

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: P905567

Luminaire Tested: DFN2DIP-HX4F0-120D080US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905567  
REPORT IS A COMBINATION OF REPORTS P899388 AND P896188  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-120D080US835-RLLFLL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

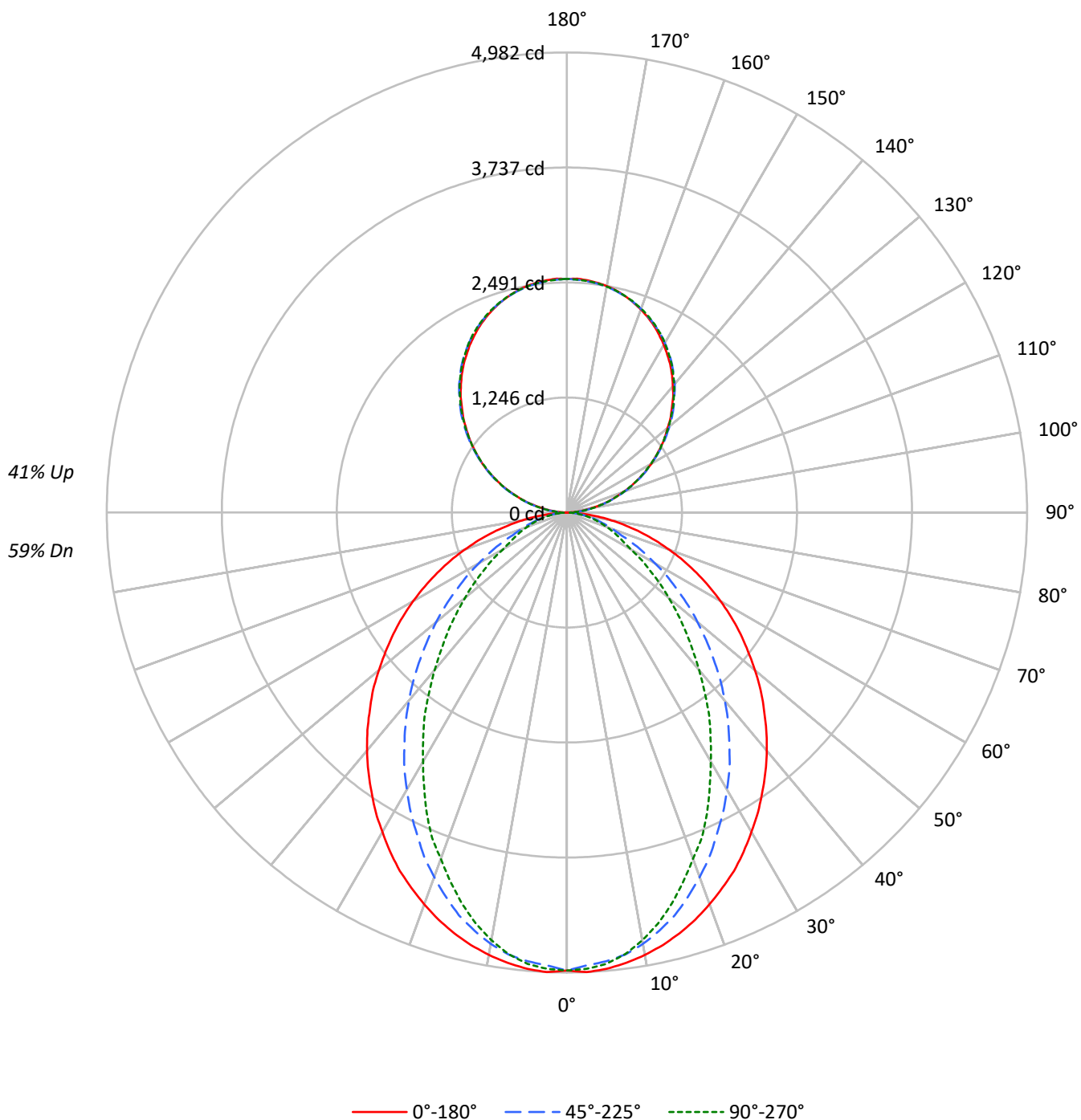
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 17280.0 lumens  
Efficiency: N/A  
Efficacy: 100.8 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): 171.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P905567

CATALOG NUMBER: DFN2DIP-HX4F0-120D080US835-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P905567

CATALOG NUMBER: DFN2DIP-HX4F0-120D080US835-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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 |
| 1   | 100 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 78 | 76 | 74 | 68 | 66 | 64 | 58 | 57 | 56 |
| 2   | 92  | 85  | 79  | 74  | 86  | 79  | 74  | 70  | 69 | 65 | 62 | 60 | 57 | 55 | 52 | 50 | 48 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 62 | 57 | 53 | 54 | 50 | 47 | 46 | 44 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 34 | 32 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 44  | 39  | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 |
| 7   | 61  | 49  | 41  | 36  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 25 |
| 8   | 57  | 45  | 37  | 32  | 53  | 42  | 35  | 30  | 38 | 32 | 28 | 33 | 29 | 25 | 29 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 27  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3688 | 3688 | 3688 |
| 5°  | 3694 | 3630 | 3653 |
| 10° | 3658 | 3559 | 3534 |
| 15° | 3608 | 3441 | 3350 |
| 20° | 3541 | 3280 | 3125 |
| 25° | 3473 | 3098 | 2907 |
| 30° | 3382 | 2912 | 2631 |
| 35° | 3293 | 2712 | 2389 |
| 40° | 3202 | 2505 | 2111 |
| 45° | 3096 | 2275 | 1859 |
| 50° | 2987 | 2043 | 1613 |
| 55° | 2873 | 1795 | 1376 |
| 60° | 2741 | 1536 | 1133 |
| 65° | 2589 | 1272 | 1020 |
| 70° | 2405 | 1026 | 923  |
| 75° | 2174 | 906  | 840  |
| 80° | 1839 | 761  | 729  |
| 85° | 1286 | 510  | 549  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3096 cd/sqm

TEST NUMBER: P905567

CATALOG NUMBER: DFN2DIP-HX4F0-120D080US835-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 464.8   | 2.7       |
| 10°-20°   | 1276.0  | 7.4       |
| 20°-30°   | 1791.5  | 10.4      |
| 30°-40°   | 1952.8  | 11.3      |
| 40°-50°   | 1794.9  | 10.4      |
| 50°-60°   | 1409.6  | 8.2       |
| 60°-70°   | 917.5   | 5.3       |
| 70°-80°   | 472.3   | 2.7       |
| 80°-90°   | 127.8   | 0.7       |
| 90°-100°  | 156.6   | 0.9       |
| 100°-110° | 497.5   | 2.9       |
| 110°-120° | 851.3   | 4.9       |
| 120°-130° | 1119.6  | 6.5       |
| 130°-140° | 1256.7  | 7.3       |
| 140°-150° | 1232.3  | 7.1       |
| 150°-160° | 1033.7  | 6.0       |
| 160°-170° | 685.6   | 4.0       |
| 170°-180° | 239.6   | 1.4       |
| 0°-30°    | 3532.3  | 20.4      |
| 0°-40°    | 5485.2  | 31.7      |
| 0°-60°    | 8689.6  | 50.3      |
| 0°-90°    | 10207.2 | 59.1      |
| 90°-120°  | 1505.3  | 8.7       |
| 90°-150°  | 5113.9  | 29.6      |
| 90°-180°  | 7073.0  | 40.9      |
| 0°-180°   | 17280.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4960 | 4960  | 4960 | 4960  | 4960 |      |
| 5°   | 4960 | 4937  | 4879 | 4919  | 4906 | 470  |
| 15°  | 4717 | 4668  | 4515 | 4430  | 4385 | 1329 |
| 25°  | 4282 | 4138  | 3842 | 3658  | 3590 | 1969 |
| 35°  | 3690 | 3460  | 3066 | 2783  | 2684 | 2309 |
| 45°  | 3016 | 2715  | 2244 | 1925  | 1818 | 2329 |
| 55°  | 2293 | 1943  | 1459 | 1190  | 1104 | 2049 |
| 65°  | 1549 | 1185  | 781  | 629   | 615  | 1535 |
| 75°  | 826  | 511   | 359  | 328   | 323  | 873  |
| 85°  | 193  | 99    | 85   | 85    | 85   | 221  |
| 90°  | 2    | 28    | 75   | 70    | 72   | 17   |
| 95°  | 111  | 133   | 136  | 136   | 133  | 124  |
| 105° | 459  | 465   | 470  | 474   | 474  | 485  |
| 115° | 854  | 866   | 863  | 860   | 854  | 845  |
| 125° | 1242 | 1262  | 1256 | 1249  | 1246 | 1110 |
| 135° | 1607 | 1631  | 1635 | 1633  | 1627 | 1242 |
| 145° | 1951 | 1966  | 1979 | 1981  | 1972 | 1219 |
| 155° | 2231 | 2237  | 2244 | 2255  | 2248 | 1027 |
| 165° | 2427 | 2425  | 2425 | 2440  | 2429 | 685  |
| 175° | 2526 | 2519  | 2515 | 2530  | 2517 | 240  |
| 180° | 2530 | 2530  | 2530 | 2530  | 2530 |      |

TEST NUMBER: P905567

CATALOG NUMBER: DFN2DIP-HX4F0-120D080US835-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4959.6 | 4959.6 | 4959.6 | 4959.6 | 4959.6 |
| 2.5°   | 4982.0 | 4959.6 | 4910.1 | 4955.3 | 4946.2 |
| 5°     | 4959.6 | 4937.2 | 4878.6 | 4919.1 | 4905.8 |
| 7.5°   | 4919.1 | 4892.4 | 4829.6 | 4847.2 | 4824.8 |
| 10°    | 4865.3 | 4833.9 | 4744.3 | 4730.5 | 4703.9 |
| 12.5°  | 4798.1 | 4757.7 | 4636.2 | 4609.6 | 4560.1 |
| 15°    | 4717.2 | 4667.7 | 4515.3 | 4430.0 | 4385.3 |
| 17.5°  | 4622.9 | 4551.0 | 4362.4 | 4263.9 | 4192.0 |
| 20°    | 4515.3 | 4425.3 | 4201.0 | 4089.1 | 3990.0 |
| 22.5°  | 4398.6 | 4295.3 | 4034.8 | 3882.4 | 3815.3 |
| 25°    | 4282.0 | 4138.1 | 3841.9 | 3658.1 | 3590.5 |
| 27.5°  | 4142.9 | 3990.0 | 3662.4 | 3451.5 | 3348.1 |
| 30°    | 3994.8 | 3823.9 | 3464.8 | 3236.2 | 3114.8 |
| 32.5°  | 3851.0 | 3644.3 | 3276.7 | 3007.2 | 2894.8 |
| 35°    | 3689.6 | 3460.5 | 3065.7 | 2782.9 | 2683.8 |
| 37.5°  | 3532.4 | 3285.3 | 2868.1 | 2558.1 | 2446.2 |
| 40°    | 3366.2 | 3097.2 | 2661.5 | 2342.9 | 2226.2 |
| 42.5°  | 3195.7 | 2908.6 | 2455.3 | 2122.9 | 2011.0 |
| 45°    | 3016.2 | 2715.3 | 2244.3 | 1925.3 | 1817.6 |
| 47.5°  | 2845.7 | 2527.2 | 2042.4 | 1723.4 | 1624.8 |
| 50°    | 2657.2 | 2338.6 | 1844.8 | 1534.8 | 1441.0 |
| 52.5°  | 2472.9 | 2136.2 | 1656.2 | 1360.0 | 1274.8 |
| 55°    | 2293.4 | 1943.4 | 1458.6 | 1189.5 | 1104.3 |
| 57.5°  | 2109.5 | 1750.5 | 1283.8 | 1032.4 | 960.5  |
| 60°    | 1921.0 | 1561.9 | 1099.5 | 871.0  | 799.1  |
| 62.5°  | 1737.2 | 1378.1 | 942.4  | 727.2  | 691.4  |
| 65°    | 1548.6 | 1184.8 | 781.0  | 628.6  | 614.8  |
| 67.5°  | 1369.1 | 1005.2 | 628.6  | 551.9  | 538.6  |
| 70°    | 1180.5 | 830.5  | 520.5  | 475.7  | 457.6  |
| 72.5°  | 1001.0 | 668.6  | 435.2  | 399.5  | 390.5  |
| 75°    | 825.7  | 511.4  | 359.1  | 327.6  | 323.3  |
| 77.5°  | 651.0  | 363.3  | 282.9  | 264.8  | 255.7  |
| 80°    | 489.1  | 260.5  | 215.2  | 197.6  | 197.6  |
| 82.5°  | 341.0  | 175.2  | 148.1  | 139.0  | 139.0  |
| 85°    | 192.9  | 98.6   | 85.2   | 85.2   | 85.2   |
| 87.5°  | 71.9   | 35.7   | 35.7   | 31.4   | 31.4   |
| 90°    | 2.3    | 27.5   | 74.8   | 70.2   | 72.5   |
| 92.5°  | 47.3   | 64.1   | 66.4   | 68.6   | 68.6   |
| 95°    | 111.4  | 132.7  | 136.5  | 136.5  | 132.7  |
| 97.5°  | 185.4  | 205.2  | 213.6  | 213.6  | 213.6  |
| 100°   | 270.8  | 288.3  | 294.4  | 294.4  | 292.1  |
| 102.5° | 360.8  | 373.8  | 382.1  | 384.4  | 382.1  |
| 105°   | 459.2  | 465.3  | 469.9  | 473.7  | 473.7  |
| 107.5° | 556.8  | 566.0  | 566.0  | 567.5  | 556.8  |
| 110°   | 651.4  | 663.6  | 663.6  | 663.6  | 657.5  |

TEST NUMBER: P905567

CATALOG NUMBER: DFN2DIP-HX4F0-120D080US835-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 753.6  | 766.6  | 764.3  | 758.2  | 753.6  |
| 115°   | 854.3  | 866.5  | 862.7  | 860.4  | 854.3  |
| 117.5° | 954.2  | 971.0  | 960.3  | 954.2  | 948.1  |
| 120°   | 1054.9 | 1071.7 | 1054.9 | 1054.9 | 1048.0 |
| 122.5° | 1146.4 | 1167.8 | 1157.1 | 1151.0 | 1146.4 |
| 125°   | 1242.5 | 1261.6 | 1255.5 | 1248.6 | 1246.4 |
| 127.5° | 1336.4 | 1360.0 | 1351.6 | 1342.5 | 1336.4 |
| 130°   | 1424.1 | 1451.5 | 1447.7 | 1443.2 | 1434.8 |
| 132.5° | 1522.5 | 1543.8 | 1545.4 | 1534.7 | 1528.6 |
| 135°   | 1607.1 | 1630.8 | 1635.4 | 1633.1 | 1627.0 |
| 137.5° | 1701.7 | 1720.8 | 1724.6 | 1723.1 | 1713.9 |
| 140°   | 1784.9 | 1803.9 | 1814.6 | 1814.6 | 1806.2 |
| 142.5° | 1870.3 | 1889.4 | 1895.5 | 1897.8 | 1889.4 |
| 145°   | 1951.2 | 1966.4 | 1978.6 | 1980.9 | 1972.5 |
| 147.5° | 2023.6 | 2042.7 | 2051.8 | 2055.7 | 2047.3 |
| 150°   | 2098.4 | 2111.3 | 2119.7 | 2126.6 | 2119.7 |
| 152.5° | 2164.7 | 2177.7 | 2188.4 | 2196.8 | 2188.4 |
| 155°   | 2231.1 | 2237.2 | 2244.1 | 2254.7 | 2247.9 |
| 157.5° | 2288.3 | 2292.9 | 2296.7 | 2311.9 | 2301.3 |
| 160°   | 2339.4 | 2344.0 | 2346.3 | 2359.2 | 2350.1 |
| 162.5° | 2386.7 | 2386.7 | 2389.0 | 2403.5 | 2392.8 |
| 165°   | 2427.1 | 2424.8 | 2424.8 | 2440.1 | 2429.4 |
| 167.5° | 2463.7 | 2456.9 | 2456.9 | 2472.1 | 2461.4 |
| 170°   | 2491.2 | 2485.1 | 2482.8 | 2498.1 | 2485.1 |
| 172.5° | 2510.3 | 2504.2 | 2501.9 | 2517.1 | 2504.2 |
| 175°   | 2525.5 | 2519.4 | 2514.8 | 2530.1 | 2517.1 |
| 177.5° | 2533.9 | 2527.8 | 2523.2 | 2536.2 | 2523.2 |
| 180°   | 2530.1 | 2530.1 | 2530.1 | 2530.1 | 2530.1 |

TEST NUMBER: P905567

CATALOG NUMBER: DFN2DIP-HX4F0-120D080US835-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 | 12.49            | 13.40 | 13.37 | 14.30 | 15.43 | 8.46           | 9.37  | 9.34  | 10.27 | 11.41 |
|                 | 3H   | 14.17            | 14.99 | 15.07 | 15.89 | 17.06 | 9.66           | 10.47 | 10.55 | 11.38 | 12.54 |
|                 | 4H   | 14.79            | 15.55 | 15.70 | 16.47 | 17.64 | 10.11          | 10.88 | 11.02 | 11.79 | 12.97 |
|                 | 6H   | 15.21            | 15.92 | 16.13 | 16.84 | 18.03 | 10.44          | 11.15 | 11.36 | 12.07 | 13.25 |
|                 | 8H   | 15.34            | 16.01 | 16.27 | 16.95 | 18.14 | 10.53          | 11.21 | 11.46 | 12.14 | 13.33 |
|                 | 12H  | 15.41            | 16.05 | 16.34 | 16.98 | 18.19 | 10.58          | 11.22 | 11.51 | 12.15 | 13.36 |
| 4H              | 2H   | 12.52            | 13.28 | 13.43 | 14.20 | 15.37 | 9.07           | 9.84  | 9.98  | 10.75 | 11.92 |
|                 | 3H   | 14.35            | 14.99 | 15.28 | 15.94 | 17.13 | 10.43          | 11.06 | 11.35 | 12.01 | 13.20 |
|                 | 4H   | 15.05            | 15.63 | 15.99 | 16.57 | 17.79 | 10.98          | 11.56 | 11.91 | 12.50 | 13.71 |
|                 | 6H   | 15.57            | 16.07 | 16.52 | 17.03 | 18.25 | 11.40          | 11.90 | 12.35 | 12.87 | 14.08 |
|                 | 8H   | 15.75            | 16.22 | 16.70 | 17.17 | 18.40 | 11.54          | 12.00 | 12.49 | 12.96 | 14.19 |
|                 | 12H  | 15.85            | 16.27 | 16.82 | 17.24 | 18.48 | 11.61          | 12.03 | 12.58 | 13.00 | 14.23 |
| 8H              | 4H   | 15.02            | 15.49 | 15.98 | 16.45 | 17.68 | 11.27          | 11.73 | 12.22 | 12.69 | 13.92 |
|                 | 6H   | 15.59            | 15.98 | 16.57 | 16.98 | 18.21 | 11.79          | 12.17 | 12.77 | 13.17 | 14.40 |
|                 | 8H   | 15.81            | 16.15 | 16.80 | 17.14 | 18.39 | 11.98          | 12.32 | 12.97 | 13.31 | 14.56 |
|                 | 12H  | 15.96            | 16.26 | 16.94 | 17.24 | 18.53 | 12.11          | 12.41 | 13.09 | 13.39 | 14.68 |
| 12H             | 4H   | 14.98            | 15.40 | 15.95 | 16.38 | 17.61 | 11.27          | 11.70 | 12.24 | 12.67 | 13.90 |
|                 | 6H   | 15.57            | 15.91 | 16.56 | 16.90 | 18.14 | 11.84          | 12.18 | 12.82 | 13.17 | 14.41 |
|                 | 8H   | 15.80            | 16.10 | 16.78 | 17.08 | 18.37 | 12.05          | 12.35 | 13.04 | 13.34 | 14.63 |

END OF REPORT