

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: P917124

Luminaire Tested: DFN2DIP-SQ2F0-030D070US930-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P917124  
REPORT IS A COMBINATION OF REPORTS P899819 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-030D070US930-FLLFLL  
Description: 2 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

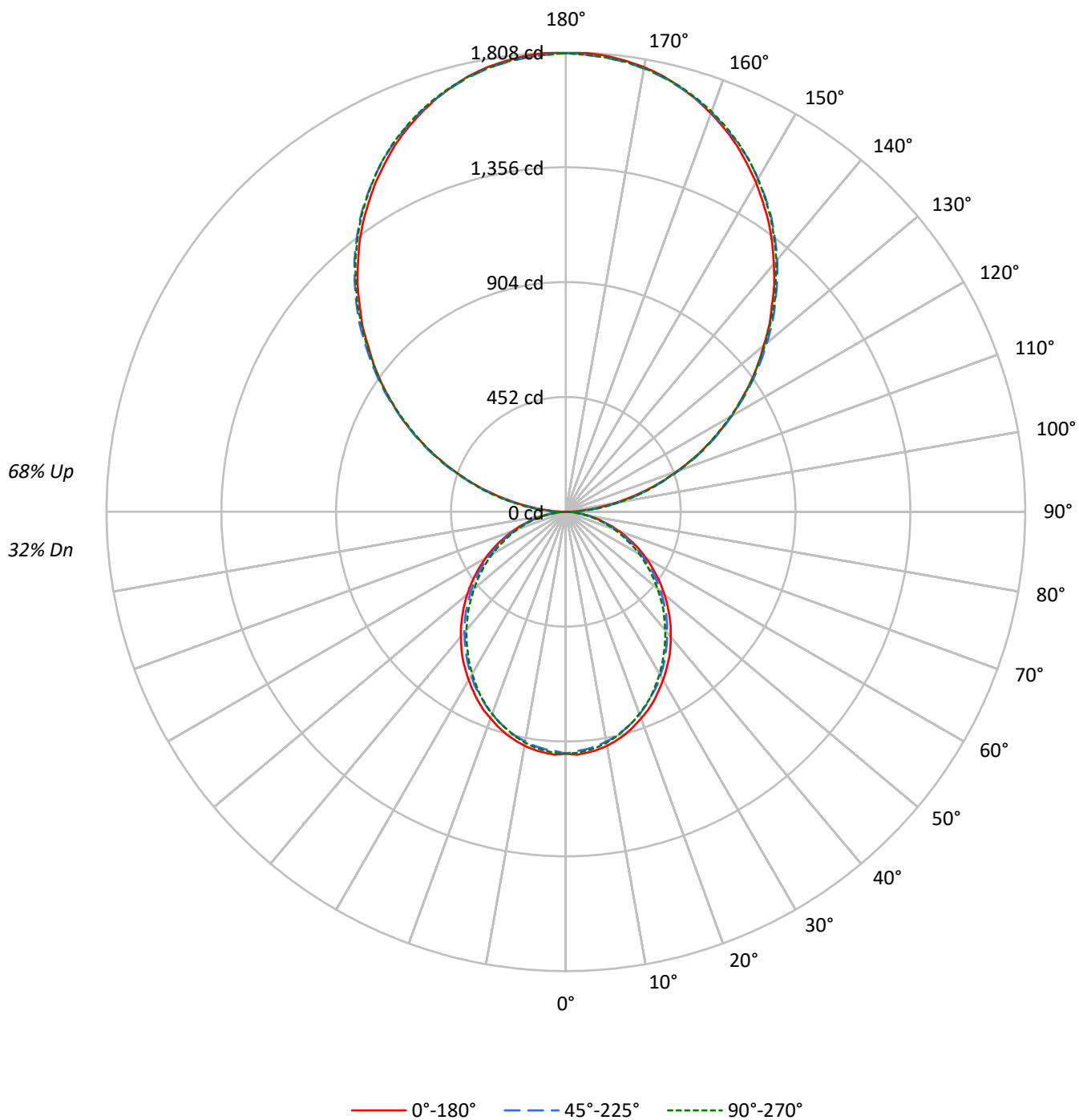
Lumens per Lamp: N/A  
Luminaire Lumens: 7472.2 lumens  
Efficiency: N/A  
Efficacy: 96.4 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 77.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9963  
Total Harmonic Distortion (THDi): 0.065  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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CATALOG NUMBER: DFN2DIP-SQ2F0-030D070US930-FLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P917124

CATALOG NUMBER: DFN2DIP-SQ2F0-030D070US930-FLLFL

**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   | 103 | 103 | 103 | 103 | 93 | 93 | 93 | 93 | 74 | 74 | 74 | 56 | 56 | 56 | 40 | 40 | 40 |
| 1   | 94  | 90  | 86  | 82  | 84 | 81 | 78 | 75 | 64 | 62 | 60 | 49 | 48 | 47 | 35 | 34 | 34 |
| 2   | 85  | 78  | 72  | 67  | 77 | 71 | 66 | 61 | 56 | 53 | 50 | 43 | 41 | 39 | 31 | 30 | 28 |
| 3   | 78  | 69  | 62  | 56  | 70 | 62 | 56 | 51 | 50 | 45 | 42 | 38 | 35 | 33 | 28 | 26 | 24 |
| 4   | 71  | 61  | 53  | 47  | 64 | 55 | 48 | 43 | 44 | 39 | 36 | 34 | 31 | 28 | 25 | 23 | 21 |
| 5   | 65  | 54  | 46  | 40  | 59 | 49 | 42 | 37 | 39 | 34 | 31 | 30 | 27 | 24 | 22 | 20 | 18 |
| 6   | 60  | 48  | 40  | 35  | 54 | 44 | 37 | 32 | 35 | 30 | 27 | 27 | 24 | 21 | 20 | 18 | 16 |
| 7   | 55  | 43  | 36  | 30  | 50 | 40 | 33 | 28 | 32 | 27 | 23 | 25 | 21 | 19 | 18 | 16 | 14 |
| 8   | 51  | 39  | 32  | 27  | 46 | 36 | 29 | 25 | 29 | 24 | 21 | 23 | 19 | 17 | 17 | 14 | 13 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 26 | 22 | 27 | 22 | 18 | 21 | 17 | 15 | 15 | 13 | 11 |
| 10  | 44  | 33  | 26  | 21  | 40 | 30 | 24 | 20 | 24 | 20 | 16 | 19 | 16 | 13 | 14 | 12 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2093 | 2093 | 2093 |
| 5°  | 2092 | 2059 | 2074 |
| 10° | 2072 | 2027 | 2043 |
| 15° | 2038 | 1989 | 1997 |
| 20° | 1993 | 1938 | 1949 |
| 25° | 1948 | 1878 | 1894 |
| 30° | 1893 | 1822 | 1825 |
| 35° | 1841 | 1756 | 1752 |
| 40° | 1777 | 1690 | 1683 |
| 45° | 1713 | 1624 | 1612 |
| 50° | 1643 | 1553 | 1530 |
| 55° | 1569 | 1472 | 1454 |
| 60° | 1485 | 1377 | 1366 |
| 65° | 1394 | 1278 | 1264 |
| 70° | 1277 | 1156 | 1152 |
| 75° | 1117 | 1010 | 1045 |
| 80° | 923  | 824  | 849  |
| 85° | 624  | 520  | 532  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2515 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 89.6   | 1.2       |
| 10°-20°   | 252.0  | 3.4       |
| 20°-30°   | 370.4  | 5.0       |
| 30°-40°   | 430.2  | 5.8       |
| 40°-50°   | 429.7  | 5.7       |
| 50°-60°   | 374.6  | 5.0       |
| 60°-70°   | 277.0  | 3.7       |
| 70°-80°   | 156.7  | 2.1       |
| 80°-90°   | 46.5   | 0.6       |
| 90°-100°  | 111.7  | 1.5       |
| 100°-110° | 354.9  | 4.7       |
| 110°-120° | 607.3  | 8.1       |
| 120°-130° | 798.7  | 10.7      |
| 130°-140° | 896.5  | 12.0      |
| 140°-150° | 879.1  | 11.8      |
| 150°-160° | 737.5  | 9.9       |
| 160°-170° | 489.1  | 6.5       |
| 170°-180° | 170.9  | 2.3       |
| 0°-30°    | 712.0  | 9.5       |
| 0°-40°    | 1142.2 | 15.3      |
| 0°-60°    | 1946.5 | 26.0      |
| 0°-90°    | 2426.6 | 32.5      |
| 90°-120°  | 1073.9 | 14.4      |
| 90°-150°  | 3648.2 | 48.8      |
| 90°-180°  | 5046.0 | 67.5      |
| 0°-180°   | 7472.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 952  | 952   | 952  | 952   | 952  |      |
| 5°   | 952  | 948   | 938  | 945   | 944  | 90   |
| 15°  | 906  | 901   | 889  | 892   | 888  | 255  |
| 25°  | 820  | 813   | 797  | 799   | 797  | 377  |
| 35°  | 707  | 698   | 684  | 678   | 674  | 442  |
| 45°  | 576  | 569   | 556  | 545   | 542  | 444  |
| 55°  | 436  | 430   | 419  | 408   | 404  | 390  |
| 65°  | 294  | 288   | 279  | 271   | 266  | 290  |
| 75°  | 154  | 152   | 147  | 142   | 144  | 164  |
| 85°  | 38   | 37    | 36   | 33    | 32   | 42   |
| 90°  | 2    | 20    | 53   | 50    | 52   | 7    |
| 95°  | 79   | 95    | 97   | 97    | 95   | 88   |
| 105° | 328  | 332   | 335  | 338   | 338  | 346  |
| 115° | 609  | 618   | 616  | 614   | 609  | 603  |
| 125° | 886  | 900   | 896  | 891   | 889  | 792  |
| 135° | 1147 | 1163  | 1167 | 1165  | 1161 | 886  |
| 145° | 1392 | 1403  | 1412 | 1413  | 1407 | 870  |
| 155° | 1592 | 1596  | 1601 | 1608  | 1604 | 733  |
| 165° | 1731 | 1730  | 1730 | 1741  | 1733 | 488  |
| 175° | 1802 | 1797  | 1794 | 1805  | 1796 | 171  |
| 180° | 1805 | 1805  | 1805 | 1805  | 1805 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 951.7 | 951.7 | 951.7 | 951.7 | 951.7 |
| 2.5°   | 957.2 | 952.7 | 942.6 | 951.7 | 950.0 |
| 5°     | 951.7 | 948.1 | 938.0 | 945.3 | 943.5 |
| 7.5°   | 945.3 | 939.9 | 929.8 | 937.2 | 935.3 |
| 10°    | 935.3 | 928.9 | 917.9 | 925.2 | 922.5 |
| 12.5°  | 921.5 | 916.1 | 905.1 | 909.6 | 907.8 |
| 15°    | 906.0 | 900.6 | 888.6 | 892.3 | 887.7 |
| 17.5°  | 886.7 | 881.3 | 869.4 | 873.9 | 869.4 |
| 20°    | 865.7 | 860.2 | 847.4 | 850.1 | 846.5 |
| 22.5°  | 844.7 | 836.5 | 824.5 | 824.5 | 822.6 |
| 25°    | 819.9 | 812.7 | 797.1 | 798.9 | 797.1 |
| 27.5°  | 792.5 | 786.0 | 774.2 | 771.5 | 767.0 |
| 30°    | 765.1 | 757.7 | 744.0 | 741.3 | 737.6 |
| 32.5°  | 735.8 | 730.3 | 715.7 | 710.1 | 706.5 |
| 35°    | 707.4 | 698.3 | 683.6 | 678.1 | 673.5 |
| 37.5°  | 675.4 | 667.2 | 652.5 | 646.0 | 641.5 |
| 40°    | 642.5 | 635.1 | 620.4 | 612.3 | 608.6 |
| 42.5°  | 610.4 | 603.1 | 588.5 | 579.3 | 573.8 |
| 45°    | 575.7 | 569.2 | 555.5 | 545.4 | 541.8 |
| 47.5°  | 541.8 | 535.4 | 520.7 | 510.6 | 505.2 |
| 50°    | 506.1 | 501.5 | 488.7 | 475.9 | 471.3 |
| 52.5°  | 471.3 | 464.9 | 453.1 | 443.0 | 436.5 |
| 55°    | 435.7 | 430.2 | 419.1 | 408.2 | 403.7 |
| 57.5°  | 399.9 | 395.3 | 383.4 | 372.4 | 368.8 |
| 60°    | 364.2 | 360.6 | 347.8 | 337.7 | 335.0 |
| 62.5°  | 329.5 | 323.0 | 313.9 | 304.8 | 301.1 |
| 65°    | 293.8 | 288.3 | 279.2 | 270.9 | 266.4 |
| 67.5°  | 257.2 | 252.6 | 244.3 | 238.0 | 234.3 |
| 70°    | 223.3 | 219.6 | 211.4 | 205.0 | 201.4 |
| 72.5°  | 188.6 | 184.8 | 180.3 | 173.9 | 171.2 |
| 75°    | 153.7 | 152.0 | 147.3 | 141.9 | 143.7 |
| 77.5°  | 122.6 | 119.0 | 117.1 | 114.4 | 111.7 |
| 80°    | 91.6  | 90.6  | 88.7  | 86.0  | 84.2  |
| 82.5°  | 62.2  | 62.2  | 61.4  | 57.6  | 57.6  |
| 85°    | 37.5  | 36.6  | 35.7  | 32.9  | 32.0  |
| 87.5°  | 16.5  | 14.7  | 12.8  | 10.1  | 9.1   |
| 90°    | 1.6   | 19.6  | 53.3  | 50.1  | 51.7  |
| 92.5°  | 33.8  | 45.7  | 47.4  | 49.0  | 49.0  |
| 95°    | 79.4  | 94.7  | 97.4  | 97.4  | 94.7  |
| 97.5°  | 132.2 | 146.3 | 152.4 | 152.4 | 152.4 |
| 100°   | 193.1 | 205.7 | 210.0 | 210.0 | 208.4 |
| 102.5° | 257.4 | 266.6 | 272.6 | 274.3 | 272.6 |
| 105°   | 327.6 | 331.9 | 335.2 | 337.9 | 337.9 |
| 107.5° | 397.2 | 403.7 | 403.7 | 404.9 | 397.2 |
| 110°   | 464.7 | 473.4 | 473.4 | 473.4 | 469.0 |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 537.6  | 546.9  | 545.3  | 540.9  | 537.6  |
| 115°   | 609.4  | 618.2  | 615.5  | 613.8  | 609.4  |
| 117.5° | 680.7  | 692.7  | 685.1  | 680.7  | 676.4  |
| 120°   | 752.5  | 764.5  | 752.5  | 752.5  | 747.6  |
| 122.5° | 817.8  | 833.1  | 825.5  | 821.1  | 817.8  |
| 125°   | 886.4  | 900.0  | 895.7  | 890.8  | 889.2  |
| 127.5° | 953.3  | 970.2  | 964.3  | 957.7  | 953.3  |
| 130°   | 1015.9 | 1035.5 | 1032.8 | 1029.6 | 1023.5 |
| 132.5° | 1086.1 | 1101.4 | 1102.4 | 1094.9 | 1090.5 |
| 135°   | 1146.6 | 1163.3 | 1166.7 | 1165.0 | 1160.7 |
| 137.5° | 1214.0 | 1227.6 | 1230.3 | 1229.2 | 1222.7 |
| 140°   | 1273.3 | 1286.9 | 1294.5 | 1294.5 | 1288.6 |
| 142.5° | 1334.2 | 1347.9 | 1352.2 | 1353.8 | 1347.9 |
| 145°   | 1392.0 | 1402.8 | 1411.5 | 1413.2 | 1407.2 |
| 147.5° | 1443.6 | 1457.3 | 1463.8 | 1466.5 | 1460.5 |
| 150°   | 1497.0 | 1506.2 | 1512.2 | 1517.1 | 1512.2 |
| 152.5° | 1544.3 | 1553.6 | 1561.1 | 1567.2 | 1561.1 |
| 155°   | 1591.6 | 1595.9 | 1600.9 | 1608.5 | 1603.6 |
| 157.5° | 1632.5 | 1635.7 | 1638.4 | 1649.3 | 1641.7 |
| 160°   | 1668.9 | 1672.2 | 1673.8 | 1683.0 | 1676.5 |
| 162.5° | 1702.7 | 1702.7 | 1704.3 | 1714.6 | 1707.0 |
| 165°   | 1731.4 | 1729.8 | 1729.8 | 1740.7 | 1733.1 |
| 167.5° | 1757.6 | 1752.7 | 1752.7 | 1763.6 | 1756.0 |
| 170°   | 1777.2 | 1772.9 | 1771.2 | 1782.1 | 1772.9 |
| 172.5° | 1790.8 | 1786.4 | 1784.8 | 1795.7 | 1786.4 |
| 175°   | 1801.6 | 1797.3 | 1794.1 | 1804.9 | 1795.7 |
| 177.5° | 1807.7 | 1803.3 | 1800.0 | 1809.3 | 1800.0 |
| 180°   | 1804.9 | 1804.9 | 1804.9 | 1804.9 | 1804.9 |

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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 | 7.83             | 8.56  | 8.93  | 9.65  | 11.15 | 7.39           | 8.11  | 8.48  | 9.20  | 10.70 |
|                 | 3H   | 9.46             | 10.11 | 10.57 | 11.21 | 12.73 | 8.97           | 9.62  | 10.08 | 10.72 | 12.24 |
|                 | 4H   | 10.03            | 10.65 | 11.14 | 11.75 | 13.27 | 9.54           | 10.15 | 10.65 | 11.25 | 12.78 |
|                 | 6H   | 10.41            | 10.97 | 11.53 | 12.08 | 13.62 | 9.91           | 10.48 | 11.03 | 11.58 | 13.12 |
|                 | 8H   | 10.50            | 11.04 | 11.63 | 12.16 | 13.69 | 10.00          | 10.54 | 11.13 | 11.66 | 13.19 |
|                 | 12H  | 10.54            | 11.05 | 11.67 | 12.16 | 13.72 | 10.03          | 10.54 | 11.16 | 11.66 | 13.21 |
| 4H              | 2H   | 8.27             | 8.88  | 9.39  | 9.98  | 11.51 | 7.91           | 8.53  | 9.03  | 9.63  | 11.15 |
|                 | 3H   | 10.10            | 10.61 | 11.22 | 11.74 | 13.27 | 9.69           | 10.20 | 10.81 | 11.33 | 12.87 |
|                 | 4H   | 10.79            | 11.26 | 11.92 | 12.38 | 13.94 | 10.37          | 10.84 | 11.50 | 11.95 | 13.51 |
|                 | 6H   | 11.28            | 11.68 | 12.42 | 12.82 | 14.37 | 10.85          | 11.25 | 11.98 | 12.39 | 13.94 |
|                 | 8H   | 11.41            | 11.79 | 12.55 | 12.92 | 14.49 | 10.98          | 11.36 | 12.11 | 12.49 | 14.05 |
|                 | 12H  | 11.47            | 11.81 | 12.63 | 12.96 | 14.53 | 11.02          | 11.37 | 12.18 | 12.51 | 14.08 |
| 8H              | 4H   | 10.96            | 11.34 | 12.10 | 12.47 | 14.04 | 10.59          | 10.96 | 11.72 | 12.10 | 13.66 |
|                 | 6H   | 11.56            | 11.88 | 12.72 | 13.05 | 14.61 | 11.18          | 11.49 | 12.34 | 12.67 | 14.23 |
|                 | 8H   | 11.77            | 12.04 | 12.93 | 13.20 | 14.78 | 11.38          | 11.65 | 12.54 | 12.80 | 14.39 |
|                 | 12H  | 11.88            | 12.12 | 13.05 | 13.27 | 14.89 | 11.47          | 11.71 | 12.64 | 12.86 | 14.48 |
| 12H             | 4H   | 10.94            | 11.28 | 12.09 | 12.43 | 14.00 | 10.57          | 10.91 | 11.72 | 12.06 | 13.63 |
|                 | 6H   | 11.59            | 11.86 | 12.75 | 13.01 | 14.60 | 11.21          | 11.49 | 12.38 | 12.64 | 14.22 |
|                 | 8H   | 11.81            | 12.05 | 12.98 | 13.20 | 14.81 | 11.43          | 11.67 | 12.59 | 12.82 | 14.43 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

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