

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: P922122

Luminaire Tested: DFN2DIP-PN3F0-050D080US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922122  
REPORT IS A COMBINATION OF REPORTS P899586 AND P896399  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-050D080US940-RLLFLL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

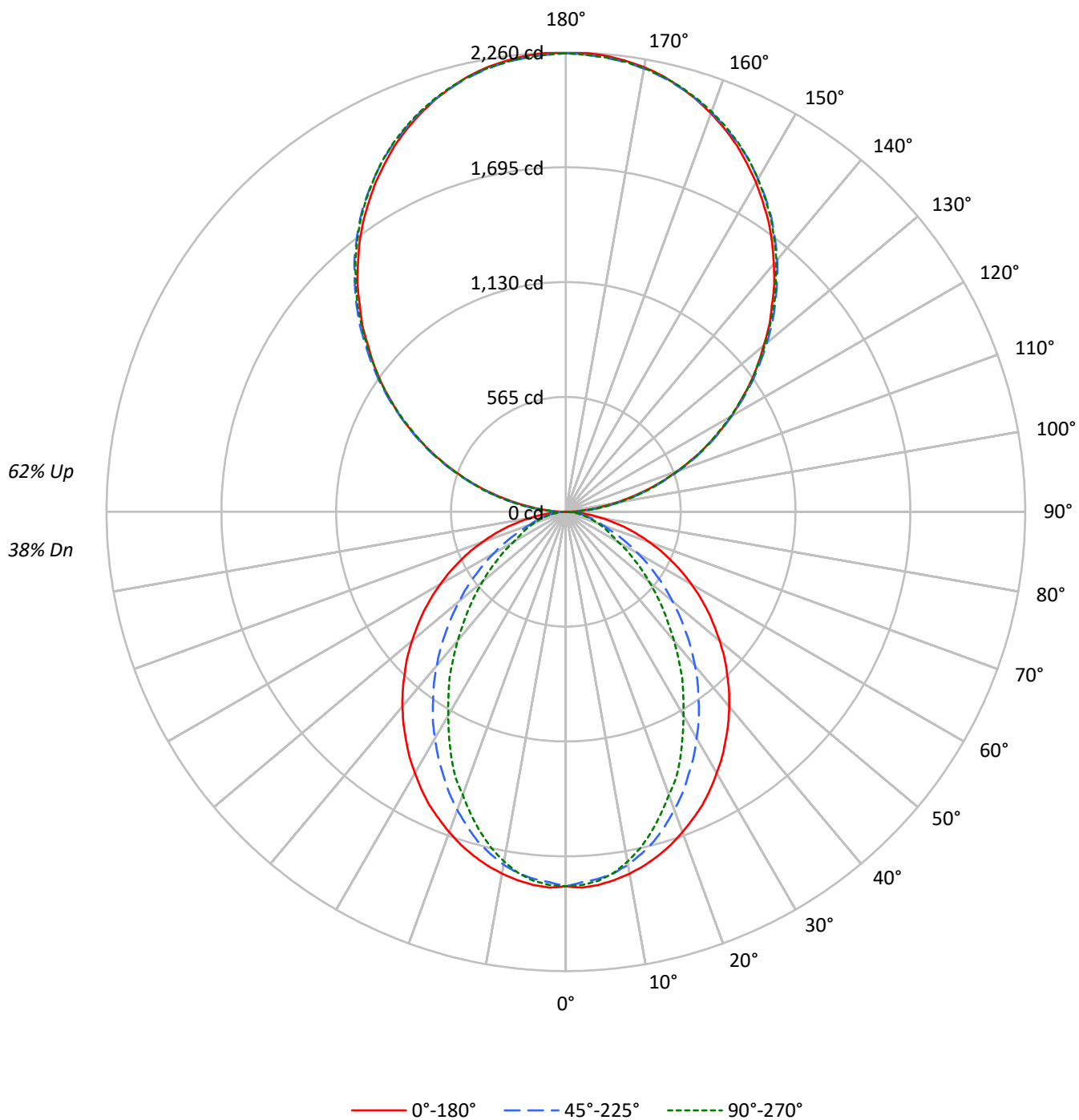
Lumens per Lamp: N/A  
Luminaire Lumens: 10103.1 lumens  
Efficiency: N/A  
Efficacy: 95.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 106.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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: P922122

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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   | 104 | 104 | 104 | 104 | 95 | 95 | 95 | 95 | 76 | 76 | 76 | 60 | 60 | 60 | 45 | 45 | 45 |
| 1   | 95  | 91  | 88  | 84  | 86 | 83 | 80 | 77 | 67 | 65 | 63 | 53 | 52 | 50 | 40 | 39 | 38 |
| 2   | 87  | 80  | 74  | 69  | 79 | 73 | 68 | 64 | 59 | 56 | 53 | 47 | 45 | 43 | 36 | 34 | 33 |
| 3   | 80  | 71  | 64  | 58  | 72 | 64 | 58 | 54 | 53 | 48 | 45 | 42 | 39 | 37 | 32 | 30 | 28 |
| 4   | 73  | 63  | 55  | 49  | 66 | 57 | 51 | 46 | 47 | 42 | 39 | 38 | 34 | 32 | 29 | 27 | 25 |
| 5   | 67  | 56  | 48  | 42  | 61 | 51 | 44 | 39 | 42 | 37 | 33 | 34 | 30 | 28 | 26 | 24 | 22 |
| 6   | 62  | 50  | 42  | 37  | 56 | 46 | 39 | 34 | 38 | 33 | 29 | 31 | 27 | 24 | 24 | 21 | 19 |
| 7   | 57  | 45  | 38  | 32  | 52 | 42 | 35 | 30 | 35 | 30 | 26 | 28 | 24 | 22 | 22 | 19 | 17 |
| 8   | 53  | 41  | 34  | 29  | 48 | 38 | 31 | 27 | 32 | 27 | 23 | 26 | 22 | 19 | 20 | 18 | 16 |
| 9   | 49  | 38  | 30  | 26  | 45 | 35 | 28 | 24 | 29 | 24 | 21 | 24 | 20 | 17 | 19 | 16 | 14 |
| 10  | 46  | 35  | 28  | 23  | 42 | 32 | 26 | 21 | 27 | 22 | 19 | 22 | 18 | 16 | 17 | 15 | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2154 | 2154 | 2154 |
| 5°  | 2156 | 2118 | 2133 |
| 10° | 2134 | 2075 | 2062 |
| 15° | 2103 | 2005 | 1954 |
| 20° | 2063 | 1909 | 1822 |
| 25° | 2022 | 1802 | 1694 |
| 30° | 1967 | 1692 | 1532 |
| 35° | 1913 | 1574 | 1390 |
| 40° | 1858 | 1452 | 1227 |
| 45° | 1795 | 1317 | 1080 |
| 50° | 1729 | 1181 | 936  |
| 55° | 1660 | 1035 | 798  |
| 60° | 1581 | 884  | 656  |
| 65° | 1489 | 730  | 589  |
| 70° | 1377 | 586  | 532  |
| 75° | 1237 | 513  | 482  |
| 80° | 1035 | 426  | 415  |
| 85° | 703  | 277  | 307  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2235 cd/sqm

TEST NUMBER: P922122

CATALOG NUMBER: DFN2DIP-PN3F0-050D080US940-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 172.7   | 1.7       |
| 10°-20°   | 474.1   | 4.7       |
| 20°-30°   | 665.6   | 6.6       |
| 30°-40°   | 725.6   | 7.2       |
| 40°-50°   | 666.9   | 6.6       |
| 50°-60°   | 523.7   | 5.2       |
| 60°-70°   | 340.9   | 3.4       |
| 70°-80°   | 175.5   | 1.7       |
| 80°-90°   | 51.2    | 0.5       |
| 90°-100°  | 139.6   | 1.4       |
| 100°-110° | 443.6   | 4.4       |
| 110°-120° | 759.1   | 7.5       |
| 120°-130° | 998.3   | 9.9       |
| 130°-140° | 1120.6  | 11.1      |
| 140°-150° | 1098.9  | 10.9      |
| 150°-160° | 921.8   | 9.1       |
| 160°-170° | 611.3   | 6.1       |
| 170°-180° | 213.7   | 2.1       |
| 0°-30°    | 1312.4  | 13.0      |
| 0°-40°    | 2038.0  | 20.2      |
| 0°-60°    | 3228.6  | 32.0      |
| 0°-90°    | 3796.2  | 37.6      |
| 90°-120°  | 1342.3  | 13.3      |
| 90°-150°  | 4560.1  | 45.1      |
| 90°-180°  | 6307.0  | 62.4      |
| 0°-180°   | 10103.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1843 | 1843  | 1843 | 1843  | 1843 |      |
| 5°   | 1843 | 1834  | 1813 | 1828  | 1823 | 175  |
| 15°  | 1753 | 1734  | 1678 | 1646  | 1629 | 494  |
| 25°  | 1591 | 1538  | 1427 | 1359  | 1334 | 732  |
| 35°  | 1371 | 1286  | 1139 | 1034  | 997  | 858  |
| 45°  | 1121 | 1009  | 834  | 715   | 675  | 865  |
| 55°  | 852  | 722   | 542  | 442   | 410  | 761  |
| 65°  | 575  | 440   | 290  | 234   | 228  | 570  |
| 75°  | 307  | 190   | 133  | 122   | 120  | 324  |
| 85°  | 72   | 37    | 32   | 32    | 32   | 82   |
| 90°  | 2    | 24    | 67   | 63    | 65   | 10   |
| 95°  | 99   | 118   | 122  | 122   | 118  | 111  |
| 105° | 410  | 415   | 419  | 422   | 422  | 432  |
| 115° | 762  | 773   | 769  | 767   | 762  | 753  |
| 125° | 1108 | 1125  | 1120 | 1113  | 1111 | 990  |
| 135° | 1433 | 1454  | 1458 | 1456  | 1451 | 1108 |
| 145° | 1740 | 1754  | 1764 | 1766  | 1759 | 1087 |
| 155° | 1990 | 1995  | 2001 | 2010  | 2004 | 916  |
| 165° | 2164 | 2162  | 2162 | 2176  | 2166 | 611  |
| 175° | 2252 | 2247  | 2242 | 2256  | 2244 | 214  |
| 180° | 2256 | 2256  | 2256 | 2256  | 2256 |      |

TEST NUMBER: P922122

CATALOG NUMBER: DFN2DIP-PN3F0-050D080US940-RLFL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1842.7 | 1842.7 | 1842.7 | 1842.7 | 1842.7 |
| 2.5°   | 1851.0 | 1842.7 | 1824.4 | 1841.1 | 1837.7 |
| 5°     | 1842.7 | 1834.4 | 1812.7 | 1827.6 | 1822.7 |
| 7.5°   | 1827.6 | 1817.8 | 1794.4 | 1801.0 | 1792.6 |
| 10°    | 1807.7 | 1796.0 | 1762.7 | 1757.7 | 1747.7 |
| 12.5°  | 1782.7 | 1767.7 | 1722.6 | 1712.7 | 1694.2 |
| 15°    | 1752.7 | 1734.3 | 1677.7 | 1646.0 | 1629.3 |
| 17.5°  | 1717.6 | 1691.0 | 1620.9 | 1584.2 | 1557.5 |
| 20°    | 1677.7 | 1644.2 | 1560.8 | 1519.3 | 1482.5 |
| 22.5°  | 1634.3 | 1595.9 | 1499.1 | 1442.5 | 1417.6 |
| 25°    | 1590.9 | 1537.5 | 1427.4 | 1359.1 | 1334.0 |
| 27.5°  | 1539.3 | 1482.5 | 1360.8 | 1282.4 | 1244.0 |
| 30°    | 1484.3 | 1420.8 | 1287.4 | 1202.4 | 1157.3 |
| 32.5°  | 1430.8 | 1354.1 | 1217.5 | 1117.3 | 1075.6 |
| 35°    | 1370.8 | 1285.8 | 1139.1 | 1033.9 | 997.2  |
| 37.5°  | 1312.4 | 1220.7 | 1065.7 | 950.5  | 908.9  |
| 40°    | 1250.7 | 1150.8 | 988.8  | 870.5  | 827.2  |
| 42.5°  | 1187.4 | 1080.7 | 912.2  | 788.7  | 747.2  |
| 45°    | 1120.7 | 1008.9 | 833.8  | 715.3  | 675.3  |
| 47.5°  | 1057.3 | 939.0  | 758.8  | 640.3  | 603.7  |
| 50°    | 987.3  | 868.9  | 685.5  | 570.2  | 535.4  |
| 52.5°  | 918.8  | 793.7  | 615.4  | 505.3  | 473.7  |
| 55°    | 852.1  | 722.0  | 541.9  | 441.9  | 410.3  |
| 57.5°  | 783.8  | 650.4  | 477.0  | 383.6  | 356.9  |
| 60°    | 713.7  | 580.3  | 408.5  | 323.6  | 296.9  |
| 62.5°  | 645.4  | 512.0  | 350.2  | 270.2  | 256.9  |
| 65°    | 575.3  | 440.2  | 290.2  | 233.5  | 228.5  |
| 67.5°  | 508.6  | 373.5  | 233.5  | 205.1  | 200.1  |
| 70°    | 438.6  | 308.5  | 193.4  | 176.7  | 170.0  |
| 72.5°  | 371.9  | 248.4  | 161.8  | 148.5  | 145.1  |
| 75°    | 306.8  | 190.0  | 133.4  | 121.7  | 120.1  |
| 77.5°  | 241.8  | 135.0  | 105.1  | 98.4   | 95.0   |
| 80°    | 181.7  | 96.8   | 80.0   | 73.4   | 73.4   |
| 82.5°  | 126.7  | 65.1   | 55.0   | 51.6   | 51.6   |
| 85°    | 71.7   | 36.6   | 31.7   | 31.7   | 31.7   |
| 87.5°  | 26.8   | 13.3   | 13.3   | 11.7   | 11.7   |
| 90°    | 2.1    | 24.5   | 66.7   | 62.6   | 64.6   |
| 92.5°  | 42.2   | 57.2   | 59.2   | 61.2   | 61.2   |
| 95°    | 99.3   | 118.3  | 121.7  | 121.7  | 118.3  |
| 97.5°  | 165.3  | 183.0  | 190.5  | 190.5  | 190.5  |
| 100°   | 241.5  | 257.1  | 262.5  | 262.5  | 260.5  |
| 102.5° | 321.7  | 333.3  | 340.7  | 342.8  | 340.7  |
| 105°   | 409.5  | 414.9  | 419.0  | 422.4  | 422.4  |
| 107.5° | 496.5  | 504.7  | 504.7  | 506.0  | 496.5  |
| 110°   | 580.9  | 591.7  | 591.7  | 591.7  | 586.3  |

TEST NUMBER: P922122

CATALOG NUMBER: DFN2DIP-PN3F0-050D080US940-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 672.0  | 683.6  | 681.5  | 676.1  | 672.0  |
| 115°   | 761.8  | 772.7  | 769.3  | 767.2  | 761.8  |
| 117.5° | 850.9  | 865.9  | 856.3  | 850.9  | 845.4  |
| 120°   | 940.7  | 955.6  | 940.7  | 940.7  | 934.5  |
| 122.5° | 1022.3 | 1041.3 | 1031.8 | 1026.4 | 1022.3 |
| 125°   | 1108.0 | 1125.0 | 1119.5 | 1113.4 | 1111.4 |
| 127.5° | 1191.7 | 1212.7 | 1205.2 | 1197.1 | 1191.7 |
| 130°   | 1269.9 | 1294.3 | 1290.9 | 1286.9 | 1279.4 |
| 132.5° | 1357.6 | 1376.6 | 1378.0 | 1368.5 | 1363.1 |
| 135°   | 1433.1 | 1454.2 | 1458.3 | 1456.3 | 1450.8 |
| 137.5° | 1517.4 | 1534.5 | 1537.8 | 1536.5 | 1528.3 |
| 140°   | 1591.6 | 1608.6 | 1618.1 | 1618.1 | 1610.6 |
| 142.5° | 1667.8 | 1684.8 | 1690.2 | 1692.3 | 1684.8 |
| 145°   | 1739.9 | 1753.5 | 1764.3 | 1766.4 | 1758.9 |
| 147.5° | 1804.5 | 1821.5 | 1829.6 | 1833.1 | 1825.6 |
| 150°   | 1871.2 | 1882.7 | 1890.2 | 1896.3 | 1890.2 |
| 152.5° | 1930.3 | 1941.9 | 1951.4 | 1958.9 | 1951.4 |
| 155°   | 1989.5 | 1994.9 | 2001.1 | 2010.5 | 2004.5 |
| 157.5° | 2040.5 | 2044.6 | 2048.0 | 2061.5 | 2052.1 |
| 160°   | 2086.1 | 2090.2 | 2092.2 | 2103.7 | 2095.6 |
| 162.5° | 2128.2 | 2128.2 | 2130.3 | 2143.2 | 2133.7 |
| 165°   | 2164.3 | 2162.2 | 2162.2 | 2175.9 | 2166.3 |
| 167.5° | 2196.9 | 2190.8 | 2190.8 | 2204.4 | 2194.9 |
| 170°   | 2221.4 | 2216.0 | 2213.9 | 2227.6 | 2216.0 |
| 172.5° | 2238.5 | 2233.0 | 2231.0 | 2244.5 | 2233.0 |
| 175°   | 2252.0 | 2246.6 | 2242.5 | 2256.1 | 2244.5 |
| 177.5° | 2259.5 | 2254.1 | 2250.0 | 2261.6 | 2250.0 |
| 180°   | 2256.1 | 2256.1 | 2256.1 | 2256.1 | 2256.1 |

TEST NUMBER: P922122

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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 | 8.49             | 9.23  | 9.55  | 10.29 | 11.73 | 4.45           | 5.19 | 5.52 | 6.25 | 7.70  |
|                 | 3H   | 10.15            | 10.81 | 11.22 | 11.88 | 13.34 | 5.63           | 6.29 | 6.70 | 7.36 | 8.82  |
|                 | 4H   | 10.75            | 11.38 | 11.84 | 12.45 | 13.92 | 6.07           | 6.70 | 7.16 | 7.77 | 9.24  |
|                 | 6H   | 11.17            | 11.74 | 12.26 | 12.82 | 14.29 | 6.38           | 6.96 | 7.48 | 8.03 | 9.51  |
|                 | 8H   | 11.29            | 11.83 | 12.38 | 12.92 | 14.40 | 6.47           | 7.01 | 7.56 | 8.11 | 9.58  |
|                 | 12H  | 11.34            | 11.86 | 12.44 | 12.95 | 14.44 | 6.51           | 7.02 | 7.61 | 8.11 | 9.60  |
| 4H              | 2H   | 8.49             | 9.12  | 9.58  | 10.19 | 11.66 | 5.04           | 5.66 | 6.13 | 6.73 | 8.20  |
|                 | 3H   | 10.31            | 10.83 | 11.40 | 11.93 | 13.40 | 6.37           | 6.89 | 7.47 | 7.99 | 9.47  |
|                 | 4H   | 10.99            | 11.47 | 12.09 | 12.56 | 14.06 | 6.91           | 7.39 | 8.01 | 8.48 | 9.98  |
|                 | 6H   | 11.50            | 11.90 | 12.60 | 13.02 | 14.51 | 7.32           | 7.73 | 8.43 | 8.84 | 10.33 |
|                 | 8H   | 11.67            | 12.05 | 12.77 | 13.15 | 14.66 | 7.44           | 7.82 | 8.55 | 8.93 | 10.43 |
|                 | 12H  | 11.75            | 12.10 | 12.88 | 13.22 | 14.73 | 7.50           | 7.84 | 8.62 | 8.96 | 10.47 |
| 8H              | 4H   | 10.95            | 11.33 | 12.06 | 12.44 | 13.94 | 7.18           | 7.56 | 8.29 | 8.67 | 10.17 |
|                 | 6H   | 11.51            | 11.82 | 12.64 | 12.97 | 14.47 | 7.69           | 8.00 | 8.82 | 9.15 | 10.65 |
|                 | 8H   | 11.72            | 11.99 | 12.86 | 13.12 | 14.65 | 7.87           | 8.15 | 9.01 | 9.27 | 10.80 |
|                 | 12H  | 11.85            | 12.09 | 12.99 | 13.21 | 14.78 | 7.98           | 8.22 | 9.12 | 9.35 | 10.91 |
| 12H             | 4H   | 10.90            | 11.24 | 12.02 | 12.36 | 13.87 | 7.18           | 7.52 | 8.30 | 8.64 | 10.15 |
|                 | 6H   | 11.48            | 11.76 | 12.62 | 12.88 | 14.41 | 7.73           | 8.01 | 8.87 | 9.14 | 10.66 |
|                 | 8H   | 11.69            | 11.94 | 12.83 | 13.06 | 14.62 | 7.93           | 8.18 | 9.07 | 9.30 | 10.86 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

8 of 8