 1763 | 1512  | 1428 | 1829 |
| 55°  | 1801 | 1526  | 1146 | 934   | 867  | 1610 |
| 65°  | 1216 | 930   | 613  | 494   | 483  | 1206 |
| 75°  | 648  | 402   | 282  | 257   | 254  | 686  |
| 85°  | 152  | 77    | 67   | 67    | 67   | 174  |
| 90°  | 3    | 36    | 97   | 91    | 94   | 17   |
| 95°  | 144  | 172   | 177  | 177   | 172  | 161  |
| 105° | 595  | 603   | 609  | 614   | 614  | 628  |
| 115° | 1107 | 1123  | 1118 | 1115  | 1107 | 1095 |
| 125° | 1610 | 1635  | 1627 | 1618  | 1615 | 1439 |
| 135° | 2083 | 2113  | 2119 | 2116  | 2108 | 1610 |
| 145° | 2528 | 2548  | 2564 | 2567  | 2556 | 1580 |
| 155° | 2891 | 2899  | 2908 | 2922  | 2913 | 1331 |
| 165° | 3145 | 3142  | 3142 | 3162  | 3148 | 887  |
| 175° | 3273 | 3265  | 3259 | 3279  | 3262 | 311  |
| 180° | 3279 | 3279  | 3279 | 3279  | 3279 |      |

TEST NUMBER: P927117

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US830-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3895.4 | 3895.4 | 3895.4 | 3895.4 | 3895.4 |
| 2.5°   | 3912.9 | 3895.4 | 3856.4 | 3892.0 | 3884.9 |
| 5°     | 3895.4 | 3877.7 | 3831.7 | 3863.6 | 3853.0 |
| 7.5°   | 3863.6 | 3842.6 | 3793.2 | 3807.0 | 3789.5 |
| 10°    | 3821.3 | 3796.6 | 3726.3 | 3715.4 | 3694.5 |
| 12.5°  | 3768.6 | 3736.7 | 3641.3 | 3620.4 | 3581.5 |
| 15°    | 3705.0 | 3666.0 | 3546.3 | 3479.4 | 3444.3 |
| 17.5°  | 3630.9 | 3574.4 | 3426.4 | 3348.9 | 3292.4 |
| 20°    | 3546.3 | 3475.7 | 3299.5 | 3211.7 | 3133.8 |
| 22.5°  | 3454.7 | 3373.6 | 3169.0 | 3049.4 | 2996.6 |
| 25°    | 3363.1 | 3250.2 | 3017.5 | 2873.1 | 2820.1 |
| 27.5°  | 3253.9 | 3133.8 | 2876.5 | 2710.8 | 2629.7 |
| 30°    | 3137.6 | 3003.3 | 2721.3 | 2541.8 | 2446.4 |
| 32.5°  | 3024.7 | 2862.3 | 2573.6 | 2361.9 | 2273.6 |
| 35°    | 2897.8 | 2718.0 | 2407.9 | 2185.8 | 2107.9 |
| 37.5°  | 2774.4 | 2580.3 | 2252.7 | 2009.2 | 1921.3 |
| 40°    | 2643.9 | 2432.6 | 2090.4 | 1840.1 | 1748.5 |
| 42.5°  | 2510.0 | 2284.4 | 1928.4 | 1667.4 | 1579.4 |
| 45°    | 2369.0 | 2132.6 | 1762.8 | 1512.1 | 1427.6 |
| 47.5°  | 2235.1 | 1984.9 | 1604.1 | 1353.5 | 1276.1 |
| 50°    | 2087.0 | 1836.7 | 1448.9 | 1205.5 | 1131.8 |
| 52.5°  | 1942.2 | 1677.8 | 1300.8 | 1068.1 | 1001.2 |
| 55°    | 1801.2 | 1526.4 | 1145.6 | 934.3  | 867.3  |
| 57.5°  | 1656.9 | 1374.8 | 1008.4 | 810.8  | 754.4  |
| 60°    | 1508.8 | 1226.8 | 863.6  | 684.1  | 627.6  |
| 62.5°  | 1364.4 | 1082.4 | 740.1  | 571.2  | 543.1  |
| 65°    | 1216.3 | 930.5  | 613.4  | 493.7  | 482.8  |
| 67.5°  | 1075.3 | 789.5  | 493.7  | 433.5  | 423.0  |
| 70°    | 927.1  | 652.3  | 408.8  | 373.6  | 359.5  |
| 72.5°  | 786.1  | 525.1  | 341.8  | 313.8  | 306.7  |
| 75°    | 648.5  | 401.7  | 282.0  | 257.3  | 253.9  |
| 77.5°  | 511.3  | 285.4  | 222.1  | 207.9  | 200.8  |
| 80°    | 384.1  | 204.6  | 169.1  | 155.2  | 155.2  |
| 82.5°  | 267.8  | 137.6  | 116.3  | 109.2  | 109.2  |
| 85°    | 151.5  | 77.4   | 66.9   | 66.9   | 66.9   |
| 87.5°  | 56.5   | 28.1   | 28.1   | 24.7   | 24.7   |
| 90°    | 2.9    | 35.6   | 96.9   | 91.0   | 93.9   |
| 92.5°  | 61.3   | 83.0   | 86.0   | 89.0   | 89.0   |
| 95°    | 144.3  | 172.0  | 176.9  | 176.9  | 172.0  |
| 97.5°  | 240.2  | 265.9  | 276.8  | 276.8  | 276.8  |
| 100°   | 350.9  | 373.6  | 381.5  | 381.5  | 378.6  |
| 102.5° | 467.6  | 484.4  | 495.3  | 498.2  | 495.3  |
| 105°   | 595.1  | 603.0  | 608.9  | 613.9  | 613.9  |
| 107.5° | 721.6  | 733.5  | 733.5  | 735.4  | 721.6  |
| 110°   | 844.2  | 860.0  | 860.0  | 860.0  | 852.1  |

TEST NUMBER: P927117

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US830-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 976.6  | 993.4  | 990.5  | 982.6  | 976.6  |
| 115°   | 1107.2 | 1122.9 | 1118.0 | 1115.1 | 1107.2 |
| 117.5° | 1236.7 | 1258.3 | 1244.5 | 1236.7 | 1228.7 |
| 120°   | 1367.1 | 1388.9 | 1367.1 | 1367.1 | 1358.2 |
| 122.5° | 1485.8 | 1513.4 | 1499.5 | 1491.6 | 1485.8 |
| 125°   | 1610.3 | 1635.0 | 1627.0 | 1618.2 | 1615.2 |
| 127.5° | 1731.8 | 1762.5 | 1751.6 | 1739.8 | 1731.8 |
| 130°   | 1845.5 | 1881.1 | 1876.1 | 1870.2 | 1859.4 |
| 132.5° | 1973.0 | 2000.7 | 2002.7 | 1988.9 | 1980.9 |
| 135°   | 2082.7 | 2113.4 | 2119.3 | 2116.4 | 2108.5 |
| 137.5° | 2205.4 | 2230.0 | 2235.0 | 2233.0 | 2221.2 |
| 140°   | 2313.1 | 2337.8 | 2351.6 | 2351.6 | 2340.8 |
| 142.5° | 2423.8 | 2448.5 | 2456.4 | 2459.4 | 2448.5 |
| 145°   | 2528.5 | 2548.3 | 2564.2 | 2567.1 | 2556.2 |
| 147.5° | 2622.5 | 2647.2 | 2659.1 | 2664.0 | 2653.1 |
| 150°   | 2719.4 | 2736.2 | 2747.0 | 2756.0 | 2747.0 |
| 152.5° | 2805.4 | 2822.1 | 2836.0 | 2846.9 | 2836.0 |
| 155°   | 2891.4 | 2899.2 | 2908.2 | 2922.0 | 2913.1 |
| 157.5° | 2965.5 | 2971.4 | 2976.3 | 2996.1 | 2982.3 |
| 160°   | 3031.7 | 3037.7 | 3040.6 | 3057.5 | 3045.6 |
| 162.5° | 3093.0 | 3093.0 | 3096.0 | 3114.8 | 3100.9 |
| 165°   | 3145.4 | 3142.4 | 3142.4 | 3162.2 | 3148.3 |
| 167.5° | 3192.8 | 3184.0 | 3184.0 | 3203.7 | 3189.9 |
| 170°   | 3228.4 | 3220.5 | 3217.6 | 3237.3 | 3220.5 |
| 172.5° | 3253.1 | 3245.2 | 3242.3 | 3262.1 | 3245.2 |
| 175°   | 3272.9 | 3265.0 | 3259.1 | 3278.9 | 3262.1 |
| 177.5° | 3283.8 | 3275.8 | 3269.9 | 3286.8 | 3269.9 |
| 180°   | 3278.9 | 3278.9 | 3278.9 | 3278.9 | 3278.9 |

TEST NUMBER: P927117

CATALOG NUMBER: DFN2DIP-HX4F0-100D110US830-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 | 10.52            | 11.32 | 11.51 | 12.32 | 13.64 | 6.49           | 7.30  | 7.49  | 8.30  | 9.62  |
|                 | 3H   | 12.20            | 12.92 | 13.20 | 13.92 | 15.27 | 7.68           | 8.40  | 8.69  | 9.41  | 10.75 |
|                 | 4H   | 12.81            | 13.49 | 13.82 | 14.50 | 15.85 | 8.13           | 8.81  | 9.15  | 9.82  | 11.17 |
|                 | 6H   | 13.23            | 13.85 | 14.25 | 14.87 | 16.23 | 8.45           | 9.08  | 9.48  | 10.10 | 11.46 |
|                 | 8H   | 13.35            | 13.95 | 14.38 | 14.98 | 16.34 | 8.54           | 9.14  | 9.58  | 10.17 | 11.53 |
|                 | 12H  | 13.41            | 13.98 | 14.45 | 15.01 | 16.39 | 8.59           | 9.15  | 9.62  | 10.18 | 11.56 |
| 4H              | 2H   | 10.54            | 11.22 | 11.56 | 12.23 | 13.58 | 7.09           | 7.77  | 8.11  | 8.78  | 10.13 |
|                 | 3H   | 12.36            | 12.93 | 13.39 | 13.97 | 15.33 | 8.44           | 9.00  | 9.47  | 10.04 | 11.40 |
|                 | 4H   | 13.06            | 13.57 | 14.09 | 14.61 | 15.99 | 8.98           | 9.50  | 10.02 | 10.53 | 11.92 |
|                 | 6H   | 13.57            | 14.01 | 14.62 | 15.07 | 16.45 | 9.40           | 9.85  | 10.45 | 10.90 | 12.29 |
|                 | 8H   | 13.75            | 14.16 | 14.79 | 15.21 | 16.61 | 9.53           | 9.95  | 10.58 | 11.00 | 12.39 |
|                 | 12H  | 13.84            | 14.21 | 14.91 | 15.28 | 16.68 | 9.60           | 9.97  | 10.66 | 11.04 | 12.44 |
| 8H              | 4H   | 13.02            | 13.44 | 14.07 | 14.48 | 15.88 | 9.26           | 9.68  | 10.31 | 10.73 | 12.12 |
|                 | 6H   | 13.59            | 13.93 | 14.66 | 15.02 | 16.41 | 9.78           | 10.13 | 10.85 | 11.22 | 12.61 |
|                 | 8H   | 13.81            | 14.11 | 14.88 | 15.18 | 16.59 | 9.98           | 10.28 | 11.05 | 11.35 | 12.76 |
|                 | 12H  | 13.94            | 14.21 | 15.03 | 15.28 | 16.73 | 10.10          | 10.36 | 11.18 | 11.43 | 12.88 |
| 12H             | 4H   | 12.97            | 13.35 | 14.04 | 14.41 | 15.81 | 9.27           | 9.64  | 10.33 | 10.70 | 12.11 |
|                 | 6H   | 13.56            | 13.87 | 14.64 | 14.94 | 16.35 | 9.83           | 10.13 | 10.91 | 11.21 | 12.62 |
|                 | 8H   | 13.78            | 14.05 | 14.87 | 15.12 | 16.57 | 10.04          | 10.31 | 11.13 | 11.38 | 12.83 |

END OF REPORT