

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: P910064

Luminaire Tested: DFN2DIP-TR4F0-050D110US840-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P910064  
REPORT IS A COMBINATION OF REPORTS P900498 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-050D110US840-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

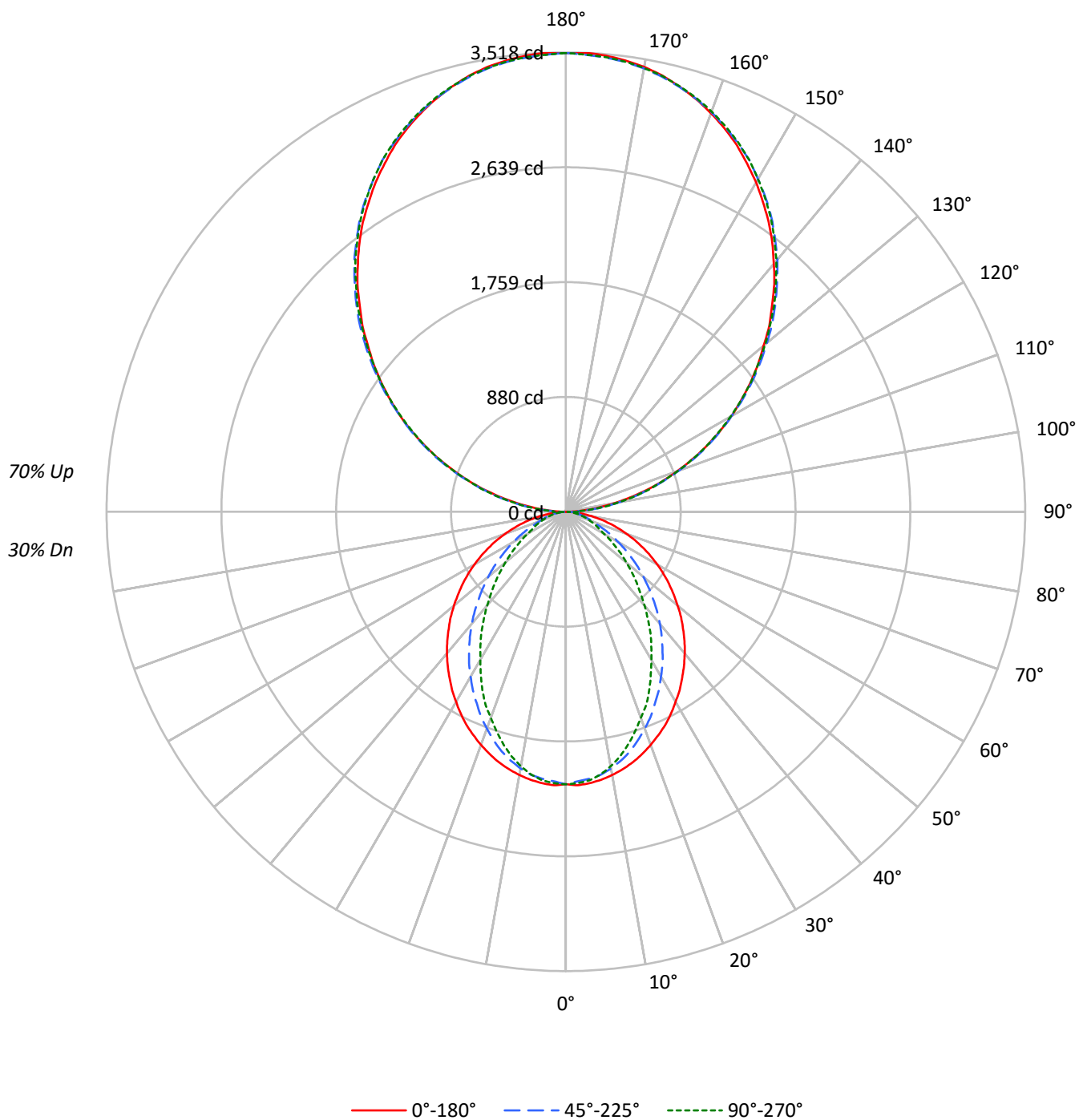
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 14123.0 lumens  
Efficiency: N/A  
Efficacy: 111.5 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): 126.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.996  
Total Harmonic Distortion (THDi): 0.064  
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: P910064

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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   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 55 | 55 | 55 | 38 | 38 | 38 |
| 1   | 94  | 90  | 86  | 83  | 84 | 81 | 78 | 75 | 64 | 62 | 60 | 48 | 47 | 46 | 34 | 33 | 33 |
| 2   | 86  | 79  | 73  | 68  | 77 | 71 | 66 | 62 | 56 | 53 | 50 | 43 | 41 | 39 | 30 | 29 | 28 |
| 3   | 78  | 69  | 62  | 57  | 70 | 62 | 57 | 52 | 50 | 46 | 42 | 38 | 35 | 33 | 27 | 26 | 24 |
| 4   | 72  | 61  | 54  | 48  | 64 | 55 | 49 | 44 | 44 | 40 | 36 | 34 | 31 | 29 | 24 | 23 | 21 |
| 5   | 66  | 55  | 47  | 41  | 59 | 50 | 43 | 38 | 40 | 35 | 31 | 31 | 27 | 25 | 22 | 20 | 18 |
| 6   | 60  | 49  | 41  | 36  | 54 | 44 | 38 | 33 | 36 | 31 | 27 | 28 | 24 | 22 | 20 | 18 | 16 |
| 7   | 56  | 44  | 37  | 31  | 50 | 40 | 34 | 29 | 32 | 28 | 24 | 25 | 22 | 19 | 18 | 16 | 15 |
| 8   | 52  | 40  | 33  | 28  | 47 | 36 | 30 | 26 | 30 | 25 | 21 | 23 | 20 | 17 | 17 | 15 | 13 |
| 9   | 48  | 37  | 29  | 25  | 43 | 33 | 27 | 23 | 27 | 22 | 19 | 21 | 18 | 16 | 16 | 14 | 12 |
| 10  | 45  | 33  | 27  | 22  | 40 | 31 | 24 | 20 | 25 | 20 | 17 | 20 | 16 | 14 | 15 | 12 | 11 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1658 | 1658 | 1658 |
| 5°  | 1661 | 1632 | 1642 |
| 10° | 1644 | 1600 | 1588 |
| 15° | 1622 | 1547 | 1506 |
| 20° | 1592 | 1474 | 1404 |
| 25° | 1561 | 1392 | 1307 |
| 30° | 1520 | 1308 | 1182 |
| 35° | 1479 | 1218 | 1073 |
| 40° | 1438 | 1125 | 948  |
| 45° | 1391 | 1022 | 835  |
| 50° | 1341 | 917  | 724  |
| 55° | 1290 | 806  | 618  |
| 60° | 1230 | 689  | 508  |
| 65° | 1162 | 571  | 458  |
| 70° | 1079 | 460  | 414  |
| 75° | 975  | 406  | 376  |
| 80° | 823  | 340  | 326  |
| 85° | 574  | 227  | 245  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2738 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 195.6   | 1.4       |
| 10°-20°   | 536.9   | 3.8       |
| 20°-30°   | 753.8   | 5.3       |
| 30°-40°   | 821.7   | 5.8       |
| 40°-50°   | 755.2   | 5.3       |
| 50°-60°   | 593.1   | 4.2       |
| 60°-70°   | 386.1   | 2.7       |
| 70°-80°   | 198.7   | 1.4       |
| 80°-90°   | 60.7    | 0.4       |
| 90°-100°  | 217.4   | 1.5       |
| 100°-110° | 690.8   | 4.9       |
| 110°-120° | 1182.1  | 8.4       |
| 120°-130° | 1554.6  | 11.0      |
| 130°-140° | 1745.0  | 12.4      |
| 140°-150° | 1711.2  | 12.1      |
| 150°-160° | 1435.4  | 10.2      |
| 160°-170° | 951.9   | 6.7       |
| 170°-180° | 332.7   | 2.4       |
| 0°-30°    | 1486.3  | 10.5      |
| 0°-40°    | 2308.0  | 16.3      |
| 0°-60°    | 3656.4  | 25.9      |
| 0°-90°    | 4301.9  | 30.5      |
| 90°-120°  | 2090.2  | 14.8      |
| 90°-150°  | 7101.0  | 50.3      |
| 90°-180°  | 9821.0  | 69.5      |
| 0°-180°   | 14123.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2087 | 2087  | 2087 | 2087  | 2087 |      |
| 5°   | 2087 | 2078  | 2053 | 2070  | 2064 | 198  |
| 15°  | 1985 | 1964  | 1900 | 1864  | 1845 | 559  |
| 25°  | 1802 | 1741  | 1617 | 1539  | 1511 | 829  |
| 35°  | 1552 | 1456  | 1290 | 1171  | 1129 | 972  |
| 45°  | 1269 | 1143  | 944  | 810   | 765  | 980  |
| 55°  | 965  | 818   | 614  | 500   | 465  | 862  |
| 65°  | 652  | 499   | 329  | 264   | 259  | 646  |
| 75°  | 348  | 215   | 151  | 138   | 136  | 368  |
| 85°  | 81   | 42    | 36   | 36    | 36   | 93   |
| 90°  | 3    | 38    | 104  | 98    | 101  | 14   |
| 95°  | 155  | 184   | 190  | 190   | 184  | 172  |
| 105° | 638  | 646   | 652  | 658   | 658  | 673  |
| 115° | 1186 | 1203  | 1198 | 1195  | 1186 | 1173 |
| 125° | 1725 | 1752  | 1743 | 1734  | 1731 | 1542 |
| 135° | 2232 | 2264  | 2271 | 2268  | 2259 | 1725 |
| 145° | 2709 | 2730  | 2747 | 2751  | 2739 | 1693 |
| 155° | 3098 | 3106  | 3116 | 3131  | 3121 | 1426 |
| 165° | 3370 | 3367  | 3367 | 3388  | 3373 | 951  |
| 175° | 3507 | 3498  | 3492 | 3513  | 3495 | 333  |
| 180° | 3513 | 3513  | 3513 | 3513  | 3513 |      |

TEST NUMBER: P910064

CATALOG NUMBER: DFN2DIP-TR4F0-050D110US840-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2086.9 | 2086.9 | 2086.9 | 2086.9 | 2086.9 |
| 2.5°   | 2096.3 | 2086.9 | 2066.1 | 2085.1 | 2081.2 |
| 5°     | 2086.9 | 2077.5 | 2052.9 | 2069.8 | 2064.3 |
| 7.5°   | 2069.8 | 2058.6 | 2032.2 | 2039.6 | 2030.1 |
| 10°    | 2047.2 | 2034.0 | 1996.3 | 1990.5 | 1979.2 |
| 12.5°  | 2018.9 | 2002.0 | 1950.9 | 1939.6 | 1918.7 |
| 15°    | 1984.9 | 1964.1 | 1900.0 | 1864.1 | 1845.2 |
| 17.5°  | 1945.2 | 1915.0 | 1835.6 | 1794.1 | 1763.8 |
| 20°    | 1900.0 | 1862.1 | 1767.7 | 1720.6 | 1678.9 |
| 22.5°  | 1850.9 | 1807.4 | 1697.8 | 1633.7 | 1605.4 |
| 25°    | 1801.7 | 1741.2 | 1616.6 | 1539.2 | 1510.8 |
| 27.5°  | 1743.2 | 1678.9 | 1541.1 | 1452.3 | 1408.9 |
| 30°    | 1680.9 | 1609.0 | 1457.9 | 1361.7 | 1310.6 |
| 32.5°  | 1620.4 | 1533.5 | 1378.8 | 1265.4 | 1218.1 |
| 35°    | 1552.5 | 1456.1 | 1290.0 | 1170.9 | 1129.3 |
| 37.5°  | 1486.3 | 1382.4 | 1206.9 | 1076.4 | 1029.4 |
| 40°    | 1416.4 | 1303.2 | 1119.8 | 985.8  | 936.8  |
| 42.5°  | 1344.7 | 1223.9 | 1033.1 | 893.2  | 846.2  |
| 45°    | 1269.2 | 1142.6 | 944.3  | 810.1  | 764.8  |
| 47.5°  | 1197.4 | 1063.4 | 859.4  | 725.2  | 683.7  |
| 50°    | 1118.1 | 984.0  | 776.3  | 645.8  | 606.3  |
| 52.5°  | 1040.6 | 898.9  | 696.9  | 572.3  | 536.4  |
| 55°    | 965.0  | 817.7  | 613.7  | 500.5  | 464.6  |
| 57.5°  | 887.7  | 736.6  | 540.2  | 434.4  | 404.1  |
| 60°    | 808.3  | 657.2  | 462.6  | 366.5  | 336.2  |
| 62.5°  | 730.9  | 579.9  | 396.6  | 306.0  | 290.9  |
| 65°    | 651.6  | 498.6  | 328.6  | 264.5  | 258.7  |
| 67.5°  | 576.0  | 423.0  | 264.5  | 232.3  | 226.6  |
| 70°    | 496.8  | 349.4  | 219.0  | 200.2  | 192.6  |
| 72.5°  | 421.2  | 281.3  | 183.2  | 168.1  | 164.3  |
| 75°    | 347.5  | 215.2  | 151.1  | 137.8  | 136.0  |
| 77.5°  | 273.9  | 152.9  | 119.1  | 111.4  | 107.6  |
| 80°    | 205.8  | 109.6  | 90.6   | 83.1   | 83.1   |
| 82.5°  | 143.5  | 73.7   | 62.3   | 58.5   | 58.5   |
| 85°    | 81.2   | 41.5   | 35.9   | 35.9   | 35.9   |
| 87.5°  | 30.3   | 15.0   | 15.0   | 13.2   | 13.2   |
| 90°    | 3.1    | 38.2   | 103.8  | 97.5   | 100.6  |
| 92.5°  | 65.6   | 89.0   | 92.1   | 95.3   | 95.3   |
| 95°    | 154.6  | 184.3  | 189.6  | 189.6  | 184.3  |
| 97.5°  | 257.4  | 284.9  | 296.6  | 296.6  | 296.6  |
| 100°   | 376.0  | 400.3  | 408.8  | 408.8  | 405.7  |
| 102.5° | 501.0  | 519.0  | 530.7  | 533.8  | 530.7  |
| 105°   | 637.6  | 646.1  | 652.5  | 657.7  | 657.7  |
| 107.5° | 773.2  | 785.9  | 785.9  | 788.0  | 773.2  |
| 110°   | 904.5  | 921.5  | 921.5  | 921.5  | 913.0  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1046.4 | 1064.4 | 1061.3 | 1052.8 | 1046.4 |
| 115°   | 1186.3 | 1203.2 | 1197.9 | 1194.8 | 1186.3 |
| 117.5° | 1325.0 | 1348.3 | 1333.4 | 1325.0 | 1316.6 |
| 120°   | 1464.8 | 1488.1 | 1464.8 | 1464.8 | 1455.3 |
| 122.5° | 1592.0 | 1621.5 | 1606.7 | 1598.2 | 1592.0 |
| 125°   | 1725.4 | 1751.8 | 1743.3 | 1733.8 | 1730.6 |
| 127.5° | 1855.6 | 1888.4 | 1876.8 | 1864.1 | 1855.6 |
| 130°   | 1977.4 | 2015.6 | 2010.2 | 2003.9 | 1992.3 |
| 132.5° | 2114.1 | 2143.7 | 2145.9 | 2131.0 | 2122.5 |
| 135°   | 2231.6 | 2264.4 | 2270.8 | 2267.7 | 2259.2 |
| 137.5° | 2363.0 | 2389.4 | 2394.7 | 2392.6 | 2380.0 |
| 140°   | 2478.4 | 2504.9 | 2519.7 | 2519.7 | 2508.1 |
| 142.5° | 2597.1 | 2623.5 | 2632.0 | 2635.1 | 2623.5 |
| 145°   | 2709.3 | 2730.5 | 2747.4 | 2750.6 | 2739.0 |
| 147.5° | 2810.0 | 2836.4 | 2849.1 | 2854.4 | 2842.8 |
| 150°   | 2913.8 | 2931.7 | 2943.4 | 2952.9 | 2943.4 |
| 152.5° | 3005.9 | 3023.8 | 3038.7 | 3050.4 | 3038.7 |
| 155°   | 3098.1 | 3106.4 | 3116.0 | 3130.9 | 3121.3 |
| 157.5° | 3177.4 | 3183.8 | 3189.1 | 3210.3 | 3195.4 |
| 160°   | 3248.4 | 3254.8 | 3257.9 | 3276.0 | 3263.3 |
| 162.5° | 3314.1 | 3314.1 | 3317.3 | 3337.4 | 3322.6 |
| 165°   | 3370.2 | 3367.0 | 3367.0 | 3388.2 | 3373.4 |
| 167.5° | 3421.0 | 3411.5 | 3411.5 | 3432.7 | 3417.9 |
| 170°   | 3459.2 | 3450.7 | 3447.6 | 3468.7 | 3450.7 |
| 172.5° | 3485.7 | 3477.2 | 3474.0 | 3495.2 | 3477.2 |
| 175°   | 3506.9 | 3498.4 | 3492.0 | 3513.2 | 3495.2 |
| 177.5° | 3518.5 | 3510.0 | 3503.6 | 3521.7 | 3503.6 |
| 180°   | 3513.2 | 3513.2 | 3513.2 | 3513.2 | 3513.2 |

TEST NUMBER: P910064

CATALOG NUMBER: DFN2DIP-TR4F0-050D110US840-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 | 6.73             | 7.42  | 7.84  | 8.52  | 10.05 | 2.70           | 3.39 | 3.81 | 4.50 | 6.02 |
|                 | 3H   | 8.39             | 9.01  | 9.51  | 10.13 | 11.67 | 3.88           | 4.50 | 5.00 | 5.61 | 7.15 |
|                 | 4H   | 8.99             | 9.58  | 10.13 | 10.70 | 12.25 | 4.32           | 4.91 | 5.45 | 6.02 | 7.57 |
|                 | 6H   | 9.41             | 9.95  | 10.55 | 11.07 | 12.63 | 4.64           | 5.18 | 5.78 | 6.29 | 7.86 |
|                 | 8H   | 9.53             | 10.05 | 10.67 | 11.18 | 12.73 | 4.72           | 5.24 | 5.87 | 6.37 | 7.92 |
|                 | 12H  | 9.59             | 10.08 | 10.74 | 11.20 | 12.78 | 4.76           | 5.25 | 5.91 | 6.38 | 7.95 |
| 4H              | 2H   | 6.73             | 7.31  | 7.87  | 8.43  | 9.98  | 3.28           | 3.87 | 4.42 | 4.98 | 6.53 |
|                 | 3H   | 8.54             | 9.03  | 9.69  | 10.17 | 11.73 | 4.62           | 5.11 | 5.76 | 6.25 | 7.81 |
|                 | 4H   | 9.23             | 9.68  | 10.38 | 10.81 | 12.39 | 5.16           | 5.61 | 6.31 | 6.74 | 8.32 |
|                 | 6H   | 9.74             | 10.12 | 10.89 | 11.27 | 12.85 | 5.57           | 5.96 | 6.72 | 7.11 | 8.68 |
|                 | 8H   | 9.91             | 10.27 | 11.06 | 11.41 | 13.00 | 5.70           | 6.06 | 6.85 | 7.20 | 8.79 |
|                 | 12H  | 10.00            | 10.32 | 11.17 | 11.48 | 13.07 | 5.76           | 6.08 | 6.93 | 7.24 | 8.83 |
| 8H              | 4H   | 9.19             | 9.55  | 10.34 | 10.69 | 12.28 | 5.43           | 5.79 | 6.58 | 6.93 | 8.52 |
|                 | 6H   | 9.75             | 10.04 | 10.92 | 11.23 | 12.82 | 5.94           | 6.24 | 7.12 | 7.43 | 9.01 |
|                 | 8H   | 9.96             | 10.22 | 11.14 | 11.39 | 12.99 | 6.13           | 6.39 | 7.31 | 7.56 | 9.16 |
|                 | 12H  | 10.10            | 10.32 | 11.28 | 11.49 | 13.13 | 6.25           | 6.48 | 7.43 | 7.64 | 9.28 |
| 12H             | 4H   | 9.13             | 9.46  | 10.30 | 10.61 | 12.21 | 5.43           | 5.75 | 6.60 | 6.91 | 8.50 |
|                 | 6H   | 9.72             | 9.98  | 10.90 | 11.15 | 12.75 | 5.99           | 6.25 | 7.17 | 7.42 | 9.02 |
|                 | 8H   | 9.94             | 10.17 | 11.12 | 11.33 | 12.97 | 6.20           | 6.42 | 7.38 | 7.59 | 9.23 |

END OF REPORT