

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: P920307

Luminaire Tested: DFN2DIP-SQ4F0-060D060US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920307  
REPORT IS A COMBINATION OF REPORTS P901580 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-060D060US935-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

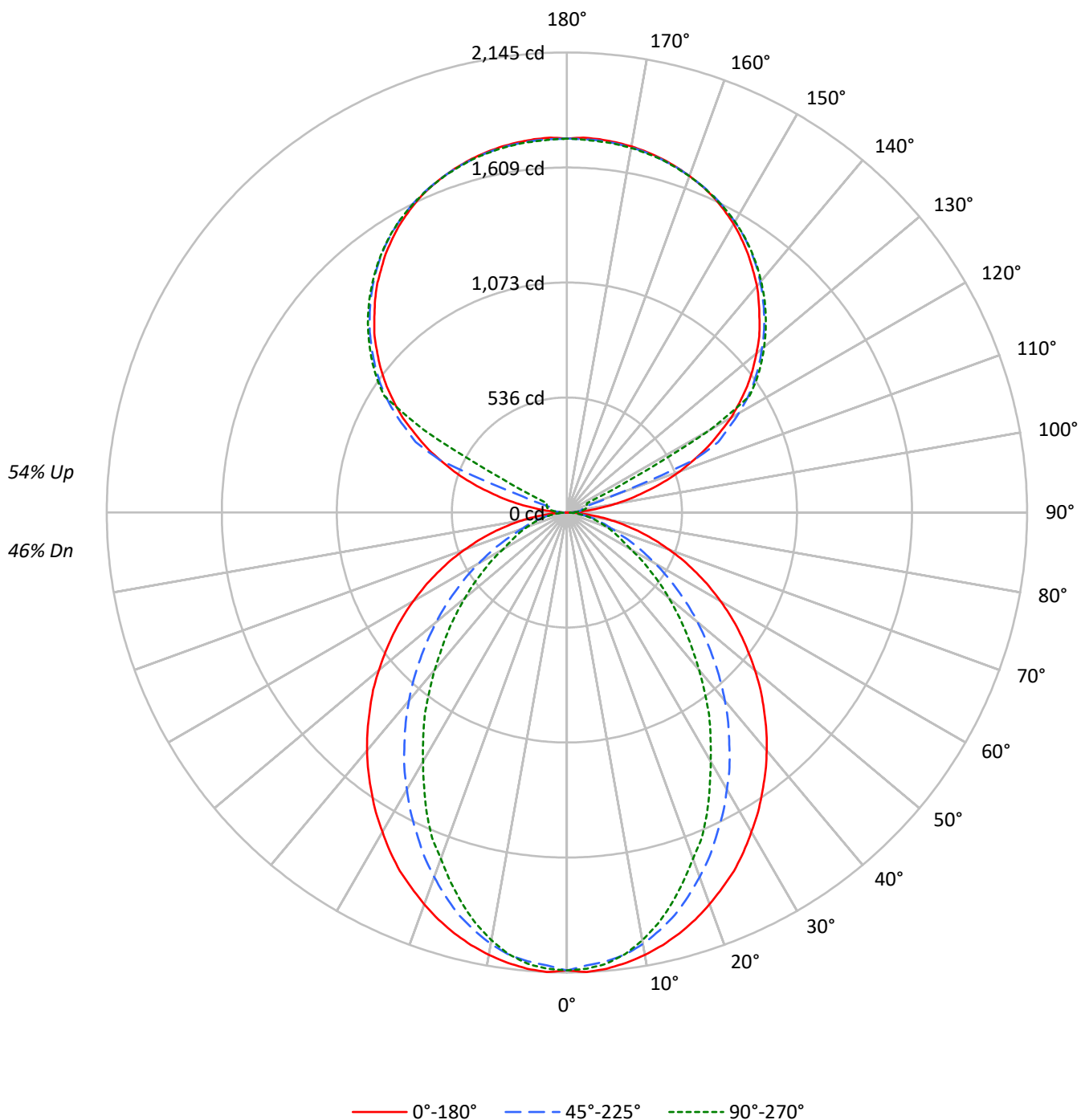
Lumens per Lamp: N/A  
Luminaire Lumens: 9505.4 lumens  
Efficiency: N/A  
Efficacy: 99.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 95.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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



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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   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1498 | 1498 | 1498 |
| 5°  | 1501 | 1475 | 1484 |
| 10° | 1486 | 1446 | 1436 |
| 15° | 1465 | 1399 | 1362 |
| 20° | 1438 | 1333 | 1271 |
| 25° | 1410 | 1259 | 1183 |
| 30° | 1373 | 1184 | 1071 |
| 35° | 1337 | 1103 | 972  |
| 40° | 1299 | 1019 | 859  |
| 45° | 1256 | 925  | 757  |
| 50° | 1212 | 831  | 657  |
| 55° | 1165 | 730  | 561  |
| 60° | 1111 | 625  | 462  |
| 65° | 1049 | 518  | 417  |
| 70° | 974  | 418  | 378  |
| 75° | 880  | 369  | 345  |
| 80° | 743  | 311  | 300  |
| 85° | 517  | 209  | 229  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1256 cd/sqm

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CATALOG NUMBER: DFN2DIP-SQ4F0-060D060US935-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 200.1  | 2.1       |
| 10°-20°   | 549.3  | 5.8       |
| 20°-30°   | 771.2  | 8.1       |
| 30°-40°   | 840.7  | 8.8       |
| 40°-50°   | 772.7  | 8.1       |
| 50°-60°   | 606.8  | 6.4       |
| 60°-70°   | 395.0  | 4.2       |
| 70°-80°   | 203.3  | 2.1       |
| 80°-90°   | 55.0   | 0.6       |
| 90°-100°  | 57.5   | 0.6       |
| 100°-110° | 214.3  | 2.3       |
| 110°-120° | 568.4  | 6.0       |
| 120°-130° | 942.7  | 9.9       |
| 130°-140° | 1001.4 | 10.5      |
| 140°-150° | 930.7  | 9.8       |
| 150°-160° | 748.2  | 7.9       |
| 160°-170° | 482.1  | 5.1       |
| 170°-180° | 165.9  | 1.7       |
| 0°-30°    | 1520.7 | 16.0      |
| 0°-40°    | 2361.4 | 24.8      |
| 0°-60°    | 3740.9 | 39.4      |
| 0°-90°    | 4394.1 | 46.2      |
| 90°-120°  | 840.2  | 8.8       |
| 90°-150°  | 3714.9 | 39.1      |
| 90°-180°  | 5111.0 | 53.8      |
| 0°-180°   | 9505.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2135 | 2135  | 2135 | 2135  | 2135 |      |
| 5°   | 2135 | 2126  | 2100 | 2118  | 2112 | 202  |
| 15°  | 2031 | 2009  | 1944 | 1907  | 1888 | 572  |
| 25°  | 1843 | 1782  | 1654 | 1575  | 1546 | 848  |
| 35°  | 1588 | 1490  | 1320 | 1198  | 1155 | 994  |
| 45°  | 1298 | 1169  | 966  | 829   | 782  | 1003 |
| 55°  | 987  | 837   | 628  | 512   | 475  | 882  |
| 65°  | 667  | 510   | 336  | 271   | 265  | 661  |
| 75°  | 356  | 220   | 154  | 141   | 139  | 376  |
| 85°  | 83   | 42    | 37   | 37    | 37   | 95   |
| 90°  | 1    | 15    | 25   | 32    | 34   | 9    |
| 95°  | 82   | 40    | 49   | 56    | 54   | 97   |
| 105° | 384  | 421   | 77   | 91    | 96   | 410  |
| 115° | 725  | 747   | 778  | 194   | 104  | 714  |
| 125° | 1026 | 1042  | 1066 | 1075  | 1079 | 915  |
| 135° | 1269 | 1289  | 1301 | 1313  | 1311 | 980  |
| 145° | 1472 | 1471  | 1492 | 1501  | 1495 | 921  |
| 155° | 1621 | 1610  | 1625 | 1632  | 1622 | 747  |
| 165° | 1708 | 1701  | 1704 | 1713  | 1704 | 483  |
| 175° | 1747 | 1738  | 1741 | 1750  | 1737 | 166  |
| 180° | 1743 | 1743  | 1743 | 1743  | 1743 |      |

TEST NUMBER: P920307

CATALOG NUMBER: DFN2DIP-SQ4F0-060D060US935-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2135.1 | 2135.1 | 2135.1 | 2135.1 | 2135.1 |
| 2.5°   | 2144.7 | 2135.1 | 2113.7 | 2133.2 | 2129.3 |
| 5°     | 2135.1 | 2125.5 | 2100.2 | 2117.7 | 2111.9 |
| 7.5°   | 2117.7 | 2106.2 | 2079.1 | 2086.7 | 2077.1 |
| 10°    | 2094.5 | 2080.9 | 2042.5 | 2036.5 | 2025.0 |
| 12.5°  | 2065.6 | 2048.1 | 1995.9 | 1984.4 | 1963.1 |
| 15°    | 2030.7 | 2009.4 | 1943.8 | 1907.1 | 1887.8 |
| 17.5°  | 1990.2 | 1959.2 | 1878.0 | 1835.6 | 1804.7 |
| 20°    | 1943.8 | 1905.0 | 1808.5 | 1760.3 | 1717.7 |
| 22.5°  | 1893.6 | 1849.1 | 1737.0 | 1671.4 | 1642.4 |
| 25°    | 1843.4 | 1781.5 | 1654.0 | 1574.9 | 1545.7 |
| 27.5°  | 1783.6 | 1717.7 | 1576.7 | 1485.8 | 1441.4 |
| 30°    | 1719.8 | 1646.1 | 1491.6 | 1393.2 | 1340.9 |
| 32.5°  | 1657.9 | 1568.9 | 1410.7 | 1294.6 | 1246.2 |
| 35°    | 1588.4 | 1489.8 | 1319.8 | 1198.0 | 1155.4 |
| 37.5°  | 1520.7 | 1414.3 | 1234.8 | 1101.3 | 1053.1 |
| 40°    | 1449.1 | 1333.3 | 1145.7 | 1008.6 | 958.4  |
| 42.5°  | 1375.8 | 1252.1 | 1057.0 | 913.9  | 865.7  |
| 45°    | 1298.5 | 1168.9 | 966.2  | 828.8  | 782.5  |
| 47.5°  | 1225.1 | 1088.0 | 879.3  | 741.9  | 699.5  |
| 50°    | 1143.9 | 1006.8 | 794.2  | 660.7  | 620.3  |
| 52.5°  | 1064.5 | 919.6  | 713.0  | 585.5  | 548.8  |
| 55°    | 987.3  | 836.6  | 627.9  | 512.1  | 475.4  |
| 57.5°  | 908.2  | 753.5  | 552.7  | 444.4  | 413.5  |
| 60°    | 827.0  | 672.4  | 473.4  | 375.0  | 344.0  |
| 62.5°  | 747.9  | 593.3  | 405.7  | 313.1  | 297.6  |
| 65°    | 666.7  | 510.1  | 336.2  | 270.6  | 264.7  |
| 67.5°  | 589.4  | 432.7  | 270.6  | 237.6  | 231.9  |
| 70°    | 508.2  | 357.5  | 224.0  | 204.8  | 197.0  |
| 72.5°  | 430.9  | 287.8  | 187.4  | 172.0  | 168.1  |
| 75°    | 355.5  | 220.2  | 154.5  | 141.0  | 139.2  |
| 77.5°  | 280.3  | 156.4  | 121.7  | 114.0  | 110.1  |
| 80°    | 210.5  | 112.1  | 92.6   | 85.1   | 85.1   |
| 82.5°  | 146.8  | 75.4   | 63.7   | 59.8   | 59.8   |
| 85°    | 83.0   | 42.4   | 36.7   | 36.7   | 36.7   |
| 87.5°  | 31.0   | 15.4   | 15.4   | 13.5   | 13.5   |
| 90°    | 1.2    | 15.2   | 25.1   | 31.6   | 34.0   |
| 92.5°  | 31.6   | 26.5   | 30.2   | 32.8   | 34.0   |
| 95°    | 82.0   | 40.3   | 49.2   | 55.6   | 54.2   |
| 97.5°  | 147.6  | 44.2   | 64.2   | 68.2   | 69.4   |
| 100°   | 223.3  | 50.5   | 71.9   | 82.0   | 84.5   |
| 102.5° | 306.5  | 304.1  | 74.5   | 88.3   | 92.1   |
| 105°   | 383.5  | 421.4  | 77.0   | 90.7   | 95.9   |
| 107.5° | 473.1  | 504.5  | 79.6   | 93.3   | 98.4   |
| 110°   | 559.0  | 585.3  | 220.8  | 94.7   | 99.6   |

TEST NUMBER: P920307

CATALOG NUMBER: DFN2DIP-SQ4F0-060D060US935-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 639.6  | 662.3  | 640.8  | 97.0   | 101.0  |
| 115°   | 725.4  | 746.8  | 778.4  | 194.3  | 103.5  |
| 117.5° | 799.8  | 825.0  | 846.5  | 666.1  | 335.5  |
| 120°   | 883.1  | 902.0  | 924.8  | 939.9  | 769.6  |
| 122.5° | 953.6  | 973.9  | 999.2  | 1006.7 | 1008.1 |
| 125°   | 1025.6 | 1042.1 | 1066.0 | 1074.9 | 1078.6 |
| 127.5° | 1091.2 | 1108.9 | 1127.9 | 1140.5 | 1141.7 |
| 130°   | 1153.0 | 1173.3 | 1187.1 | 1201.0 | 1199.8 |
| 132.5° | 1216.2 | 1232.6 | 1246.4 | 1257.7 | 1256.5 |
| 135°   | 1269.2 | 1289.4 | 1300.6 | 1313.4 | 1310.8 |
| 137.5° | 1324.6 | 1339.7 | 1352.5 | 1365.0 | 1361.3 |
| 140°   | 1378.8 | 1389.0 | 1402.8 | 1414.2 | 1407.9 |
| 142.5° | 1424.3 | 1433.2 | 1449.6 | 1459.6 | 1453.3 |
| 145°   | 1472.3 | 1470.9 | 1492.4 | 1501.2 | 1495.0 |
| 147.5° | 1513.8 | 1510.0 | 1531.5 | 1537.7 | 1532.8 |
| 150°   | 1554.3 | 1545.4 | 1565.6 | 1573.1 | 1566.8 |
| 152.5° | 1588.3 | 1578.2 | 1597.1 | 1604.7 | 1595.9 |
| 155°   | 1621.1 | 1609.8 | 1625.0 | 1632.5 | 1622.4 |
| 157.5° | 1647.6 | 1637.5 | 1648.9 | 1657.8 | 1647.6 |
| 160°   | 1670.3 | 1662.7 | 1670.3 | 1677.8 | 1669.0 |
| 162.5° | 1690.4 | 1682.9 | 1689.2 | 1698.1 | 1686.7 |
| 165°   | 1708.1 | 1700.6 | 1704.3 | 1713.2 | 1704.3 |
| 167.5° | 1722.0 | 1714.4 | 1718.3 | 1727.2 | 1715.7 |
| 170°   | 1733.4 | 1725.8 | 1728.4 | 1737.1 | 1725.8 |
| 172.5° | 1740.9 | 1733.4 | 1735.9 | 1744.8 | 1733.4 |
| 175°   | 1747.2 | 1738.4 | 1740.9 | 1749.7 | 1737.1 |
| 177.5° | 1749.7 | 1740.9 | 1742.2 | 1751.1 | 1739.7 |
| 180°   | 1743.4 | 1743.4 | 1743.4 | 1743.4 | 1743.4 |

TEST NUMBER: P920307

CATALOG NUMBER: DFN2DIP-SQ4F0-060D060US935-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 | 8.20             | 9.00  | 9.20  | 10.00 | 11.33 | 4.16           | 4.96 | 5.16 | 5.96 | 7.29  |
|                 | 3H   | 9.88             | 10.60 | 10.89 | 11.61 | 12.96 | 5.35           | 6.06 | 6.35 | 7.08 | 8.42  |
|                 | 4H   | 10.49            | 11.17 | 11.51 | 12.18 | 13.54 | 5.80           | 6.47 | 6.82 | 7.49 | 8.85  |
|                 | 6H   | 10.91            | 11.54 | 11.94 | 12.56 | 13.92 | 6.12           | 6.74 | 7.15 | 7.76 | 9.13  |
|                 | 8H   | 11.04            | 11.63 | 12.08 | 12.67 | 14.03 | 6.21           | 6.80 | 7.24 | 7.84 | 9.20  |
|                 | 12H  | 11.10            | 11.67 | 12.14 | 12.70 | 14.08 | 6.25           | 6.81 | 7.29 | 7.84 | 9.23  |
| 4H              | 2H   | 8.21             | 8.89  | 9.24  | 9.91  | 11.26 | 4.76           | 5.43 | 5.78 | 6.45 | 7.80  |
|                 | 3H   | 10.05            | 10.61 | 11.08 | 11.65 | 13.02 | 6.10           | 6.67 | 7.14 | 7.71 | 9.08  |
|                 | 4H   | 10.74            | 11.26 | 11.78 | 12.29 | 13.68 | 6.65           | 7.17 | 7.69 | 8.20 | 9.59  |
|                 | 6H   | 11.26            | 11.70 | 12.31 | 12.76 | 14.15 | 7.07           | 7.51 | 8.12 | 8.57 | 9.96  |
|                 | 8H   | 11.44            | 11.85 | 12.49 | 12.90 | 14.30 | 7.20           | 7.61 | 8.25 | 8.66 | 10.06 |
|                 | 12H  | 11.53            | 11.90 | 12.60 | 12.97 | 14.38 | 7.26           | 7.64 | 8.33 | 8.70 | 10.11 |
| 8H              | 4H   | 10.71            | 11.12 | 11.76 | 12.17 | 13.57 | 6.93           | 7.34 | 7.98 | 8.40 | 9.80  |
|                 | 6H   | 11.28            | 11.62 | 12.35 | 12.71 | 14.11 | 7.45           | 7.79 | 8.52 | 8.88 | 10.28 |
|                 | 8H   | 11.50            | 11.79 | 12.58 | 12.87 | 14.29 | 7.64           | 7.94 | 8.72 | 9.02 | 10.44 |
|                 | 12H  | 11.64            | 11.90 | 12.72 | 12.97 | 14.43 | 7.76           | 8.02 | 8.84 | 9.10 | 10.56 |
| 12H             | 4H   | 10.66            | 11.03 | 11.73 | 12.09 | 13.50 | 6.94           | 7.31 | 8.00 | 8.37 | 9.78  |
|                 | 6H   | 11.25            | 11.55 | 12.33 | 12.63 | 14.05 | 7.50           | 7.80 | 8.58 | 8.88 | 10.30 |
|                 | 8H   | 11.47            | 11.74 | 12.56 | 12.81 | 14.27 | 7.71           | 7.97 | 8.80 | 9.05 | 10.51 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

8 of 8