

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: P912756

Luminaire Tested: DFN2DIP-TR4F0-040D110US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912756  
REPORT IS A COMBINATION OF REPORTS P900496 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-040D110US850-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

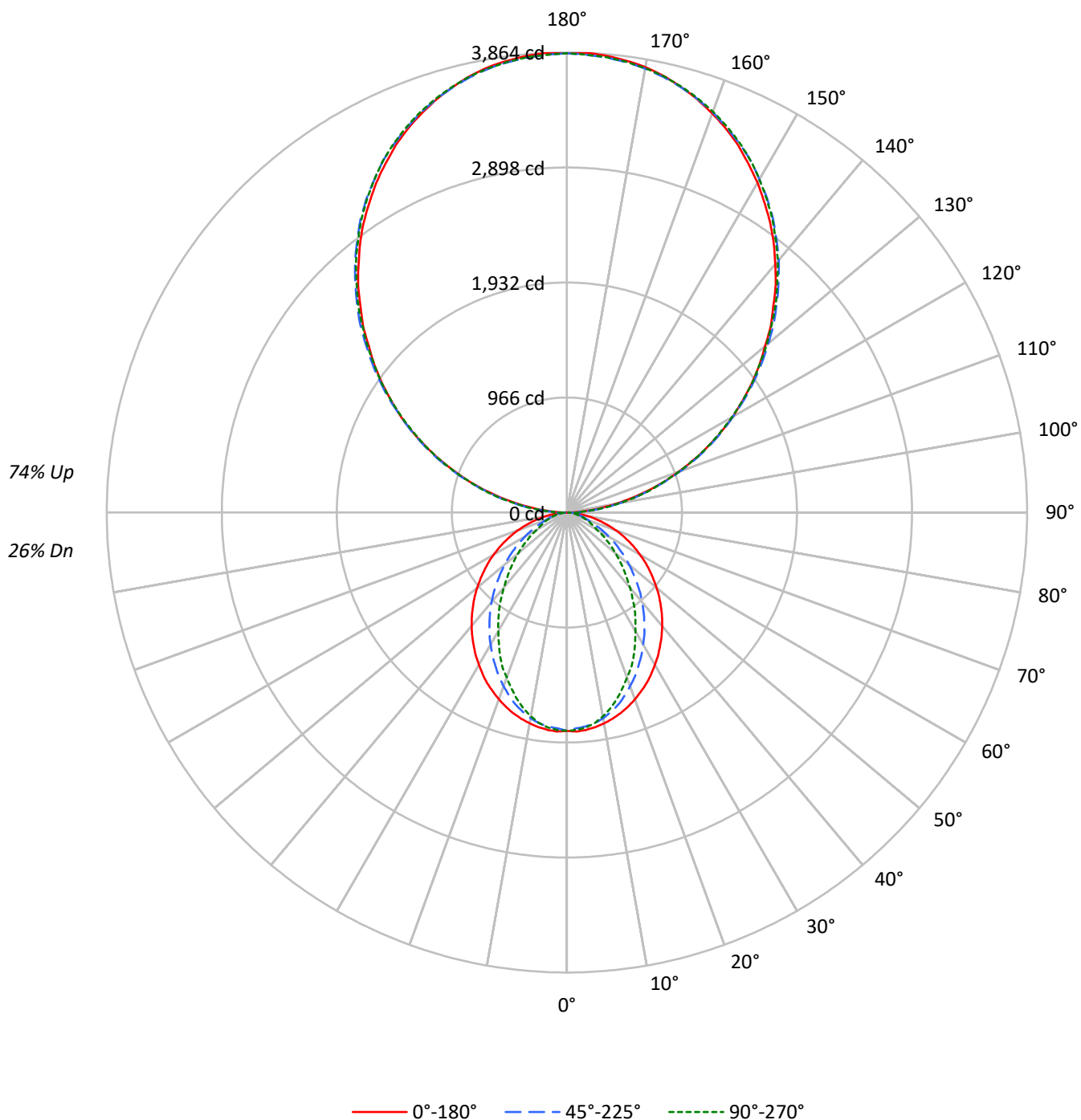
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14566.7 lumens  
Efficiency: N/A  
Efficacy: 124.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 116.7  
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



TEST NUMBER: P912756

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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   | 101 | 101 | 101 | 101 |  | 90 | 90 | 90 | 90 |  | 70 | 70 | 70 |  | 51 | 51 | 51 |  | 34 | 34 | 34 |
| 1   | 93  | 89  | 85  | 82  |  | 82 | 79 | 76 | 73 |  | 62 | 60 | 58 |  | 45 | 44 | 43 |  | 30 | 30 | 29 |
| 2   | 85  | 78  | 72  | 67  |  | 75 | 69 | 65 | 61 |  | 54 | 51 | 48 |  | 40 | 38 | 36 |  | 27 | 26 | 25 |
| 3   | 77  | 68  | 61  | 56  |  | 69 | 61 | 55 | 51 |  | 48 | 44 | 41 |  | 36 | 33 | 31 |  | 24 | 23 | 21 |
| 4   | 71  | 61  | 53  | 47  |  | 63 | 54 | 48 | 43 |  | 43 | 38 | 35 |  | 32 | 29 | 27 |  | 22 | 20 | 19 |
| 5   | 65  | 54  | 46  | 41  |  | 58 | 48 | 42 | 37 |  | 38 | 34 | 30 |  | 29 | 26 | 23 |  | 20 | 18 | 16 |
| 6   | 60  | 48  | 41  | 35  |  | 53 | 43 | 37 | 32 |  | 34 | 30 | 26 |  | 26 | 23 | 20 |  | 18 | 16 | 15 |
| 7   | 55  | 43  | 36  | 31  |  | 49 | 39 | 33 | 28 |  | 31 | 26 | 23 |  | 24 | 20 | 18 |  | 16 | 14 | 13 |
| 8   | 51  | 39  | 32  | 27  |  | 46 | 36 | 29 | 25 |  | 28 | 24 | 20 |  | 21 | 18 | 16 |  | 15 | 13 | 12 |
| 9   | 47  | 36  | 29  | 24  |  | 42 | 32 | 26 | 22 |  | 26 | 21 | 18 |  | 20 | 17 | 14 |  | 14 | 12 | 11 |
| 10  | 44  | 33  | 26  | 21  |  | 40 | 30 | 24 | 20 |  | 24 | 19 | 16 |  | 18 | 15 | 13 |  | 13 | 11 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1457 | 1457 | 1457 |
| 5°  | 1459 | 1433 | 1443 |
| 10° | 1444 | 1405 | 1396 |
| 15° | 1425 | 1359 | 1323 |
| 20° | 1398 | 1295 | 1234 |
| 25° | 1371 | 1223 | 1148 |
| 30° | 1335 | 1149 | 1039 |
| 35° | 1300 | 1070 | 943  |
| 40° | 1264 | 988  | 833  |
| 45° | 1222 | 897  | 733  |
| 50° | 1178 | 806  | 636  |
| 55° | 1133 | 708  | 543  |
| 60° | 1081 | 605  | 447  |
| 65° | 1021 | 501  | 402  |
| 70° | 948  | 404  | 364  |
| 75° | 856  | 356  | 331  |
| 80° | 723  | 299  | 287  |
| 85° | 504  | 199  | 215  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3007 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 171.8   | 1.2       |
| 10°-20°   | 471.7   | 3.2       |
| 20°-30°   | 662.3   | 4.5       |
| 30°-40°   | 721.9   | 5.0       |
| 40°-50°   | 663.5   | 4.6       |
| 50°-60°   | 521.1   | 3.6       |
| 60°-70°   | 339.2   | 2.3       |
| 70°-80°   | 174.6   | 1.2       |
| 80°-90°   | 55.5    | 0.4       |
| 90°-100°  | 238.7   | 1.6       |
| 100°-110° | 758.6   | 5.2       |
| 110°-120° | 1298.1  | 8.9       |
| 120°-130° | 1707.2  | 11.7      |
| 130°-140° | 1916.3  | 13.2      |
| 140°-150° | 1879.1  | 12.9      |
| 150°-160° | 1576.3  | 10.8      |
| 160°-170° | 1045.4  | 7.2       |
| 170°-180° | 365.4   | 2.5       |
| 0°-30°    | 1305.8  | 9.0       |
| 0°-40°    | 2027.7  | 13.9      |
| 0°-60°    | 3212.2  | 22.1      |
| 0°-90°    | 3781.5  | 26.0      |
| 90°-120°  | 2295.4  | 15.8      |
| 90°-150°  | 7798.0  | 53.5      |
| 90°-180°  | 10785.0 | 74.0      |
| 0°-180°   | 14566.7 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1833 | 1833  | 1833 | 1833  | 1833 |      |
| 5°   | 1833 | 1825  | 1804 | 1818  | 1814 | 174  |
| 15°  | 1744 | 1726  | 1669 | 1638  | 1621 | 491  |
| 25°  | 1583 | 1530  | 1420 | 1352  | 1327 | 728  |
| 35°  | 1364 | 1279  | 1133 | 1029  | 992  | 854  |
| 45°  | 1115 | 1004  | 830  | 712   | 672  | 861  |
| 55°  | 848  | 718   | 539  | 440   | 408  | 758  |
| 65°  | 572  | 438   | 289  | 232   | 227  | 568  |
| 75°  | 305  | 189   | 133  | 121   | 120  | 323  |
| 85°  | 71   | 36    | 32   | 32    | 32   | 82   |
| 90°  | 3    | 42    | 114  | 107   | 110  | 14   |
| 95°  | 170  | 202   | 208  | 208   | 202  | 189  |
| 105° | 700  | 710   | 716  | 722   | 722  | 739  |
| 115° | 1303 | 1321  | 1316 | 1312  | 1303 | 1288 |
| 125° | 1895 | 1924  | 1914 | 1904  | 1900 | 1693 |
| 135° | 2451 | 2487  | 2494 | 2490  | 2481 | 1894 |
| 145° | 2975 | 2998  | 3017 | 3021  | 3008 | 1859 |
| 155° | 3402 | 3411  | 3422 | 3438  | 3428 | 1566 |
| 165° | 3701 | 3698  | 3698 | 3721  | 3704 | 1044 |
| 175° | 3851 | 3842  | 3835 | 3858  | 3838 | 366  |
| 180° | 3858 | 3858  | 3858 | 3858  | 3858 |      |

TEST NUMBER: P912756

CATALOG NUMBER: DFN2DIP-TR4F0-040D110US850-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.4 | 1833.4 | 1833.4 | 1833.4 | 1833.4 |
| 2.5°   | 1841.7 | 1833.4 | 1815.1 | 1831.8 | 1828.4 |
| 5°     | 1833.4 | 1825.1 | 1803.5 | 1818.4 | 1813.5 |
| 7.5°   | 1818.4 | 1808.6 | 1785.4 | 1791.8 | 1783.6 |
| 10°    | 1798.6 | 1786.9 | 1753.8 | 1748.7 | 1738.9 |
| 12.5°  | 1773.7 | 1758.8 | 1713.8 | 1704.0 | 1685.7 |
| 15°    | 1743.8 | 1725.5 | 1669.2 | 1637.7 | 1621.1 |
| 17.5°  | 1709.0 | 1682.4 | 1612.6 | 1576.2 | 1549.6 |
| 20°    | 1669.2 | 1635.9 | 1552.9 | 1511.6 | 1475.0 |
| 22.5°  | 1626.0 | 1587.9 | 1491.5 | 1435.2 | 1410.4 |
| 25°    | 1582.9 | 1529.8 | 1420.2 | 1352.3 | 1327.3 |
| 27.5°  | 1531.5 | 1475.0 | 1353.9 | 1275.9 | 1237.6 |
| 30°    | 1476.7 | 1413.5 | 1280.8 | 1196.3 | 1151.5 |
| 32.5°  | 1423.6 | 1347.2 | 1211.2 | 1111.7 | 1070.1 |
| 35°    | 1364.0 | 1279.2 | 1133.3 | 1028.7 | 992.1  |
| 37.5°  | 1305.8 | 1214.5 | 1060.2 | 945.6  | 904.3  |
| 40°    | 1244.4 | 1144.9 | 983.9  | 866.1  | 823.0  |
| 42.5°  | 1181.3 | 1075.2 | 907.6  | 784.7  | 743.4  |
| 45°    | 1115.0 | 1003.8 | 829.6  | 711.8  | 671.9  |
| 47.5°  | 1052.0 | 934.2  | 755.0  | 637.1  | 600.6  |
| 50°    | 982.2  | 864.5  | 681.9  | 567.4  | 532.7  |
| 52.5°  | 914.1  | 789.7  | 612.3  | 502.7  | 471.2  |
| 55°    | 847.8  | 718.4  | 539.2  | 439.7  | 408.2  |
| 57.5°  | 779.8  | 647.1  | 474.5  | 381.6  | 355.1  |
| 60°    | 710.1  | 577.3  | 406.4  | 321.9  | 295.4  |
| 62.5°  | 642.2  | 509.5  | 348.3  | 268.8  | 255.6  |
| 65°    | 572.5  | 437.9  | 288.7  | 232.3  | 227.2  |
| 67.5°  | 506.1  | 371.6  | 232.3  | 204.1  | 199.1  |
| 70°    | 436.4  | 307.0  | 192.4  | 175.9  | 169.1  |
| 72.5°  | 370.1  | 247.2  | 160.9  | 147.7  | 144.4  |
| 75°    | 305.2  | 189.1  | 132.7  | 121.1  | 119.6  |
| 77.5°  | 240.7  | 134.3  | 104.6  | 97.9   | 94.5   |
| 80°    | 180.8  | 96.3   | 79.5   | 73.1   | 73.1   |
| 82.5°  | 126.1  | 64.8   | 54.8   | 51.3   | 51.3   |
| 85°    | 71.3   | 36.5   | 31.5   | 31.5   | 31.5   |
| 87.5°  | 26.6   | 13.2   | 13.2   | 11.6   | 11.6   |
| 90°    | 3.4    | 41.9   | 114.0  | 107.0  | 110.5  |
| 92.5°  | 72.1   | 97.7   | 101.1  | 104.7  | 104.7  |
| 95°    | 169.8  | 202.4  | 208.2  | 208.2  | 202.4  |
| 97.5°  | 282.7  | 312.8  | 325.7  | 325.7  | 325.7  |
| 100°   | 412.9  | 439.6  | 448.9  | 448.9  | 445.5  |
| 102.5° | 550.2  | 569.9  | 582.8  | 586.2  | 582.8  |
| 105°   | 700.2  | 709.5  | 716.5  | 722.3  | 722.3  |
| 107.5° | 849.1  | 863.0  | 863.0  | 865.4  | 849.1  |
| 110°   | 993.3  | 1012.0 | 1012.0 | 1012.0 | 1002.6 |

TEST NUMBER: P912756

CATALOG NUMBER: DFN2DIP-TR4F0-040D110US850-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1149.1 | 1168.9 | 1165.4 | 1156.1 | 1149.1 |
| 115°   | 1302.7 | 1321.3 | 1315.5 | 1312.1 | 1302.7 |
| 117.5° | 1455.1 | 1480.6 | 1464.3 | 1455.1 | 1445.8 |
| 120°   | 1608.6 | 1634.2 | 1608.6 | 1608.6 | 1598.2 |
| 122.5° | 1748.2 | 1780.7 | 1764.4 | 1755.1 | 1748.2 |
| 125°   | 1894.7 | 1923.8 | 1914.5 | 1904.0 | 1900.5 |
| 127.5° | 2037.8 | 2073.8 | 2061.1 | 2047.1 | 2037.8 |
| 130°   | 2171.5 | 2213.5 | 2207.6 | 2200.6 | 2187.8 |
| 132.5° | 2321.6 | 2354.2 | 2356.5 | 2340.2 | 2330.9 |
| 135°   | 2450.7 | 2486.7 | 2493.7 | 2490.3 | 2480.9 |
| 137.5° | 2594.9 | 2624.0 | 2629.8 | 2627.4 | 2613.6 |
| 140°   | 2721.7 | 2750.8 | 2767.1 | 2767.1 | 2754.3 |
| 142.5° | 2852.0 | 2881.1 | 2890.4 | 2893.8 | 2881.1 |
| 145°   | 2975.2 | 2998.5 | 3017.1 | 3020.6 | 3007.8 |
| 147.5° | 3085.8 | 3114.8 | 3128.8 | 3134.6 | 3121.8 |
| 150°   | 3199.8 | 3219.5 | 3232.3 | 3242.8 | 3232.3 |
| 152.5° | 3300.9 | 3320.7 | 3337.0 | 3349.8 | 3337.0 |
| 155°   | 3402.2 | 3411.4 | 3421.9 | 3438.2 | 3427.7 |
| 157.5° | 3489.4 | 3496.3 | 3502.1 | 3525.4 | 3509.1 |
| 160°   | 3567.3 | 3574.3 | 3577.7 | 3597.6 | 3583.6 |
| 162.5° | 3639.4 | 3639.4 | 3643.0 | 3665.0 | 3648.7 |
| 165°   | 3701.1 | 3697.5 | 3697.5 | 3720.8 | 3704.5 |
| 167.5° | 3756.8 | 3746.4 | 3746.4 | 3769.7 | 3753.4 |
| 170°   | 3798.8 | 3789.5 | 3786.0 | 3809.2 | 3789.5 |
| 172.5° | 3827.8 | 3818.5 | 3815.1 | 3838.4 | 3818.5 |
| 175°   | 3851.1 | 3841.8 | 3834.8 | 3858.1 | 3838.4 |
| 177.5° | 3863.9 | 3854.6 | 3847.6 | 3867.4 | 3847.6 |
| 180°   | 3858.1 | 3858.1 | 3858.1 | 3858.1 | 3858.1 |

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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 | 5.62             | 6.29 | 6.77  | 7.42  | 9.00  | 1.60           | 2.26 | 2.74 | 3.39 | 4.97 |
|                 | 3H   | 7.29             | 7.88 | 8.44  | 9.02  | 10.62 | 2.77           | 3.37 | 3.93 | 4.51 | 6.10 |
|                 | 4H   | 7.89             | 8.45 | 9.05  | 9.59  | 11.19 | 3.22           | 3.78 | 4.38 | 4.92 | 6.52 |
|                 | 6H   | 8.30             | 8.82 | 9.47  | 9.96  | 11.57 | 3.53           | 4.05 | 4.70 | 5.19 | 6.80 |
|                 | 8H   | 8.42             | 8.92 | 9.59  | 10.07 | 11.68 | 3.62           | 4.11 | 4.79 | 5.27 | 6.87 |
|                 | 12H  | 8.48             | 8.95 | 9.65  | 10.10 | 11.72 | 3.66           | 4.12 | 4.83 | 5.27 | 6.90 |
| 4H              | 2H   | 5.62             | 6.19 | 6.79  | 7.33  | 8.93  | 2.17           | 2.74 | 3.34 | 3.88 | 5.48 |
|                 | 3H   | 7.44             | 7.91 | 8.61  | 9.07  | 10.68 | 3.51           | 3.98 | 4.68 | 5.14 | 6.75 |
|                 | 4H   | 8.12             | 8.55 | 9.30  | 9.71  | 11.34 | 4.05           | 4.48 | 5.22 | 5.64 | 7.27 |
|                 | 6H   | 8.63             | 9.00 | 9.81  | 10.17 | 11.79 | 4.46           | 4.83 | 5.64 | 6.01 | 7.63 |
|                 | 8H   | 8.80             | 9.15 | 9.98  | 10.31 | 11.95 | 4.59           | 4.93 | 5.77 | 6.10 | 7.74 |
|                 | 12H  | 8.89             | 9.20 | 10.08 | 10.38 | 12.02 | 4.65           | 4.96 | 5.84 | 6.14 | 7.78 |
| 8H              | 4H   | 8.08             | 8.42 | 9.25  | 9.59  | 11.23 | 4.32           | 4.66 | 5.50 | 5.83 | 7.47 |
|                 | 6H   | 8.64             | 8.92 | 9.83  | 10.13 | 11.76 | 4.83           | 5.12 | 6.03 | 6.33 | 7.96 |
|                 | 8H   | 8.85             | 9.10 | 10.06 | 10.29 | 11.94 | 5.02           | 5.27 | 6.22 | 6.46 | 8.11 |
|                 | 12H  | 8.98             | 9.20 | 10.19 | 10.39 | 12.07 | 5.13           | 5.35 | 6.34 | 6.54 | 8.22 |
| 12H             | 4H   | 8.02             | 8.33 | 9.21  | 9.51  | 11.15 | 4.32           | 4.63 | 5.51 | 5.81 | 7.45 |
|                 | 6H   | 8.61             | 8.86 | 9.81  | 10.05 | 11.70 | 4.88           | 5.13 | 6.08 | 6.32 | 7.97 |
|                 | 8H   | 8.83             | 9.04 | 10.03 | 10.23 | 11.91 | 5.08           | 5.30 | 6.29 | 6.49 | 8.17 |

END OF REPORT