

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: P926918

Luminaire Tested: DFN2DIP-HX4F0-050D060US830-RLLONL

Issue Date: 12/12/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926918  
REPORT IS A COMBINATION OF REPORTS P900858 AND P896187  
Test Lab: INNOVATION CENTER  
Issue Date: 12/12/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX4F0-050D060US830-RLLONL  
Description: 4 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

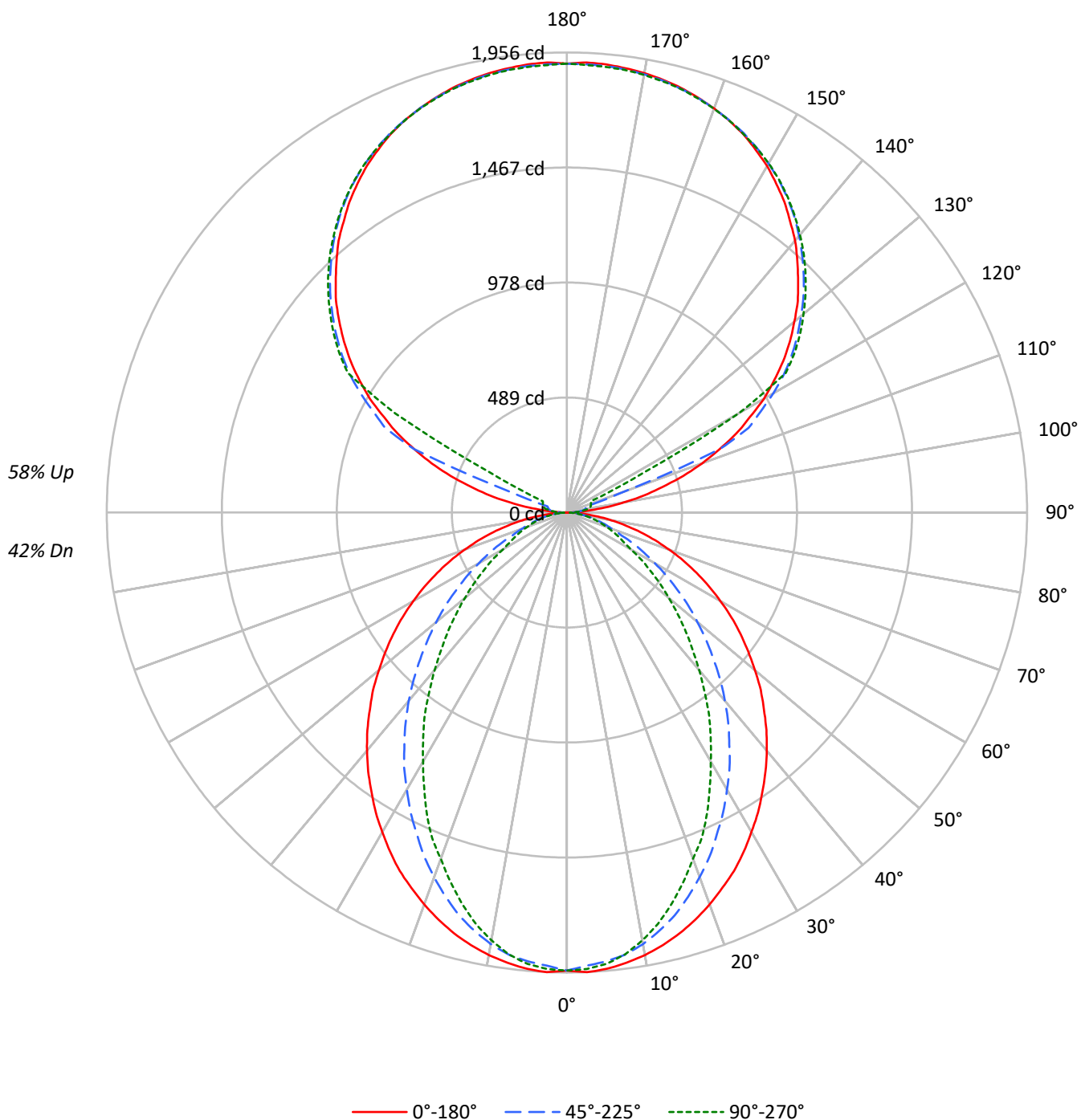
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9604.1 lumens  
Efficiency: N/A  
Efficacy: 109.5 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): 87.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P926918

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### Luminous Intensity Polar Plot



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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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 43 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 46 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 39 | 34 | 30 | 32 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 27 | 33 | 28 | 24 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 35 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1448 | 1448 | 1448 |
| 5°  | 1451 | 1425 | 1434 |
| 10° | 1436 | 1398 | 1388 |
| 15° | 1417 | 1352 | 1316 |
| 20° | 1391 | 1288 | 1227 |
| 25° | 1364 | 1217 | 1142 |
| 30° | 1328 | 1144 | 1033 |
| 35° | 1293 | 1065 | 938  |
| 40° | 1257 | 984  | 829  |
| 45° | 1216 | 893  | 730  |
| 50° | 1173 | 802  | 633  |
| 55° | 1128 | 705  | 540  |
| 60° | 1076 | 603  | 445  |
| 65° | 1017 | 500  | 401  |
| 70° | 944  | 403  | 363  |
| 75° | 854  | 356  | 330  |
| 80° | 722  | 299  | 286  |
| 85° | 505  | 200  | 216  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1216 cd/sqm

TEST NUMBER: P926918

CATALOG NUMBER: DFN2DIP-HX4F0-050D060US830-RLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 182.5  | 1.9       |
| 10°-20°   | 501.1  | 5.2       |
| 20°-30°   | 703.5  | 7.3       |
| 30°-40°   | 766.9  | 8.0       |
| 40°-50°   | 704.9  | 7.3       |
| 50°-60°   | 553.6  | 5.8       |
| 60°-70°   | 360.3  | 3.8       |
| 70°-80°   | 185.5  | 1.9       |
| 80°-90°   | 50.7   | 0.5       |
| 90°-100°  | 62.9   | 0.7       |
| 100°-110° | 234.6  | 2.4       |
| 110°-120° | 622.2  | 6.5       |
| 120°-130° | 1031.9 | 10.7      |
| 130°-140° | 1096.2 | 11.4      |
| 140°-150° | 1018.8 | 10.6      |
| 150°-160° | 819.1  | 8.5       |
| 160°-170° | 527.8  | 5.5       |
| 170°-180° | 181.7  | 1.9       |
| 0°-30°    | 1387.2 | 14.4      |
| 0°-40°    | 2154.1 | 22.4      |
| 0°-60°    | 3412.5 | 35.5      |
| 0°-90°    | 4009.0 | 41.7      |
| 90°-120°  | 919.7  | 9.6       |
| 90°-150°  | 4066.6 | 42.3      |
| 90°-180°  | 5595.0 | 58.3      |
| 0°-180°   | 9604.1 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1948 | 1948  | 1948 | 1948  | 1948 |      |
| 5°   | 1948 | 1939  | 1916 | 1932  | 1927 | 185  |
| 15°  | 1852 | 1833  | 1773 | 1740  | 1722 | 522  |
| 25°  | 1682 | 1625  | 1509 | 1437  | 1410 | 773  |
| 35°  | 1449 | 1359  | 1204 | 1093  | 1054 | 907  |
| 45°  | 1184 | 1066  | 881  | 756   | 714  | 915  |
| 55°  | 901  | 763   | 573  | 467   | 434  | 805  |
| 65°  | 608  | 465   | 307  | 247   | 242  | 603  |
| 75°  | 324  | 201   | 141  | 129   | 127  | 343  |
| 85°  | 76   | 39    | 34   | 34    | 34   | 87   |
| 90°  | 1    | 17    | 28   | 35    | 37   | 9    |
| 95°  | 90   | 44    | 54   | 61    | 59   | 106  |
| 105° | 420  | 461   | 84   | 99    | 105  | 449  |
| 115° | 794  | 818   | 852  | 213   | 113  | 782  |
| 125° | 1123 | 1141  | 1167 | 1177  | 1181 | 1001 |
| 135° | 1389 | 1412  | 1424 | 1438  | 1435 | 1073 |
| 145° | 1612 | 1610  | 1634 | 1643  | 1636 | 1008 |
| 155° | 1774 | 1762  | 1779 | 1787  | 1776 | 818  |
| 165° | 1870 | 1862  | 1866 | 1875  | 1866 | 528  |
| 175° | 1913 | 1903  | 1906 | 1915  | 1902 | 182  |
| 180° | 1908 | 1908  | 1908 | 1908  | 1908 |      |

TEST NUMBER: P926918

CATALOG NUMBER: DFN2DIP-HX4F0-050D060US830-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1947.7 | 1947.7 | 1947.7 | 1947.7 | 1947.7 |
| 2.5°   | 1956.4 | 1947.7 | 1928.3 | 1946.0 | 1942.4 |
| 5°     | 1947.7 | 1938.9 | 1915.9 | 1931.7 | 1926.6 |
| 7.5°   | 1931.7 | 1921.3 | 1896.6 | 1903.6 | 1894.7 |
| 10°    | 1910.6 | 1898.3 | 1863.1 | 1857.8 | 1847.2 |
| 12.5°  | 1884.2 | 1868.4 | 1820.7 | 1810.3 | 1790.8 |
| 15°    | 1852.5 | 1833.1 | 1773.2 | 1739.8 | 1722.1 |
| 17.5°  | 1815.4 | 1787.3 | 1713.2 | 1674.4 | 1646.2 |
| 20°    | 1773.2 | 1737.9 | 1649.8 | 1605.8 | 1566.9 |
| 22.5°  | 1727.4 | 1686.8 | 1584.5 | 1524.7 | 1498.3 |
| 25°    | 1681.5 | 1625.1 | 1508.8 | 1436.6 | 1410.0 |
| 27.5°  | 1626.9 | 1566.9 | 1438.3 | 1355.4 | 1314.9 |
| 30°    | 1568.8 | 1501.7 | 1360.7 | 1270.9 | 1223.2 |
| 32.5°  | 1512.3 | 1431.2 | 1286.8 | 1181.0 | 1136.8 |
| 35°    | 1448.9 | 1359.0 | 1203.9 | 1092.8 | 1054.0 |
| 37.5°  | 1387.2 | 1290.2 | 1126.4 | 1004.6 | 960.7  |
| 40°    | 1322.0 | 1216.3 | 1045.1 | 920.1  | 874.3  |
| 42.5°  | 1255.0 | 1142.2 | 964.2  | 833.6  | 789.7  |
| 45°    | 1184.5 | 1066.3 | 881.3  | 756.1  | 713.8  |
| 47.5°  | 1117.5 | 992.5  | 802.1  | 676.8  | 638.1  |
| 50°    | 1043.5 | 918.4  | 724.5  | 602.7  | 565.9  |
| 52.5°  | 971.2  | 838.9  | 650.4  | 534.1  | 500.7  |
| 55°    | 900.7  | 763.1  | 572.8  | 467.1  | 433.6  |
| 57.5°  | 828.5  | 687.5  | 504.1  | 405.5  | 377.2  |
| 60°    | 754.4  | 613.4  | 431.8  | 342.0  | 313.8  |
| 62.5°  | 682.2  | 541.2  | 370.1  | 285.6  | 271.5  |
| 65°    | 608.1  | 465.3  | 306.7  | 246.8  | 241.5  |
| 67.5°  | 537.6  | 394.8  | 246.8  | 216.8  | 211.5  |
| 70°    | 463.6  | 326.1  | 204.4  | 186.8  | 179.7  |
| 72.5°  | 393.1  | 262.6  | 171.0  | 156.9  | 153.3  |
| 75°    | 324.3  | 200.8  | 141.0  | 128.7  | 127.0  |
| 77.5°  | 255.6  | 142.7  | 111.1  | 104.0  | 100.4  |
| 80°    | 192.1  | 102.3  | 84.5   | 77.6   | 77.6   |
| 82.5°  | 133.9  | 68.8   | 58.2   | 54.6   | 54.6   |
| 85°    | 75.8   | 38.7   | 33.5   | 33.5   | 33.5   |
| 87.5°  | 28.3   | 14.0   | 14.0   | 12.3   | 12.3   |
| 90°    | 1.3    | 16.6   | 27.5   | 34.6   | 37.2   |
| 92.5°  | 34.6   | 29.0   | 33.1   | 35.9   | 37.2   |
| 95°    | 89.7   | 44.1   | 53.8   | 60.9   | 59.4   |
| 97.5°  | 161.5  | 48.4   | 70.3   | 74.6   | 76.0   |
| 100°   | 244.5  | 55.2   | 78.7   | 89.7   | 92.5   |
| 102.5° | 335.5  | 332.9  | 81.5   | 96.6   | 100.8  |
| 105°   | 419.8  | 461.3  | 84.3   | 99.3   | 105.0  |
| 107.5° | 517.9  | 552.3  | 87.1   | 102.2  | 107.7  |
| 110°   | 611.9  | 640.7  | 241.8  | 103.7  | 109.0  |

TEST NUMBER: P926918

CATALOG NUMBER: DFN2DIP-HX4F0-050D060US830-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 700.2  | 725.0  | 701.5  | 106.2  | 110.6  |
| 115°   | 794.1  | 817.5  | 852.1  | 212.7  | 113.3  |
| 117.5° | 875.5  | 903.1  | 926.7  | 729.1  | 367.3  |
| 120°   | 966.7  | 987.4  | 1012.3 | 1028.8 | 842.4  |
| 122.5° | 1043.9 | 1066.1 | 1093.8 | 1102.0 | 1103.5 |
| 125°   | 1122.7 | 1140.7 | 1166.9 | 1176.6 | 1180.7 |
| 127.5° | 1194.5 | 1213.8 | 1234.7 | 1248.4 | 1249.8 |
| 130°   | 1262.2 | 1284.3 | 1299.4 | 1314.7 | 1313.4 |
| 132.5° | 1331.3 | 1349.3 | 1364.4 | 1376.8 | 1375.5 |
| 135°   | 1389.3 | 1411.5 | 1423.7 | 1437.7 | 1434.9 |
| 137.5° | 1449.9 | 1466.5 | 1480.5 | 1494.2 | 1490.2 |
| 140°   | 1509.3 | 1520.5 | 1535.6 | 1548.1 | 1541.2 |
| 142.5° | 1559.2 | 1568.9 | 1586.8 | 1597.7 | 1590.8 |
| 145°   | 1611.7 | 1610.2 | 1633.6 | 1643.3 | 1636.5 |
| 147.5° | 1657.1 | 1653.0 | 1676.4 | 1683.3 | 1677.9 |
| 150°   | 1701.4 | 1691.7 | 1713.8 | 1722.0 | 1715.2 |
| 152.5° | 1738.6 | 1727.6 | 1748.2 | 1756.6 | 1746.9 |
| 155°   | 1774.5 | 1762.2 | 1778.8 | 1787.0 | 1776.0 |
| 157.5° | 1803.6 | 1792.5 | 1805.0 | 1814.7 | 1803.6 |
| 160°   | 1828.4 | 1820.1 | 1828.4 | 1836.6 | 1827.0 |
| 162.5° | 1850.4 | 1842.2 | 1849.1 | 1858.8 | 1846.4 |
| 165°   | 1869.8 | 1861.6 | 1865.7 | 1875.4 | 1865.7 |
| 167.5° | 1885.0 | 1876.7 | 1880.9 | 1890.7 | 1878.1 |
| 170°   | 1897.5 | 1889.1 | 1892.0 | 1901.6 | 1889.1 |
| 172.5° | 1905.7 | 1897.5 | 1900.3 | 1910.0 | 1897.5 |
| 175°   | 1912.6 | 1902.9 | 1905.7 | 1915.3 | 1901.6 |
| 177.5° | 1915.3 | 1905.7 | 1907.1 | 1916.9 | 1904.4 |
| 180°   | 1908.5 | 1908.5 | 1908.5 | 1908.5 | 1908.5 |

TEST NUMBER: P926918

CATALOG NUMBER: DFN2DIP-HX4F0-050D060US830-RLONL

**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 | 7.61             | 8.38  | 8.64  | 9.41  | 10.80 | 3.59           | 4.35 | 4.62 | 5.39 | 6.77  |
|                 | 3H   | 9.29             | 9.97  | 10.33 | 11.01 | 12.42 | 4.77           | 5.46 | 5.81 | 6.50 | 7.91  |
|                 | 4H   | 9.89             | 10.54 | 10.95 | 11.59 | 13.00 | 5.22           | 5.87 | 6.27 | 6.91 | 8.33  |
|                 | 6H   | 10.31            | 10.91 | 11.37 | 11.96 | 13.38 | 5.54           | 6.14 | 6.60 | 7.19 | 8.61  |
|                 | 8H   | 10.44            | 11.00 | 11.50 | 12.07 | 13.49 | 5.63           | 6.20 | 6.70 | 7.26 | 8.68  |
|                 | 12H  | 10.50            | 11.04 | 11.57 | 12.09 | 13.54 | 5.67           | 6.21 | 6.74 | 7.27 | 8.71  |
| 4H              | 2H   | 7.62             | 8.27  | 8.68  | 9.32  | 10.73 | 4.17           | 4.82 | 5.23 | 5.87 | 7.28  |
|                 | 3H   | 9.45             | 9.99  | 10.51 | 11.06 | 12.49 | 5.52           | 6.06 | 6.59 | 7.13 | 8.56  |
|                 | 4H   | 10.14            | 10.63 | 11.21 | 11.70 | 13.15 | 6.07           | 6.56 | 7.14 | 7.63 | 9.07  |
|                 | 6H   | 10.65            | 11.07 | 11.73 | 12.16 | 13.61 | 6.48           | 6.91 | 7.57 | 8.00 | 9.44  |
|                 | 8H   | 10.83            | 11.22 | 11.91 | 12.30 | 13.76 | 6.61           | 7.01 | 7.70 | 8.09 | 9.55  |
|                 | 12H  | 10.92            | 11.28 | 12.02 | 12.37 | 13.83 | 6.68           | 7.03 | 7.78 | 8.13 | 9.59  |
| 8H              | 4H   | 10.10            | 10.50 | 11.18 | 11.58 | 13.04 | 6.34           | 6.74 | 7.43 | 7.82 | 9.28  |
|                 | 6H   | 10.67            | 10.99 | 11.77 | 12.11 | 13.57 | 6.86           | 7.19 | 7.97 | 8.31 | 9.76  |
|                 | 8H   | 10.88            | 11.17 | 11.99 | 12.27 | 13.75 | 7.05           | 7.34 | 8.16 | 8.44 | 9.92  |
|                 | 12H  | 11.02            | 11.27 | 12.13 | 12.37 | 13.89 | 7.17           | 7.42 | 8.29 | 8.52 | 10.04 |
| 12H             | 4H   | 10.05            | 10.41 | 11.15 | 11.50 | 12.96 | 6.35           | 6.70 | 7.44 | 7.80 | 9.26  |
|                 | 6H   | 10.64            | 10.93 | 11.75 | 12.03 | 13.51 | 6.91           | 7.20 | 8.02 | 8.30 | 9.78  |
|                 | 8H   | 10.86            | 11.11 | 11.97 | 12.21 | 13.73 | 7.12           | 7.37 | 8.23 | 8.47 | 9.99  |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

8 of 8