

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: P912467

Luminaire Tested: DFN2DIP-TR2F0-030D020US850-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P912467  
REPORT IS A COMBINATION OF REPORTS P901744 AND P897145  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR2F0-030D020US850-RLLONL  
Description: 2 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

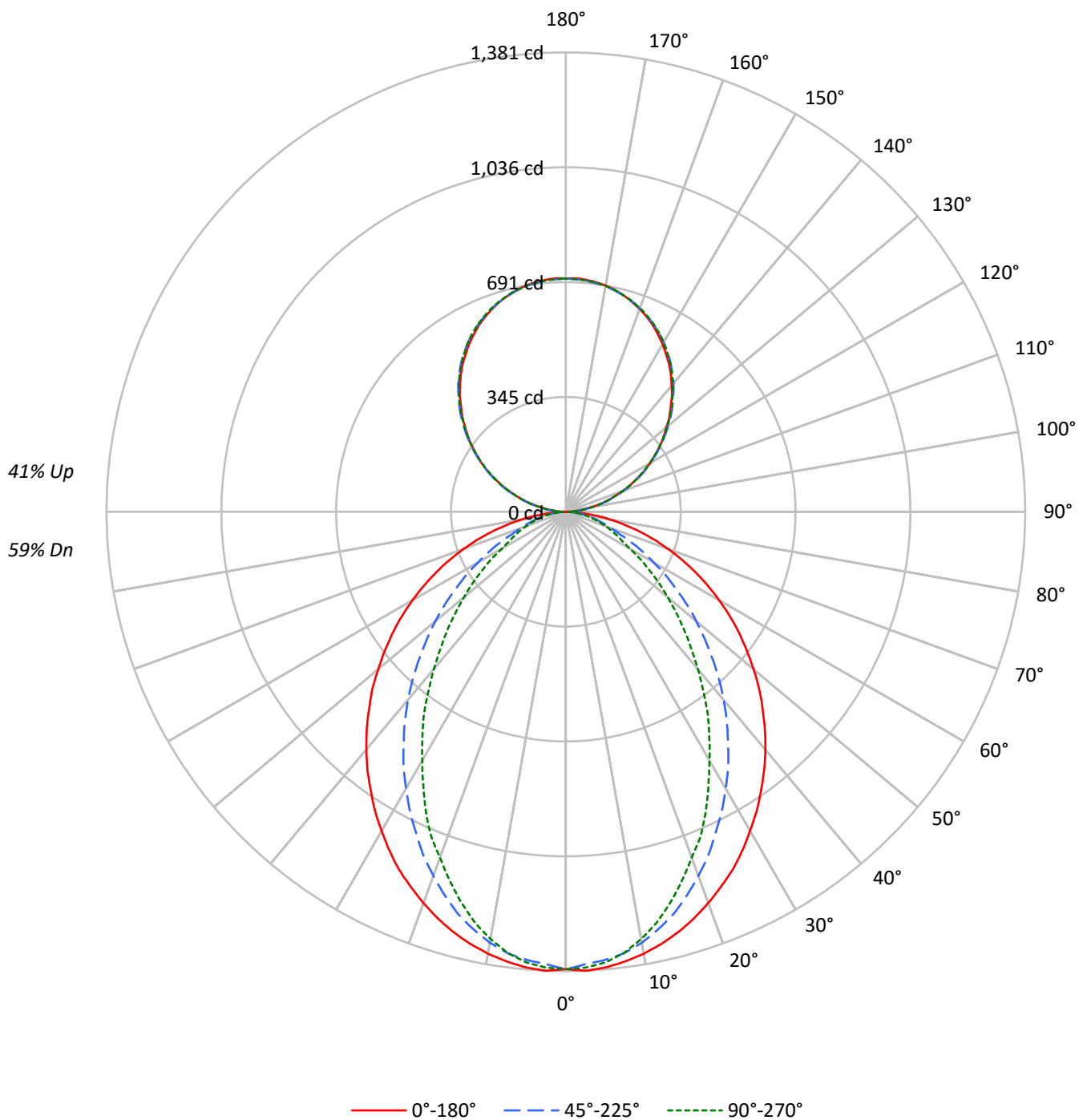
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4790.9 lumens  
Efficiency: N/A  
Efficacy: 118.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.04' x L: 2.36' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 40.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
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   | 109 | 109 | 109 | 109 | 102 | 102 | 102 | 102 | 88 | 88 | 88 | 76 | 76 | 76 | 64 | 64 | 64 |
| 1   | 100 | 96  | 92  | 89  | 94  | 90  | 87  | 84  | 78 | 76 | 74 | 68 | 66 | 64 | 58 | 57 | 56 |
| 2   | 92  | 85  | 79  | 74  | 86  | 79  | 74  | 70  | 69 | 65 | 62 | 60 | 57 | 55 | 52 | 50 | 48 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 62 | 57 | 53 | 54 | 50 | 47 | 46 | 44 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 55 | 50 | 46 | 48 | 44 | 41 | 42 | 39 | 36 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 50 | 44 | 40 | 44 | 39 | 36 | 38 | 34 | 32 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 44  | 39  | 45 | 39 | 35 | 40 | 35 | 32 | 35 | 31 | 28 |
| 7   | 61  | 49  | 41  | 36  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 32 | 28 | 32 | 28 | 25 |
| 8   | 57  | 45  | 37  | 32  | 53  | 42  | 35  | 30  | 38 | 32 | 28 | 33 | 29 | 25 | 29 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 27  | 35 | 29 | 25 | 31 | 26 | 23 | 27 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 24 | 21 | 25 | 22 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3067 | 3067 | 3067 |
| 5°  | 3067 | 3011 | 3032 |
| 10° | 3032 | 2946 | 2929 |
| 15° | 2986 | 2841 | 2771 |
| 20° | 2926 | 2701 | 2580 |
| 25° | 2865 | 2545 | 2395 |
| 30° | 2785 | 2385 | 2163 |
| 35° | 2705 | 2214 | 1959 |
| 40° | 2624 | 2038 | 1726 |
| 45° | 2531 | 1844 | 1515 |
| 50° | 2433 | 1648 | 1310 |
| 55° | 2331 | 1439 | 1113 |
| 60° | 2213 | 1223 | 911  |
| 65° | 2077 | 1004 | 814  |
| 70° | 1912 | 799  | 730  |
| 75° | 1703 | 692  | 653  |
| 80° | 1404 | 561  | 551  |
| 85° | 923  | 348  | 387  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2531 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 128.9  | 2.7       |
| 10°-20°   | 353.8  | 7.4       |
| 20°-30°   | 496.7  | 10.4      |
| 30°-40°   | 541.4  | 11.3      |
| 40°-50°   | 497.6  | 10.4      |
| 50°-60°   | 390.8  | 8.2       |
| 60°-70°   | 254.4  | 5.3       |
| 70°-80°   | 130.9  | 2.7       |
| 80°-90°   | 35.4   | 0.7       |
| 90°-100°  | 43.4   | 0.9       |
| 100°-110° | 137.9  | 2.9       |
| 110°-120° | 236.0  | 4.9       |
| 120°-130° | 310.4  | 6.5       |
| 130°-140° | 348.4  | 7.3       |
| 140°-150° | 341.7  | 7.1       |
| 150°-160° | 286.6  | 6.0       |
| 160°-170° | 190.1  | 4.0       |
| 170°-180° | 66.4   | 1.4       |
| 0°-30°    | 979.3  | 20.4      |
| 0°-40°    | 1520.7 | 31.7      |
| 0°-60°    | 2409.2 | 50.3      |
| 0°-90°    | 2829.9 | 59.1      |
| 90°-120°  | 417.3  | 8.7       |
| 90°-150°  | 1417.8 | 29.6      |
| 90°-180°  | 1961.0 | 40.9      |
| 0°-180°   | 4790.9 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1375 | 1375  | 1375 | 1375  | 1375 |      |
| 5°   | 1375 | 1369  | 1353 | 1364  | 1360 | 130  |
| 15°  | 1308 | 1294  | 1252 | 1228  | 1216 | 369  |
| 25°  | 1187 | 1147  | 1065 | 1014  | 995  | 546  |
| 35°  | 1023 | 959   | 850  | 772   | 744  | 640  |
| 45°  | 836  | 753   | 622  | 534   | 504  | 646  |
| 55°  | 636  | 539   | 404  | 330   | 306  | 568  |
| 65°  | 429  | 328   | 216  | 174   | 170  | 426  |
| 75°  | 229  | 142   | 100  | 91    | 90   | 242  |
| 85°  | 54   | 27    | 24   | 24    | 24   | 61   |
| 90°  | 1    | 8     | 21   | 19    | 20   | 5    |
| 95°  | 31   | 37    | 38   | 38    | 37   | 34   |
| 105° | 127  | 129   | 130  | 131   | 131  | 134  |
| 115° | 237  | 240   | 239  | 238   | 237  | 234  |
| 125° | 344  | 350   | 348  | 346   | 346  | 308  |
| 135° | 446  | 452   | 453  | 453   | 451  | 344  |
| 145° | 541  | 545   | 549  | 549   | 547  | 338  |
| 155° | 619  | 620   | 622  | 625   | 623  | 285  |
| 165° | 673  | 672   | 672  | 676   | 674  | 190  |
| 175° | 700  | 699   | 697  | 701   | 698  | 67   |
| 180° | 701  | 701   | 701  | 701   | 701  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1375.0 | 1375.0 | 1375.0 | 1375.0 | 1375.0 |
| 2.5°   | 1381.3 | 1375.0 | 1361.3 | 1373.8 | 1371.4 |
| 5°     | 1375.0 | 1368.8 | 1352.6 | 1363.8 | 1360.1 |
| 7.5°   | 1363.8 | 1356.4 | 1339.0 | 1343.9 | 1337.7 |
| 10°    | 1348.9 | 1340.2 | 1315.4 | 1311.5 | 1304.2 |
| 12.5°  | 1330.2 | 1319.0 | 1285.4 | 1278.0 | 1264.3 |
| 15°    | 1307.8 | 1294.1 | 1251.8 | 1228.2 | 1215.8 |
| 17.5°  | 1281.7 | 1261.8 | 1209.5 | 1182.2 | 1162.2 |
| 20°    | 1251.8 | 1226.9 | 1164.7 | 1133.7 | 1106.2 |
| 22.5°  | 1219.6 | 1190.8 | 1118.6 | 1076.4 | 1057.8 |
| 25°    | 1187.2 | 1147.3 | 1065.2 | 1014.2 | 995.4  |
| 27.5°  | 1148.6 | 1106.2 | 1015.4 | 957.0  | 928.2  |
| 30°    | 1107.6 | 1060.2 | 960.6  | 897.3  | 863.6  |
| 32.5°  | 1067.6 | 1010.4 | 908.5  | 833.7  | 802.6  |
| 35°    | 1022.9 | 959.4  | 849.9  | 771.5  | 744.1  |
| 37.5°  | 979.4  | 910.8  | 795.2  | 709.2  | 678.3  |
| 40°    | 933.3  | 858.7  | 737.9  | 649.5  | 617.3  |
| 42.5°  | 886.0  | 806.5  | 680.7  | 588.5  | 557.5  |
| 45°    | 836.3  | 752.8  | 622.3  | 533.8  | 503.9  |
| 47.5°  | 788.9  | 700.7  | 566.3  | 477.8  | 450.5  |
| 50°    | 736.7  | 648.3  | 511.5  | 425.5  | 399.5  |
| 52.5°  | 685.6  | 592.3  | 459.2  | 377.1  | 353.4  |
| 55°    | 635.8  | 538.8  | 404.3  | 329.8  | 306.2  |
| 57.5°  | 584.9  | 485.3  | 356.0  | 286.2  | 266.3  |
| 60°    | 532.5  | 433.1  | 304.9  | 241.4  | 221.6  |
| 62.5°  | 481.6  | 382.1  | 261.3  | 201.6  | 191.7  |
| 65°    | 429.3  | 328.5  | 216.5  | 174.2  | 170.5  |
| 67.5°  | 379.6  | 278.7  | 174.2  | 153.0  | 149.3  |
| 70°    | 327.3  | 230.2  | 144.3  | 131.9  | 126.9  |
| 72.5°  | 277.5  | 185.3  | 120.7  | 110.8  | 108.2  |
| 75°    | 228.9  | 141.8  | 99.6   | 90.8   | 89.6   |
| 77.5°  | 180.4  | 100.7  | 78.4   | 73.4   | 70.9   |
| 80°    | 135.6  | 72.2   | 59.7   | 54.8   | 54.8   |
| 82.5°  | 94.5   | 48.6   | 41.0   | 38.6   | 38.6   |
| 85°    | 53.5   | 27.3   | 23.6   | 23.6   | 23.6   |
| 87.5°  | 20.0   | 9.9    | 9.9    | 8.8    | 8.8    |
| 90°    | 0.7    | 7.7    | 20.7   | 19.4   | 20.1   |
| 92.5°  | 13.1   | 17.7   | 18.4   | 19.1   | 19.1   |
| 95°    | 30.8   | 36.8   | 37.8   | 37.8   | 36.8   |
| 97.5°  | 51.3   | 56.9   | 59.2   | 59.2   | 59.2   |
| 100°   | 75.1   | 80.0   | 81.6   | 81.6   | 81.0   |
| 102.5° | 100.0  | 103.6  | 105.9  | 106.6  | 105.9  |
| 105°   | 127.3  | 129.0  | 130.3  | 131.3  | 131.3  |
| 107.5° | 154.4  | 156.9  | 156.9  | 157.4  | 154.4  |
| 110°   | 180.7  | 184.0  | 184.0  | 184.0  | 182.3  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 208.9 | 212.5 | 211.9 | 210.2 | 208.9 |
| 115°   | 236.9 | 240.2 | 239.2 | 238.5 | 236.9 |
| 117.5° | 264.6 | 269.3 | 266.3 | 264.6 | 262.8 |
| 120°   | 292.4 | 297.1 | 292.4 | 292.4 | 290.6 |
| 122.5° | 317.8 | 323.7 | 320.8 | 319.2 | 317.8 |
| 125°   | 344.5 | 349.8 | 348.1 | 346.2 | 345.6 |
| 127.5° | 370.5 | 377.1 | 374.7 | 372.2 | 370.5 |
| 130°   | 394.8 | 402.5 | 401.3 | 400.1 | 397.8 |
| 132.5° | 422.1 | 428.1 | 428.4 | 425.5 | 423.7 |
| 135°   | 445.6 | 452.1 | 453.4 | 452.8 | 451.0 |
| 137.5° | 471.8 | 477.1 | 478.2 | 477.8 | 475.2 |
| 140°   | 494.8 | 500.2 | 503.2 | 503.2 | 500.8 |
| 142.5° | 518.6 | 523.8 | 525.6 | 526.1 | 523.8 |
| 145°   | 541.0 | 545.2 | 548.6 | 549.2 | 546.8 |
| 147.5° | 561.0 | 566.4 | 568.9 | 569.9 | 567.6 |
| 150°   | 581.8 | 585.3 | 587.7 | 589.5 | 587.7 |
| 152.5° | 600.2 | 603.7 | 606.7 | 609.1 | 606.7 |
| 155°   | 618.6 | 620.3 | 622.1 | 625.1 | 623.3 |
| 157.5° | 634.5 | 635.7 | 636.8 | 641.0 | 638.0 |
| 160°   | 648.7 | 649.9 | 650.5 | 654.1 | 651.5 |
| 162.5° | 661.7 | 661.7 | 662.3 | 666.4 | 663.4 |
| 165°   | 672.9 | 672.3 | 672.3 | 676.5 | 673.6 |
| 167.5° | 683.0 | 681.1 | 681.1 | 685.4 | 682.5 |
| 170°   | 690.7 | 689.0 | 688.4 | 692.6 | 689.0 |
| 172.5° | 696.0 | 694.2 | 693.7 | 697.9 | 694.2 |
| 175°   | 700.2 | 698.6 | 697.2 | 701.4 | 697.9 |
| 177.5° | 702.6 | 700.9 | 699.6 | 703.1 | 699.6 |
| 180°   | 701.4 | 701.4 | 701.4 | 701.4 | 701.4 |

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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 | 11.72            | 12.63 | 12.60 | 13.53 | 14.66 | 7.70           | 8.61  | 8.58  | 9.51  | 10.65 |
|                 | 3H   | 13.38            | 14.19 | 14.27 | 15.10 | 16.26 | 8.88           | 9.69  | 9.77  | 10.60 | 11.76 |
|                 | 4H   | 13.97            | 14.74 | 14.88 | 15.66 | 16.83 | 9.32           | 10.09 | 10.23 | 11.00 | 12.18 |
|                 | 6H   | 14.38            | 15.09 | 15.30 | 16.01 | 17.19 | 9.63           | 10.34 | 10.55 | 11.26 | 12.45 |
|                 | 8H   | 14.50            | 15.17 | 15.43 | 16.11 | 17.29 | 9.72           | 10.39 | 10.65 | 11.33 | 12.51 |
|                 | 12H  | 14.55            | 15.19 | 15.49 | 16.12 | 17.33 | 9.76           | 10.40 | 10.69 | 11.33 | 12.54 |
| 4H              | 2H   | 11.74            | 12.51 | 12.66 | 13.42 | 14.60 | 8.29           | 9.06  | 9.21  | 9.97  | 11.15 |
|                 | 3H   | 13.55            | 14.19 | 14.48 | 15.13 | 16.32 | 9.63           | 10.27 | 10.56 | 11.21 | 12.40 |
|                 | 4H   | 14.23            | 14.81 | 15.16 | 15.75 | 16.96 | 10.17          | 10.75 | 11.10 | 11.69 | 12.90 |
|                 | 6H   | 14.73            | 15.23 | 15.67 | 16.19 | 17.40 | 10.57          | 11.08 | 11.52 | 12.04 | 13.25 |
|                 | 8H   | 14.89            | 15.36 | 15.84 | 16.31 | 17.54 | 10.70          | 11.16 | 11.65 | 12.12 | 13.35 |
|                 | 12H  | 14.97            | 15.40 | 15.94 | 16.37 | 17.60 | 10.76          | 11.18 | 11.73 | 12.15 | 13.38 |
| 8H              | 4H   | 14.20            | 14.67 | 15.15 | 15.62 | 16.85 | 10.44          | 10.91 | 11.39 | 11.86 | 13.09 |
|                 | 6H   | 14.74            | 15.13 | 15.72 | 16.13 | 17.35 | 10.94          | 11.33 | 11.92 | 12.32 | 13.55 |
|                 | 8H   | 14.94            | 15.28 | 15.93 | 16.27 | 17.52 | 11.12          | 11.46 | 12.10 | 12.45 | 13.69 |
|                 | 12H  | 15.07            | 15.37 | 16.06 | 16.35 | 17.64 | 11.23          | 11.53 | 12.22 | 12.51 | 13.80 |
| 12H             | 4H   | 14.15            | 14.57 | 15.12 | 15.55 | 16.78 | 10.44          | 10.87 | 11.41 | 11.84 | 13.07 |
|                 | 6H   | 14.72            | 15.06 | 15.70 | 16.04 | 17.29 | 10.98          | 11.32 | 11.97 | 12.31 | 13.56 |
|                 | 8H   | 14.92            | 15.22 | 15.91 | 16.20 | 17.50 | 11.18          | 11.48 | 12.17 | 12.46 | 13.76 |

END OF REPORT

FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE

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