

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: P913456

Luminaire Tested: DFN2DIP-HX3F0-040D030US927-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P913456  
REPORT IS A COMBINATION OF REPORTS P899204 AND P896089  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-HX3F0-040D030US927-RLLFLL  
Description: 3 foot, Hexagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

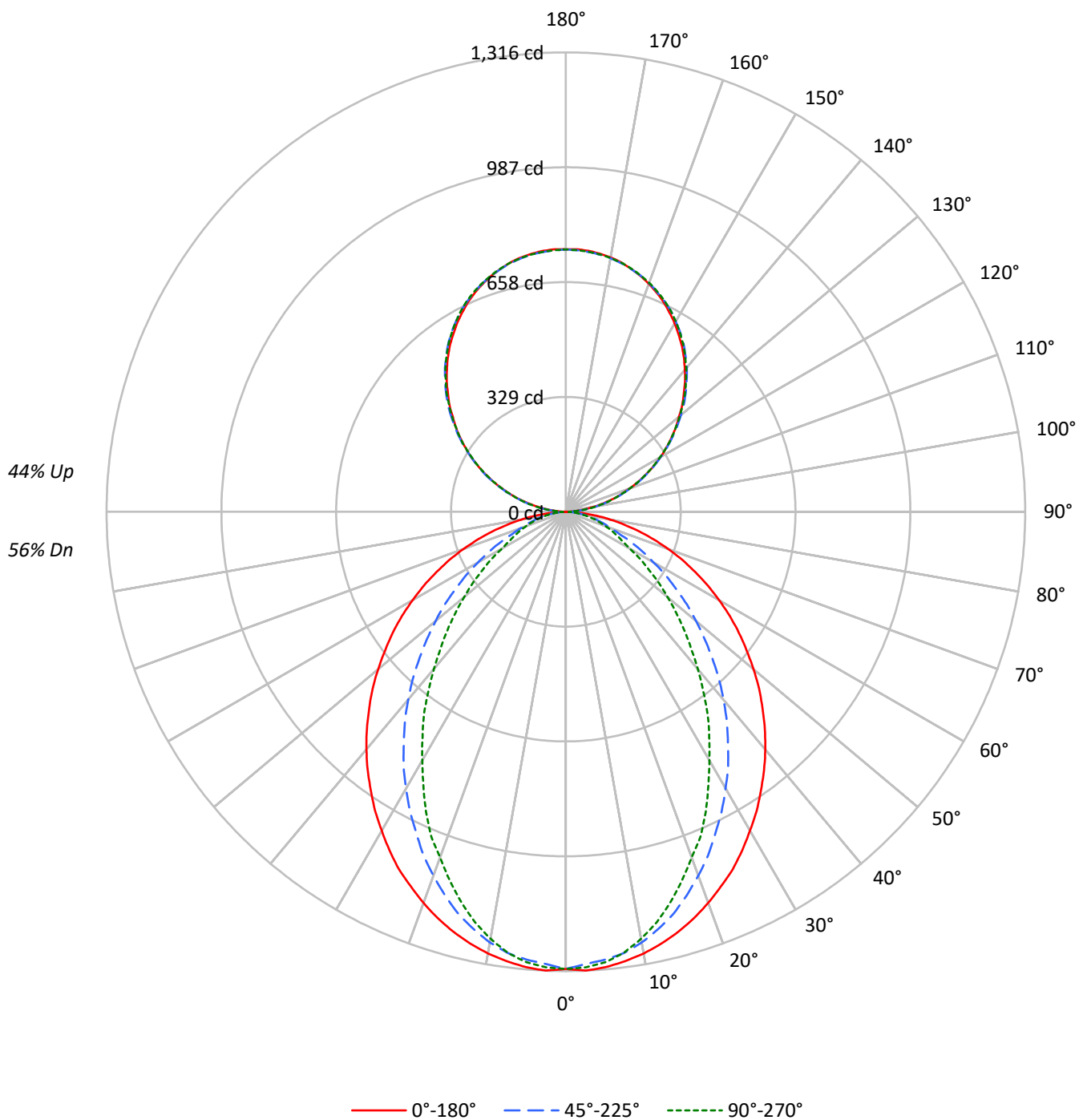
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4796.6 lumens  
Efficiency: N/A  
Efficacy: 83.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.84' x L: 3.28' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 57.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9968  
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: P913456

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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   | 109 | 109 | 109 | 109 | 101 | 101 | 101 | 101 | 87 | 87 | 87 | 74 | 74 | 74 | 62 | 62 | 62 |
| 1   | 100 | 96  | 92  | 88  | 93  | 89  | 86  | 83  | 77 | 75 | 72 | 66 | 64 | 63 | 55 | 54 | 53 |
| 2   | 91  | 84  | 78  | 73  | 85  | 79  | 73  | 69  | 68 | 64 | 61 | 58 | 56 | 53 | 49 | 47 | 46 |
| 3   | 84  | 74  | 67  | 62  | 78  | 70  | 63  | 58  | 61 | 56 | 52 | 52 | 49 | 46 | 44 | 42 | 40 |
| 4   | 77  | 66  | 59  | 53  | 71  | 62  | 55  | 50  | 54 | 49 | 45 | 47 | 43 | 40 | 40 | 37 | 35 |
| 5   | 71  | 59  | 51  | 46  | 66  | 56  | 49  | 43  | 49 | 43 | 39 | 42 | 38 | 35 | 36 | 33 | 30 |
| 6   | 65  | 53  | 46  | 40  | 61  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 34 | 31 | 33 | 30 | 27 |
| 7   | 61  | 48  | 41  | 35  | 56  | 46  | 39  | 34  | 40 | 35 | 30 | 35 | 31 | 27 | 30 | 27 | 24 |
| 8   | 56  | 44  | 37  | 31  | 52  | 42  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 25 | 28 | 25 | 22 |
| 9   | 53  | 41  | 33  | 28  | 49  | 38  | 32  | 27  | 34 | 28 | 25 | 30 | 25 | 22 | 26 | 23 | 20 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 28 | 23 | 20 | 24 | 21 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1517 | 1517 | 1517 |
| 5°  | 1519 | 1492 | 1502 |
| 10° | 1503 | 1462 | 1452 |
| 15° | 1482 | 1412 | 1376 |
| 20° | 1454 | 1345 | 1282 |
| 25° | 1425 | 1269 | 1192 |
| 30° | 1387 | 1192 | 1078 |
| 35° | 1349 | 1109 | 978  |
| 40° | 1311 | 1023 | 863  |
| 45° | 1266 | 928  | 760  |
| 50° | 1220 | 832  | 658  |
| 55° | 1172 | 729  | 561  |
| 60° | 1116 | 622  | 461  |
| 65° | 1052 | 514  | 414  |
| 70° | 974  | 413  | 373  |
| 75° | 876  | 362  | 338  |
| 80° | 734  | 300  | 290  |
| 85° | 502  | 195  | 213  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1266 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 122.7  | 2.6       |
| 10°-20°   | 336.9  | 7.0       |
| 20°-30°   | 473.1  | 9.9       |
| 30°-40°   | 515.7  | 10.8      |
| 40°-50°   | 473.9  | 9.9       |
| 50°-60°   | 372.2  | 7.8       |
| 60°-70°   | 242.3  | 5.1       |
| 70°-80°   | 124.7  | 2.6       |
| 80°-90°   | 34.0   | 0.7       |
| 90°-100°  | 46.5   | 1.0       |
| 100°-110° | 147.8  | 3.1       |
| 110°-120° | 252.9  | 5.3       |
| 120°-130° | 332.6  | 6.9       |
| 130°-140° | 373.3  | 7.8       |
| 140°-150° | 366.1  | 7.6       |
| 150°-160° | 307.1  | 6.4       |
| 160°-170° | 203.7  | 4.2       |
| 170°-180° | 71.2   | 1.5       |
| 0°-30°    | 932.7  | 19.4      |
| 0°-40°    | 1448.4 | 30.2      |
| 0°-60°    | 2294.6 | 47.8      |
| 0°-90°    | 2695.5 | 56.2      |
| 90°-120°  | 447.2  | 9.3       |
| 90°-150°  | 1519.2 | 31.7      |
| 90°-180°  | 2101.0 | 43.8      |
| 0°-180°   | 4796.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1310 | 1310  | 1310 | 1310  | 1310 |      |
| 5°   | 1310 | 1304  | 1288 | 1299  | 1296 | 124  |
| 15°  | 1246 | 1233  | 1192 | 1170  | 1158 | 351  |
| 25°  | 1131 | 1093  | 1014 | 966   | 948  | 520  |
| 35°  | 974  | 914   | 810  | 735   | 709  | 610  |
| 45°  | 796  | 717   | 593  | 508   | 480  | 615  |
| 55°  | 606  | 513   | 385  | 314   | 292  | 541  |
| 65°  | 409  | 313   | 206  | 166   | 162  | 405  |
| 75°  | 218  | 135   | 95   | 86    | 85   | 231  |
| 85°  | 51   | 26    | 22   | 22    | 22   | 58   |
| 90°  | 1    | 8     | 22   | 21    | 22   | 5    |
| 95°  | 33   | 40    | 41   | 41    | 40   | 37   |
| 105° | 136  | 138   | 140  | 141   | 141  | 144  |
| 115° | 254  | 257   | 256  | 256   | 254  | 251  |
| 125° | 369  | 375   | 373  | 371   | 370  | 330  |
| 135° | 477  | 484   | 486  | 485   | 483  | 369  |
| 145° | 580  | 584   | 588  | 588   | 586  | 362  |
| 155° | 663  | 665   | 667  | 670   | 668  | 305  |
| 165° | 721  | 720   | 720  | 725   | 722  | 203  |
| 175° | 750  | 748   | 747  | 752   | 748  | 71   |
| 180° | 752  | 752   | 752  | 752   | 752  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1309.6 | 1309.6 | 1309.6 | 1309.6 | 1309.6 |
| 2.5°   | 1315.6 | 1309.6 | 1296.6 | 1308.5 | 1306.1 |
| 5°     | 1309.6 | 1303.7 | 1288.2 | 1298.9 | 1295.5 |
| 7.5°   | 1298.9 | 1291.9 | 1275.3 | 1279.9 | 1274.1 |
| 10°    | 1284.8 | 1276.4 | 1252.8 | 1249.1 | 1242.1 |
| 12.5°  | 1267.0 | 1256.3 | 1224.2 | 1217.2 | 1204.1 |
| 15°    | 1245.6 | 1232.6 | 1192.3 | 1169.8 | 1158.0 |
| 17.5°  | 1220.8 | 1201.7 | 1151.9 | 1125.9 | 1106.9 |
| 20°    | 1192.3 | 1168.5 | 1109.3 | 1079.7 | 1053.6 |
| 22.5°  | 1161.5 | 1134.2 | 1065.4 | 1025.2 | 1007.5 |
| 25°    | 1130.7 | 1092.7 | 1014.5 | 966.0  | 948.1  |
| 27.5°  | 1094.0 | 1053.6 | 967.1  | 911.4  | 884.1  |
| 30°    | 1054.9 | 1009.7 | 914.9  | 854.5  | 822.5  |
| 32.5°  | 1016.9 | 962.3  | 865.2  | 794.1  | 764.4  |
| 35°    | 974.3  | 913.8  | 809.5  | 734.8  | 708.7  |
| 37.5°  | 932.8  | 867.5  | 757.3  | 675.5  | 645.9  |
| 40°    | 888.9  | 817.8  | 702.8  | 618.7  | 587.9  |
| 42.5°  | 843.8  | 768.0  | 648.3  | 560.5  | 531.0  |
| 45°    | 796.5  | 717.0  | 592.6  | 508.4  | 480.0  |
| 47.5°  | 751.5  | 667.3  | 539.3  | 455.1  | 429.0  |
| 50°    | 701.6  | 617.5  | 487.1  | 405.3  | 380.5  |
| 52.5°  | 653.0  | 564.1  | 437.4  | 359.1  | 336.6  |
| 55°    | 605.6  | 513.2  | 385.2  | 314.1  | 291.6  |
| 57.5°  | 557.1  | 462.2  | 339.0  | 272.6  | 253.7  |
| 60°    | 507.2  | 412.4  | 290.3  | 230.0  | 211.0  |
| 62.5°  | 458.8  | 363.9  | 248.8  | 192.0  | 182.6  |
| 65°    | 408.9  | 312.8  | 206.2  | 166.0  | 162.3  |
| 67.5°  | 361.6  | 265.5  | 166.0  | 145.8  | 142.2  |
| 70°    | 311.7  | 219.3  | 137.4  | 125.6  | 120.8  |
| 72.5°  | 264.4  | 176.6  | 114.9  | 105.5  | 103.1  |
| 75°    | 218.0  | 135.1  | 94.8   | 86.5   | 85.4   |
| 77.5°  | 171.9  | 95.9   | 74.7   | 69.9   | 67.5   |
| 80°    | 129.1  | 68.8   | 56.8   | 52.2   | 52.2   |
| 82.5°  | 90.1   | 46.3   | 39.1   | 36.7   | 36.7   |
| 85°    | 50.9   | 26.1   | 22.5   | 22.5   | 22.5   |
| 87.5°  | 19.0   | 9.4    | 9.4    | 8.3    | 8.3    |
| 90°    | 0.7    | 8.2    | 22.2   | 20.8   | 21.5   |
| 92.5°  | 14.0   | 19.0   | 19.7   | 20.4   | 20.4   |
| 95°    | 33.1   | 39.5   | 40.6   | 40.6   | 39.5   |
| 97.5°  | 55.1   | 60.9   | 63.5   | 63.5   | 63.5   |
| 100°   | 80.4   | 85.6   | 87.5   | 87.5   | 86.8   |
| 102.5° | 107.2  | 111.1  | 113.5  | 114.2  | 113.5  |
| 105°   | 136.4  | 138.2  | 139.6  | 140.7  | 140.7  |
| 107.5° | 165.4  | 168.1  | 168.1  | 168.6  | 165.4  |
| 110°   | 193.5  | 197.2  | 197.2  | 197.2  | 195.4  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 223.9 | 227.8 | 227.0 | 225.2 | 223.9 |
| 115°   | 253.8 | 257.4 | 256.3 | 255.6 | 253.8 |
| 117.5° | 283.4 | 288.4 | 285.3 | 283.4 | 281.6 |
| 120°   | 313.4 | 318.4 | 313.4 | 313.4 | 311.3 |
| 122.5° | 340.6 | 346.9 | 343.7 | 341.9 | 340.6 |
| 125°   | 369.2 | 374.8 | 373.0 | 370.9 | 370.3 |
| 127.5° | 397.0 | 404.0 | 401.6 | 398.8 | 397.0 |
| 130°   | 423.0 | 431.2 | 430.1 | 428.7 | 426.2 |
| 132.5° | 452.3 | 458.6 | 459.1 | 455.9 | 454.1 |
| 135°   | 477.4 | 484.4 | 485.8 | 485.1 | 483.3 |
| 137.5° | 505.5 | 511.2 | 512.3 | 511.9 | 509.1 |
| 140°   | 530.2 | 535.9 | 539.1 | 539.1 | 536.5 |
| 142.5° | 555.6 | 561.3 | 563.1 | 563.8 | 561.3 |
| 145°   | 579.6 | 584.2 | 587.8 | 588.4 | 586.0 |
| 147.5° | 601.2 | 606.8 | 609.5 | 610.7 | 608.2 |
| 150°   | 623.4 | 627.2 | 629.7 | 631.8 | 629.7 |
| 152.5° | 643.1 | 646.9 | 650.1 | 652.6 | 650.1 |
| 155°   | 662.8 | 664.6 | 666.6 | 669.8 | 667.8 |
| 157.5° | 679.8 | 681.1 | 682.3 | 686.8 | 683.7 |
| 160°   | 695.0 | 696.3 | 697.0 | 700.8 | 698.1 |
| 162.5° | 709.0 | 709.0 | 709.7 | 714.0 | 710.8 |
| 165°   | 721.0 | 720.3 | 720.3 | 724.8 | 721.7 |
| 167.5° | 731.9 | 729.8 | 729.8 | 734.4 | 731.2 |
| 170°   | 740.1 | 738.2 | 737.6 | 742.1 | 738.2 |
| 172.5° | 745.7 | 743.9 | 743.2 | 747.7 | 743.9 |
| 175°   | 750.3 | 748.5 | 747.1 | 751.6 | 747.7 |
| 177.5° | 752.7 | 750.9 | 749.6 | 753.4 | 749.6 |
| 180°   | 751.6 | 751.6 | 751.6 | 751.6 | 751.6 |

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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 | 9.11             | 9.99  | 10.02 | 10.92 | 12.10 | 5.09           | 5.97 | 6.00 | 6.89 | 8.08  |
|                 | 3H   | 10.78            | 11.57 | 11.71 | 12.51 | 13.71 | 6.27           | 7.07 | 7.20 | 8.00 | 9.21  |
|                 | 4H   | 11.39            | 12.14 | 12.33 | 13.07 | 14.29 | 6.72           | 7.47 | 7.66 | 8.41 | 9.63  |
|                 | 6H   | 11.81            | 12.49 | 12.76 | 13.44 | 14.67 | 7.04           | 7.73 | 7.99 | 8.68 | 9.90  |
|                 | 8H   | 11.93            | 12.59 | 12.89 | 13.55 | 14.77 | 7.13           | 7.79 | 8.09 | 8.75 | 9.98  |
|                 | 12H  | 11.99            | 12.61 | 12.95 | 13.57 | 14.82 | 7.18           | 7.80 | 8.14 | 8.75 | 10.01 |
| 4H              | 2H   | 9.13             | 9.88  | 10.08 | 10.82 | 12.03 | 5.68           | 6.43 | 6.63 | 7.37 | 8.58  |
|                 | 3H   | 10.96            | 11.58 | 11.91 | 12.55 | 13.78 | 7.03           | 7.65 | 7.98 | 8.62 | 9.85  |
|                 | 4H   | 11.65            | 12.21 | 12.61 | 13.18 | 14.43 | 7.58           | 8.15 | 8.54 | 9.11 | 10.36 |
|                 | 6H   | 12.16            | 12.64 | 13.13 | 13.63 | 14.89 | 8.00           | 8.48 | 8.97 | 9.47 | 10.72 |
|                 | 8H   | 12.33            | 12.78 | 13.31 | 13.76 | 15.03 | 8.12           | 8.58 | 9.10 | 9.56 | 10.83 |
|                 | 12H  | 12.42            | 12.83 | 13.42 | 13.83 | 15.10 | 8.19           | 8.60 | 9.18 | 9.59 | 10.87 |
| 8H              | 4H   | 11.62            | 12.07 | 12.59 | 13.05 | 14.32 | 7.86           | 8.31 | 8.83 | 9.29 | 10.56 |
|                 | 6H   | 12.18            | 12.55 | 13.18 | 13.57 | 14.84 | 8.37           | 8.75 | 9.37 | 9.77 | 11.04 |
|                 | 8H   | 12.39            | 12.72 | 13.40 | 13.73 | 15.02 | 8.56           | 8.89 | 9.57 | 9.90 | 11.19 |
|                 | 12H  | 12.53            | 12.82 | 13.54 | 13.82 | 15.15 | 8.68           | 8.97 | 9.69 | 9.97 | 11.30 |
| 12H             | 4H   | 11.57            | 11.98 | 12.57 | 12.98 | 14.25 | 7.87           | 8.27 | 8.86 | 9.27 | 10.54 |
|                 | 6H   | 12.15            | 12.48 | 13.16 | 13.49 | 14.78 | 8.42           | 8.75 | 9.43 | 9.76 | 11.05 |
|                 | 8H   | 12.37            | 12.66 | 13.38 | 13.66 | 15.00 | 8.63           | 8.92 | 9.64 | 9.92 | 11.26 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

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