

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: P907464

Luminaire Tested: DFN2DIP-TR4F0-090D070US835-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P907464  
REPORT IS A COMBINATION OF REPORTS P900434 AND P897293  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-090D070US835-RLLFLL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

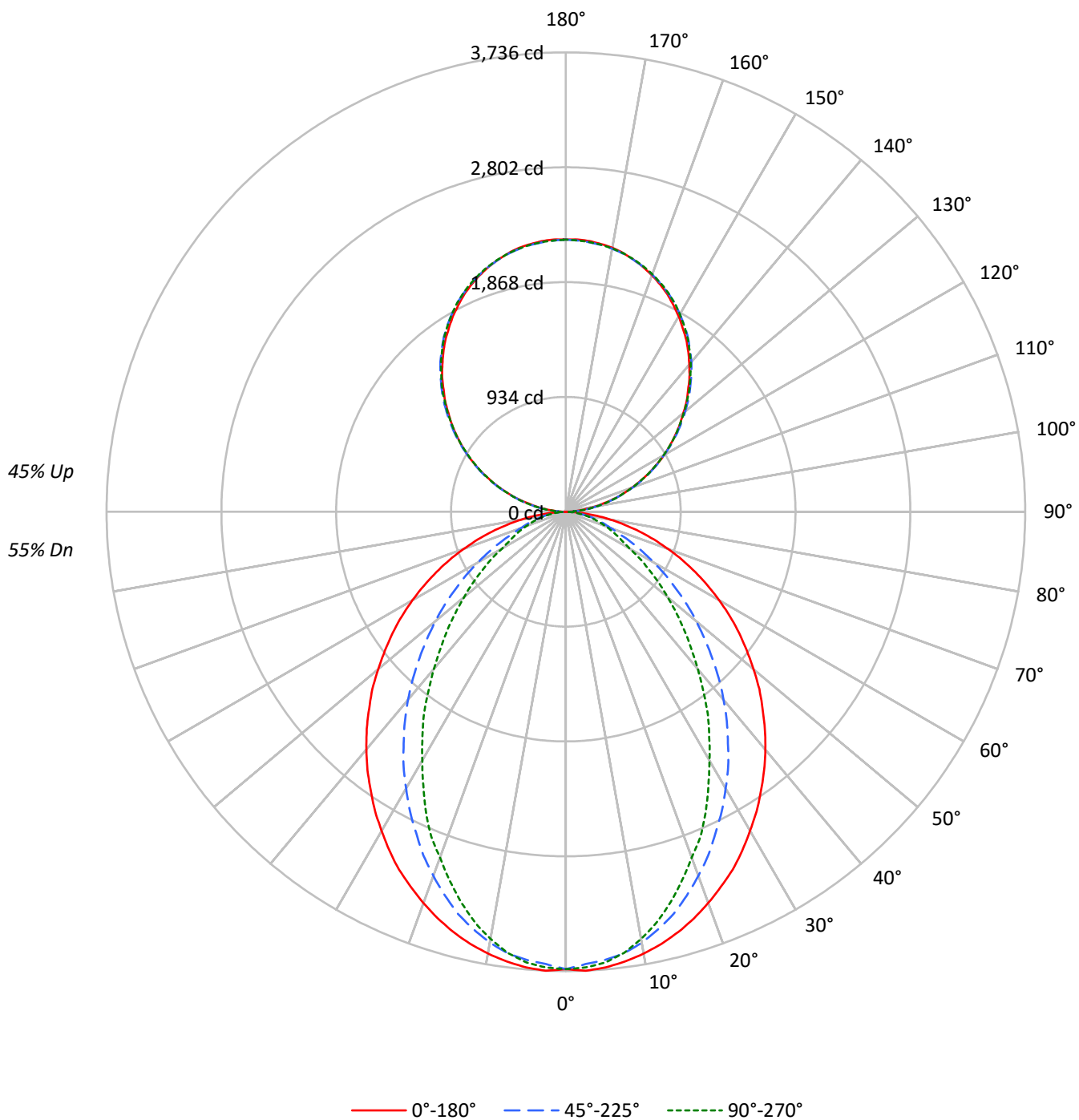
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13845.0 lumens  
Efficiency: N/A  
Efficacy: 99.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 139.6  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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: P907464

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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   | 108 | 108 | 108 | 108 | 101 | 101 | 101 | 101 | 86 | 86 | 86 | 73 | 73 | 73 | 61 | 61 | 61 |
| 1   | 99  | 95  | 92  | 88  | 92  | 89  | 86  | 83  | 76 | 74 | 72 | 65 | 63 | 62 | 55 | 54 | 53 |
| 2   | 91  | 84  | 78  | 73  | 84  | 78  | 73  | 69  | 68 | 64 | 60 | 58 | 55 | 53 | 49 | 47 | 45 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 60 | 55 | 51 | 52 | 48 | 45 | 44 | 41 | 39 |
| 4   | 77  | 66  | 58  | 52  | 71  | 62  | 55  | 50  | 54 | 49 | 44 | 46 | 42 | 39 | 39 | 36 | 34 |
| 5   | 71  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 43 | 39 | 42 | 38 | 34 | 36 | 33 | 30 |
| 6   | 65  | 53  | 45  | 40  | 60  | 50  | 43  | 38  | 44 | 38 | 34 | 38 | 34 | 30 | 33 | 29 | 27 |
| 7   | 60  | 48  | 41  | 35  | 56  | 45  | 38  | 33  | 40 | 34 | 30 | 35 | 30 | 27 | 30 | 27 | 24 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 35  | 30  | 37 | 31 | 27 | 32 | 28 | 24 | 28 | 24 | 22 |
| 9   | 52  | 40  | 33  | 28  | 49  | 38  | 31  | 27  | 34 | 28 | 24 | 30 | 25 | 22 | 26 | 22 | 20 |
| 10  | 49  | 37  | 30  | 25  | 46  | 35  | 29  | 24  | 31 | 26 | 22 | 27 | 23 | 20 | 24 | 20 | 18 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2955 | 2955 | 2955 |
| 5°  | 2960 | 2908 | 2927 |
| 10° | 2931 | 2851 | 2831 |
| 15° | 2890 | 2757 | 2684 |
| 20° | 2837 | 2627 | 2503 |
| 25° | 2782 | 2481 | 2329 |
| 30° | 2709 | 2332 | 2107 |
| 35° | 2637 | 2171 | 1913 |
| 40° | 2564 | 2005 | 1690 |
| 45° | 2479 | 1821 | 1488 |
| 50° | 2391 | 1635 | 1291 |
| 55° | 2299 | 1436 | 1101 |
| 60° | 2193 | 1228 | 906  |
| 65° | 2071 | 1017 | 816  |
| 70° | 1923 | 820  | 738  |
| 75° | 1737 | 723  | 671  |
| 80° | 1468 | 606  | 582  |
| 85° | 1023 | 404  | 437  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
Vertical Angle: 45°  
Luminance: 2479 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 348.6   | 2.5       |
| 10°-20°   | 957.0   | 6.9       |
| 20°-30°   | 1343.6  | 9.7       |
| 30°-40°   | 1464.6  | 10.6      |
| 40°-50°   | 1346.2  | 9.7       |
| 50°-60°   | 1057.2  | 7.6       |
| 60°-70°   | 688.1   | 5.0       |
| 70°-80°   | 354.2   | 2.6       |
| 80°-90°   | 96.7    | 0.7       |
| 90°-100°  | 137.0   | 1.0       |
| 100°-110° | 435.3   | 3.1       |
| 110°-120° | 744.9   | 5.4       |
| 120°-130° | 979.6   | 7.1       |
| 130°-140° | 1099.6  | 7.9       |
| 140°-150° | 1078.3  | 7.8       |
| 150°-160° | 904.5   | 6.5       |
| 160°-170° | 599.9   | 4.3       |
| 170°-180° | 209.7   | 1.5       |
| 0°-30°    | 2649.2  | 19.1      |
| 0°-40°    | 4113.9  | 29.7      |
| 0°-60°    | 6517.2  | 47.1      |
| 0°-90°    | 7656.3  | 55.3      |
| 90°-120°  | 1317.2  | 9.5       |
| 90°-150°  | 4474.7  | 32.3      |
| 90°-180°  | 6189.0  | 44.7      |
| 0°-180°   | 13845.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3720 | 3720  | 3720 | 3720  | 3720 |      |
| 5°   | 3720 | 3703  | 3659 | 3689  | 3679 | 353  |
| 15°  | 3538 | 3501  | 3386 | 3322  | 3289 | 997  |
| 25°  | 3212 | 3104  | 2882 | 2744  | 2693 | 1477 |
| 35°  | 2767 | 2595  | 2299 | 2087  | 2013 | 1732 |
| 45°  | 2262 | 2036  | 1683 | 1444  | 1363 | 1747 |
| 55°  | 1720 | 1458  | 1094 | 892   | 828  | 1537 |
| 65°  | 1161 | 889   | 586  | 471   | 461  | 1151 |
| 75°  | 619  | 384   | 269  | 246   | 242  | 655  |
| 85°  | 145  | 74    | 64   | 64    | 64   | 166  |
| 90°  | 2    | 24    | 65   | 61    | 63   | 14   |
| 95°  | 97   | 116   | 120  | 120   | 116  | 108  |
| 105° | 402  | 407   | 411  | 414   | 414  | 424  |
| 115° | 748  | 758   | 755  | 753   | 748  | 739  |
| 125° | 1087 | 1104  | 1099 | 1093  | 1091 | 972  |
| 135° | 1406 | 1427  | 1431 | 1429  | 1424 | 1087 |
| 145° | 1707 | 1721  | 1731 | 1733  | 1726 | 1067 |
| 155° | 1952 | 1958  | 1964 | 1973  | 1967 | 899  |
| 165° | 2124 | 2122  | 2122 | 2135  | 2126 | 599  |
| 175° | 2210 | 2204  | 2200 | 2214  | 2202 | 210  |
| 180° | 2214 | 2214  | 2214 | 2214  | 2214 |      |

TEST NUMBER: P907464

CATALOG NUMBER: DFN2DIP-TR4F0-090D070US835-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3719.7 | 3719.7 | 3719.7 | 3719.7 | 3719.7 |
| 2.5°   | 3736.5 | 3719.7 | 3682.5 | 3716.5 | 3709.7 |
| 5°     | 3719.7 | 3702.9 | 3659.0 | 3689.3 | 3679.3 |
| 7.5°   | 3689.3 | 3669.3 | 3622.2 | 3635.4 | 3618.6 |
| 10°    | 3649.0 | 3625.4 | 3558.3 | 3547.9 | 3527.9 |
| 12.5°  | 3598.6 | 3568.3 | 3477.2 | 3457.2 | 3420.0 |
| 15°    | 3537.9 | 3500.8 | 3386.5 | 3322.5 | 3289.0 |
| 17.5°  | 3467.2 | 3413.3 | 3271.8 | 3197.9 | 3144.0 |
| 20°    | 3386.5 | 3319.0 | 3150.7 | 3066.8 | 2992.5 |
| 22.5°  | 3299.0 | 3221.5 | 3026.1 | 2911.8 | 2861.5 |
| 25°    | 3211.5 | 3103.6 | 2881.5 | 2743.6 | 2692.9 |
| 27.5°  | 3107.2 | 2992.5 | 2746.8 | 2588.6 | 2511.1 |
| 30°    | 2996.1 | 2867.9 | 2598.6 | 2427.2 | 2336.1 |
| 32.5°  | 2888.2 | 2733.2 | 2457.5 | 2255.4 | 2171.1 |
| 35°    | 2767.2 | 2595.4 | 2299.3 | 2087.2 | 2012.9 |
| 37.5°  | 2649.3 | 2464.0 | 2151.1 | 1918.6 | 1834.7 |
| 40°    | 2524.7 | 2322.9 | 1996.1 | 1757.2 | 1669.7 |
| 42.5°  | 2396.8 | 2181.5 | 1841.4 | 1592.2 | 1508.2 |
| 45°    | 2262.2 | 2036.5 | 1683.2 | 1443.9 | 1363.2 |
| 47.5°  | 2134.3 | 1895.4 | 1531.8 | 1292.5 | 1218.6 |
| 50°    | 1992.9 | 1753.9 | 1383.6 | 1151.1 | 1080.7 |
| 52.5°  | 1854.7 | 1602.2 | 1242.2 | 1020.0 | 956.1  |
| 55°    | 1720.0 | 1457.5 | 1093.9 | 892.2  | 828.2  |
| 57.5°  | 1582.2 | 1312.9 | 962.9  | 774.3  | 720.4  |
| 60°    | 1440.7 | 1171.4 | 824.7  | 653.2  | 599.3  |
| 62.5°  | 1302.9 | 1033.6 | 706.8  | 545.4  | 518.6  |
| 65°    | 1161.4 | 888.6  | 585.7  | 471.4  | 461.1  |
| 67.5°  | 1026.8 | 753.9  | 471.4  | 413.9  | 403.9  |
| 70°    | 885.4  | 622.9  | 390.4  | 356.8  | 343.2  |
| 72.5°  | 750.7  | 501.4  | 326.4  | 299.6  | 292.9  |
| 75°    | 619.3  | 383.6  | 269.3  | 245.7  | 242.5  |
| 77.5°  | 488.2  | 272.5  | 212.1  | 198.6  | 191.8  |
| 80°    | 366.8  | 195.4  | 161.4  | 148.2  | 148.2  |
| 82.5°  | 255.7  | 131.4  | 111.1  | 104.3  | 104.3  |
| 85°    | 144.6  | 73.9   | 63.9   | 63.9   | 63.9   |
| 87.5°  | 53.9   | 26.8   | 26.8   | 23.6   | 23.6   |
| 90°    | 2.0    | 24.0   | 65.4   | 61.4   | 63.4   |
| 92.5°  | 41.4   | 56.1   | 58.1   | 60.1   | 60.1   |
| 95°    | 97.4   | 116.1  | 119.5  | 119.5  | 116.1  |
| 97.5°  | 162.2  | 179.5  | 186.9  | 186.9  | 186.9  |
| 100°   | 236.9  | 252.3  | 257.6  | 257.6  | 255.6  |
| 102.5° | 315.7  | 327.0  | 334.4  | 336.4  | 334.4  |
| 105°   | 401.8  | 407.1  | 411.1  | 414.5  | 414.5  |
| 107.5° | 487.2  | 495.2  | 495.2  | 496.6  | 487.2  |
| 110°   | 570.0  | 580.7  | 580.7  | 580.7  | 575.3  |

TEST NUMBER: P907464

CATALOG NUMBER: DFN2DIP-TR4F0-090D070US835-RLLFLL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 659.4  | 670.8  | 668.8  | 663.4  | 659.4  |
| 115°   | 747.5  | 758.2  | 754.9  | 752.9  | 747.5  |
| 117.5° | 834.9  | 849.6  | 840.3  | 834.9  | 829.6  |
| 120°   | 923.0  | 937.7  | 923.0  | 923.0  | 917.0  |
| 122.5° | 1003.1 | 1021.8 | 1012.5 | 1007.1 | 1003.1 |
| 125°   | 1087.2 | 1103.9 | 1098.6 | 1092.6 | 1090.6 |
| 127.5° | 1169.3 | 1190.0 | 1182.7 | 1174.7 | 1169.3 |
| 130°   | 1246.1 | 1270.1 | 1266.8 | 1262.8 | 1255.4 |
| 132.5° | 1332.2 | 1350.9 | 1352.2 | 1342.9 | 1337.5 |
| 135°   | 1406.3 | 1426.9 | 1431.0 | 1428.9 | 1423.6 |
| 137.5° | 1489.0 | 1505.7 | 1509.0 | 1507.7 | 1499.7 |
| 140°   | 1561.8 | 1578.5 | 1587.8 | 1587.8 | 1580.5 |
| 142.5° | 1636.5 | 1653.2 | 1658.5 | 1660.5 | 1653.2 |
| 145°   | 1707.3 | 1720.6 | 1731.3 | 1733.3 | 1726.0 |
| 147.5° | 1770.7 | 1787.4 | 1795.4 | 1798.7 | 1791.4 |
| 150°   | 1836.1 | 1847.4 | 1854.8 | 1860.8 | 1854.8 |
| 152.5° | 1894.1 | 1905.5 | 1914.8 | 1922.2 | 1914.8 |
| 155°   | 1952.2 | 1957.5 | 1963.6 | 1972.9 | 1966.9 |
| 157.5° | 2002.3 | 2006.3 | 2009.6 | 2023.0 | 2013.6 |
| 160°   | 2047.0 | 2051.0 | 2053.0 | 2064.3 | 2056.3 |
| 162.5° | 2088.4 | 2088.4 | 2090.4 | 2103.0 | 2093.7 |
| 165°   | 2123.7 | 2121.7 | 2121.7 | 2135.1 | 2125.7 |
| 167.5° | 2155.8 | 2149.8 | 2149.8 | 2163.1 | 2153.8 |
| 170°   | 2179.8 | 2174.5 | 2172.5 | 2185.8 | 2174.5 |
| 172.5° | 2196.5 | 2191.1 | 2189.1 | 2202.5 | 2191.1 |
| 175°   | 2209.8 | 2204.5 | 2200.5 | 2213.8 | 2202.5 |
| 177.5° | 2217.2 | 2211.8 | 2207.8 | 2219.2 | 2207.8 |
| 180°   | 2213.8 | 2213.8 | 2213.8 | 2213.8 | 2213.8 |

TEST NUMBER: P907464

CATALOG NUMBER: DFN2DIP-TR4F0-090D070US835-RLFL

**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 | 11.39            | 12.26 | 12.30 | 13.19 | 14.39 | 7.36           | 8.24  | 8.28  | 9.17  | 10.36 |
|                 | 3H   | 13.07            | 13.85 | 14.00 | 14.79 | 16.01 | 8.55           | 9.34  | 9.48  | 10.28 | 11.50 |
|                 | 4H   | 13.68            | 14.42 | 14.62 | 15.36 | 16.59 | 9.01           | 9.75  | 9.95  | 10.69 | 11.92 |
|                 | 6H   | 14.10            | 14.78 | 15.06 | 15.73 | 16.98 | 9.33           | 10.01 | 10.29 | 10.96 | 12.20 |
|                 | 8H   | 14.23            | 14.88 | 15.19 | 15.84 | 17.08 | 9.42           | 10.07 | 10.38 | 11.04 | 12.28 |
|                 | 12H  | 14.29            | 14.91 | 15.26 | 15.87 | 17.13 | 9.47           | 10.08 | 10.44 | 11.05 | 12.31 |
| 4H              | 2H   | 11.41            | 12.15 | 12.36 | 13.10 | 14.33 | 7.96           | 8.70  | 8.91  | 9.65  | 10.88 |
|                 | 3H   | 13.24            | 13.86 | 14.20 | 14.83 | 16.08 | 9.32           | 9.93  | 10.28 | 10.91 | 12.15 |
|                 | 4H   | 13.94            | 14.50 | 14.91 | 15.47 | 16.74 | 9.87           | 10.43 | 10.84 | 11.40 | 12.67 |
|                 | 6H   | 14.45            | 14.94 | 15.44 | 15.93 | 17.20 | 10.29          | 10.77 | 11.27 | 11.76 | 13.03 |
|                 | 8H   | 14.63            | 15.08 | 15.61 | 16.07 | 17.35 | 10.42          | 10.87 | 11.40 | 11.86 | 13.14 |
|                 | 12H  | 14.73            | 15.13 | 15.73 | 16.14 | 17.42 | 10.49          | 10.89 | 11.49 | 11.90 | 13.18 |
| 8H              | 4H   | 13.91            | 14.36 | 14.89 | 15.35 | 16.63 | 10.15          | 10.60 | 11.13 | 11.59 | 12.87 |
|                 | 6H   | 14.48            | 14.85 | 15.48 | 15.88 | 17.16 | 10.67          | 11.04 | 11.68 | 12.07 | 13.35 |
|                 | 8H   | 14.69            | 15.02 | 15.71 | 16.04 | 17.34 | 10.86          | 11.19 | 11.88 | 12.21 | 13.51 |
|                 | 12H  | 14.83            | 15.12 | 15.85 | 16.13 | 17.48 | 10.98          | 11.27 | 12.00 | 12.28 | 13.63 |
| 12H             | 4H   | 13.86            | 14.27 | 14.86 | 15.27 | 16.56 | 10.16          | 10.56 | 11.16 | 11.57 | 12.85 |
|                 | 6H   | 14.45            | 14.78 | 15.47 | 15.80 | 17.09 | 10.72          | 11.05 | 11.74 | 12.06 | 13.36 |
|                 | 8H   | 14.67            | 14.96 | 15.69 | 15.97 | 17.32 | 10.93          | 11.22 | 11.95 | 12.23 | 13.58 |

END OF REPORT