

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: P903374

Luminaire Tested: DFN2DIP-PN4F0-100D070US830-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P903374  
REPORT IS A COMBINATION OF REPORTS P899676 AND P896497  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN4F0-100D070US830-RLLFLL  
Description: 4 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

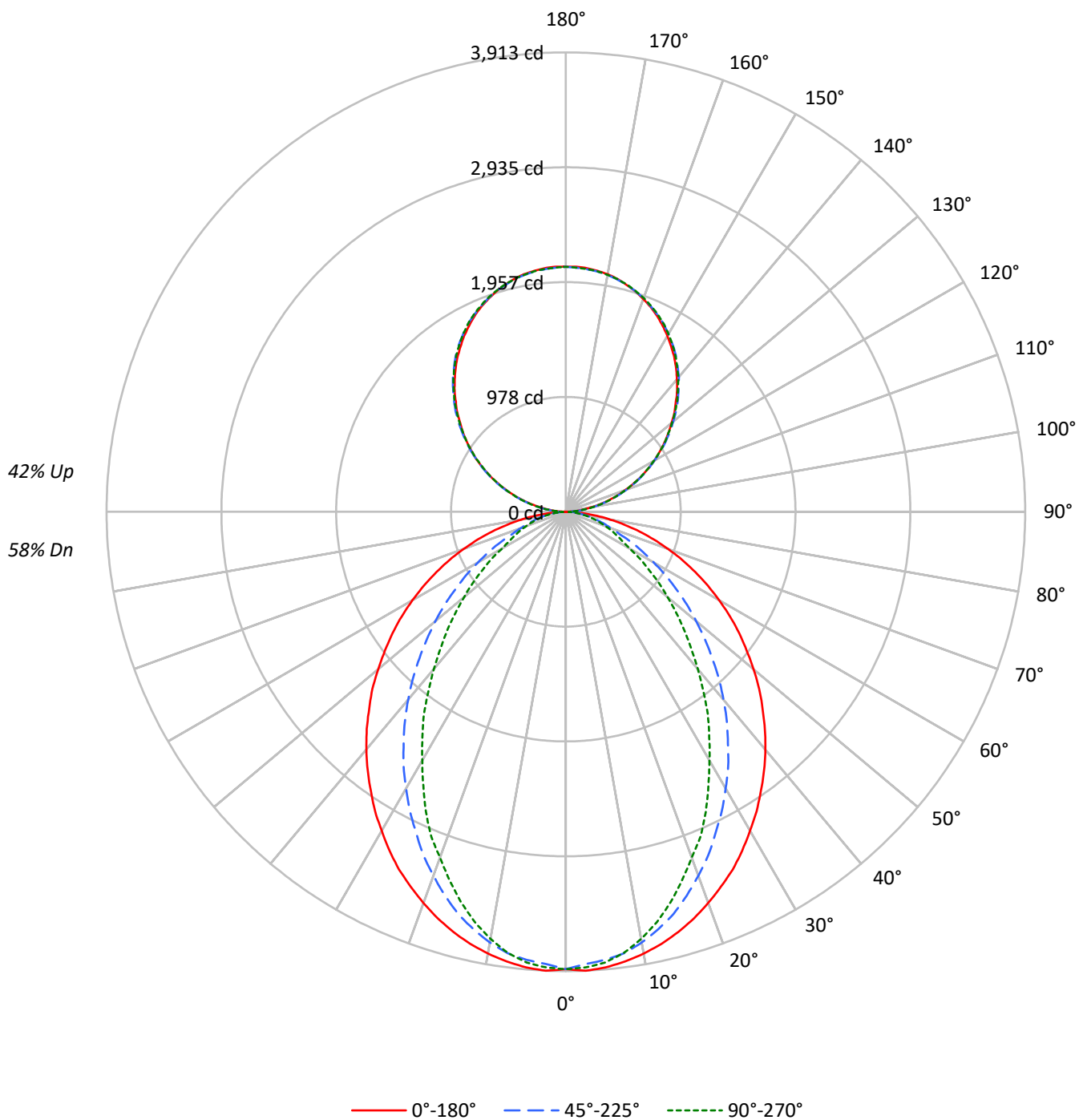
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 13850.6 lumens  
Efficiency: N/A  
Efficacy: 90.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.74' x L: 3.94' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 153.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9952  
Total Harmonic Distortion (THDi): 0.069  
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: P903374

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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 | 75 | 75 | 75 | 63 | 63 | 63 |
| 1   | 100 | 96  | 92  | 89  | 93  | 90  | 86  | 83  | 78 | 75 | 73 | 67 | 65 | 64 | 57 | 56 | 55 |
| 2   | 92  | 84  | 79  | 74  | 85  | 79  | 74  | 69  | 69 | 65 | 62 | 59 | 57 | 54 | 51 | 49 | 47 |
| 3   | 84  | 75  | 68  | 62  | 78  | 70  | 64  | 59  | 61 | 56 | 52 | 53 | 49 | 46 | 45 | 43 | 41 |
| 4   | 77  | 67  | 59  | 53  | 72  | 62  | 56  | 50  | 55 | 49 | 45 | 48 | 44 | 40 | 41 | 38 | 35 |
| 5   | 71  | 60  | 52  | 46  | 66  | 56  | 49  | 44  | 49 | 44 | 39 | 43 | 39 | 35 | 37 | 34 | 31 |
| 6   | 66  | 54  | 46  | 40  | 61  | 51  | 43  | 38  | 45 | 39 | 35 | 39 | 35 | 31 | 34 | 31 | 28 |
| 7   | 61  | 49  | 41  | 35  | 57  | 46  | 39  | 34  | 41 | 35 | 31 | 36 | 31 | 28 | 31 | 28 | 25 |
| 8   | 57  | 44  | 37  | 32  | 53  | 42  | 35  | 30  | 37 | 32 | 28 | 33 | 28 | 25 | 29 | 25 | 23 |
| 9   | 53  | 41  | 33  | 28  | 49  | 39  | 32  | 27  | 34 | 29 | 25 | 30 | 26 | 23 | 27 | 23 | 20 |
| 10  | 49  | 38  | 30  | 26  | 46  | 36  | 29  | 25  | 32 | 26 | 23 | 28 | 24 | 21 | 25 | 21 | 19 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2844 | 2844 | 2844 |
| 5°  | 2848 | 2799 | 2817 |
| 10° | 2820 | 2744 | 2726 |
| 15° | 2781 | 2654 | 2584 |
| 20° | 2730 | 2529 | 2411 |
| 25° | 2677 | 2389 | 2244 |
| 30° | 2606 | 2246 | 2031 |
| 35° | 2537 | 2092 | 1844 |
| 40° | 2467 | 1932 | 1630 |
| 45° | 2385 | 1755 | 1436 |
| 50° | 2301 | 1576 | 1246 |
| 55° | 2212 | 1385 | 1063 |
| 60° | 2110 | 1185 | 876  |
| 65° | 1992 | 982  | 789  |
| 70° | 1850 | 792  | 715  |
| 75° | 1671 | 699  | 651  |
| 80° | 1411 | 588  | 567  |
| 85° | 983  | 394  | 429  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2385 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 365.1   | 2.6       |
| 10°-20°   | 1002.2  | 7.2       |
| 20°-30°   | 1407.1  | 10.2      |
| 30°-40°   | 1533.9  | 11.1      |
| 40°-50°   | 1409.8  | 10.2      |
| 50°-60°   | 1107.2  | 8.0       |
| 60°-70°   | 720.7   | 5.2       |
| 70°-80°   | 371.0   | 2.7       |
| 80°-90°   | 100.6   | 0.7       |
| 90°-100°  | 129.1   | 0.9       |
| 100°-110° | 410.3   | 3.0       |
| 110°-120° | 702.1   | 5.1       |
| 120°-130° | 923.3   | 6.7       |
| 130°-140° | 1036.4  | 7.5       |
| 140°-150° | 1016.3  | 7.3       |
| 150°-160° | 852.6   | 6.2       |
| 160°-170° | 565.4   | 4.1       |
| 170°-180° | 197.6   | 1.4       |
| 0°-30°    | 2774.5  | 20.0      |
| 0°-40°    | 4308.3  | 31.1      |
| 0°-60°    | 6825.3  | 49.3      |
| 0°-90°    | 8017.5  | 57.9      |
| 90°-120°  | 1241.5  | 9.0       |
| 90°-150°  | 4217.6  | 30.5      |
| 90°-180°  | 5833.0  | 42.1      |
| 0°-180°   | 13850.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3896 | 3896  | 3896 | 3896  | 3896 |      |
| 5°   | 3896 | 3878  | 3832 | 3864  | 3853 | 369  |
| 15°  | 3705 | 3666  | 3546 | 3480  | 3444 | 1044 |
| 25°  | 3363 | 3250  | 3018 | 2873  | 2820 | 1547 |
| 35°  | 2898 | 2718  | 2408 | 2186  | 2108 | 1814 |
| 45°  | 2369 | 2133  | 1763 | 1512  | 1428 | 1830 |
| 55°  | 1801 | 1526  | 1146 | 934   | 867  | 1610 |
| 65°  | 1216 | 931   | 613  | 494   | 483  | 1206 |
| 75°  | 649  | 402   | 282  | 257   | 254  | 686  |
| 85°  | 152  | 77    | 67   | 67    | 67   | 174  |
| 90°  | 2    | 23    | 62   | 58    | 60   | 14   |
| 95°  | 92   | 109   | 113  | 113   | 109  | 102  |
| 105° | 379  | 384   | 388  | 391   | 391  | 400  |
| 115° | 705  | 715   | 712  | 710   | 705  | 697  |
| 125° | 1025 | 1040  | 1036 | 1030  | 1028 | 916  |
| 135° | 1326 | 1345  | 1349 | 1347  | 1342 | 1025 |
| 145° | 1609 | 1622  | 1632 | 1634  | 1627 | 1005 |
| 155° | 1840 | 1845  | 1851 | 1860  | 1854 | 847  |
| 165° | 2002 | 2000  | 2000 | 2012  | 2004 | 565  |
| 175° | 2083 | 2078  | 2074 | 2087  | 2076 | 198  |
| 180° | 2087 | 2087  | 2087 | 2087  | 2087 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3895.5 | 3895.5 | 3895.5 | 3895.5 | 3895.5 |
| 2.5°   | 3913.1 | 3895.5 | 3856.6 | 3892.1 | 3885.1 |
| 5°     | 3895.5 | 3877.9 | 3831.9 | 3863.8 | 3853.2 |
| 7.5°   | 3863.8 | 3842.7 | 3793.4 | 3807.2 | 3789.7 |
| 10°    | 3821.4 | 3796.7 | 3726.4 | 3715.6 | 3694.7 |
| 12.5°  | 3768.8 | 3736.9 | 3641.5 | 3620.6 | 3581.7 |
| 15°    | 3705.1 | 3666.2 | 3546.5 | 3479.6 | 3444.4 |
| 17.5°  | 3631.0 | 3574.6 | 3426.5 | 3349.0 | 3292.6 |
| 20°    | 3546.5 | 3475.8 | 3299.7 | 3211.8 | 3134.0 |
| 22.5°  | 3454.9 | 3373.7 | 3169.1 | 3049.5 | 2996.7 |
| 25°    | 3363.3 | 3250.4 | 3017.6 | 2873.2 | 2820.2 |
| 27.5°  | 3254.0 | 3134.0 | 2876.6 | 2710.9 | 2629.8 |
| 30°    | 3137.7 | 3003.4 | 2721.4 | 2541.9 | 2446.6 |
| 32.5°  | 3024.8 | 2862.4 | 2573.7 | 2362.0 | 2273.7 |
| 35°    | 2897.9 | 2718.1 | 2408.0 | 2185.8 | 2108.0 |
| 37.5°  | 2774.6 | 2580.4 | 2252.8 | 2009.3 | 1921.4 |
| 40°    | 2644.0 | 2432.7 | 2090.5 | 1840.2 | 1748.6 |
| 42.5°  | 2510.1 | 2284.5 | 1928.5 | 1667.5 | 1579.5 |
| 45°    | 2369.1 | 2132.7 | 1762.8 | 1512.2 | 1427.7 |
| 47.5°  | 2235.2 | 1985.0 | 1604.2 | 1353.6 | 1276.2 |
| 50°    | 2087.1 | 1836.8 | 1449.0 | 1205.5 | 1131.8 |
| 52.5°  | 1942.3 | 1677.9 | 1300.9 | 1068.2 | 1001.3 |
| 55°    | 1801.3 | 1526.4 | 1145.7 | 934.3  | 867.3  |
| 57.5°  | 1657.0 | 1374.9 | 1008.4 | 810.9  | 754.4  |
| 60°    | 1508.8 | 1226.8 | 863.7  | 684.1  | 627.6  |
| 62.5°  | 1364.4 | 1082.4 | 740.2  | 571.2  | 543.1  |
| 65°    | 1216.4 | 930.6  | 613.4  | 493.7  | 482.9  |
| 67.5°  | 1075.3 | 789.6  | 493.7  | 433.5  | 423.0  |
| 70°    | 927.2  | 652.3  | 408.8  | 373.6  | 359.5  |
| 72.5°  | 786.2  | 525.1  | 341.9  | 313.8  | 306.7  |
| 75°    | 648.6  | 401.7  | 282.0  | 257.3  | 253.9  |
| 77.5°  | 511.3  | 285.4  | 222.2  | 207.9  | 200.9  |
| 80°    | 384.1  | 204.6  | 169.1  | 155.2  | 155.2  |
| 82.5°  | 267.8  | 137.6  | 116.3  | 109.2  | 109.2  |
| 85°    | 151.5  | 77.4   | 66.9   | 66.9   | 66.9   |
| 87.5°  | 56.5   | 28.1   | 28.1   | 24.7   | 24.7   |
| 90°    | 1.9    | 22.6   | 61.6   | 57.9   | 59.8   |
| 92.5°  | 39.0   | 52.9   | 54.8   | 56.6   | 56.6   |
| 95°    | 91.8   | 109.4  | 112.6  | 112.6  | 109.4  |
| 97.5°  | 152.9  | 169.2  | 176.2  | 176.2  | 176.2  |
| 100°   | 223.3  | 237.8  | 242.8  | 242.8  | 240.9  |
| 102.5° | 297.6  | 308.2  | 315.2  | 317.1  | 315.2  |
| 105°   | 378.7  | 383.7  | 387.5  | 390.7  | 390.7  |
| 107.5° | 459.2  | 466.7  | 466.7  | 468.1  | 459.2  |
| 110°   | 537.2  | 547.3  | 547.3  | 547.3  | 542.2  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 621.5  | 632.3  | 630.4  | 625.3  | 621.5  |
| 115°   | 704.6  | 714.6  | 711.5  | 709.6  | 704.6  |
| 117.5° | 786.9  | 800.8  | 792.0  | 786.9  | 781.9  |
| 120°   | 870.0  | 883.8  | 870.0  | 870.0  | 864.3  |
| 122.5° | 945.5  | 963.1  | 954.3  | 949.2  | 945.5  |
| 125°   | 1024.7 | 1040.5 | 1035.5 | 1029.8 | 1027.9 |
| 127.5° | 1102.1 | 1121.6 | 1114.7 | 1107.2 | 1102.1 |
| 130°   | 1174.5 | 1197.1 | 1194.0 | 1190.2 | 1183.3 |
| 132.5° | 1255.7 | 1273.3 | 1274.5 | 1265.7 | 1260.7 |
| 135°   | 1325.5 | 1344.9 | 1348.8 | 1346.8 | 1341.8 |
| 137.5° | 1403.4 | 1419.2 | 1422.3 | 1421.1 | 1413.5 |
| 140°   | 1472.1 | 1487.8 | 1496.6 | 1496.6 | 1489.7 |
| 142.5° | 1542.5 | 1558.2 | 1563.2 | 1565.1 | 1558.2 |
| 145°   | 1609.2 | 1621.7 | 1631.8 | 1633.7 | 1626.8 |
| 147.5° | 1669.0 | 1684.7 | 1692.2 | 1695.4 | 1688.5 |
| 150°   | 1730.6 | 1741.3 | 1748.2 | 1753.9 | 1748.2 |
| 152.5° | 1785.3 | 1796.0 | 1804.8 | 1811.8 | 1804.8 |
| 155°   | 1840.0 | 1845.0 | 1850.8 | 1859.5 | 1853.9 |
| 157.5° | 1887.3 | 1891.0 | 1894.1 | 1906.8 | 1897.9 |
| 160°   | 1929.4 | 1933.2 | 1935.0 | 1945.7 | 1938.1 |
| 162.5° | 1968.4 | 1968.4 | 1970.3 | 1982.2 | 1973.4 |
| 165°   | 2001.7 | 1999.8 | 1999.8 | 2012.4 | 2003.6 |
| 167.5° | 2031.9 | 2026.3 | 2026.3 | 2038.8 | 2030.0 |
| 170°   | 2054.6 | 2049.6 | 2047.7 | 2060.2 | 2049.6 |
| 172.5° | 2070.3 | 2065.2 | 2063.3 | 2075.9 | 2065.2 |
| 175°   | 2082.8 | 2077.8 | 2074.1 | 2086.6 | 2075.9 |
| 177.5° | 2089.8 | 2084.7 | 2080.9 | 2091.7 | 2080.9 |
| 180°   | 2086.6 | 2086.6 | 2086.6 | 2086.6 | 2086.6 |

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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 | 11.49            | 12.39 | 12.38 | 13.30 | 14.45 | 7.45           | 8.35  | 8.35  | 9.26  | 10.42 |
|                 | 3H   | 13.18            | 13.98 | 14.08 | 14.90 | 16.08 | 8.65           | 9.45  | 9.56  | 10.37 | 11.55 |
|                 | 4H   | 13.79            | 14.55 | 14.71 | 15.47 | 16.66 | 9.10           | 9.86  | 10.02 | 10.79 | 11.98 |
|                 | 6H   | 14.22            | 14.92 | 15.15 | 15.85 | 17.05 | 9.43           | 10.13 | 10.36 | 11.06 | 12.26 |
|                 | 8H   | 14.35            | 15.01 | 15.29 | 15.96 | 17.16 | 9.52           | 10.19 | 10.46 | 11.13 | 12.34 |
|                 | 12H  | 14.41            | 15.04 | 15.36 | 15.98 | 17.21 | 9.57           | 10.20 | 10.51 | 11.14 | 12.37 |
| 4H              | 2H   | 11.52            | 12.28 | 12.44 | 13.20 | 14.39 | 8.06           | 8.82  | 8.99  | 9.74  | 10.93 |
|                 | 3H   | 13.36            | 13.99 | 14.29 | 14.94 | 16.15 | 9.42           | 10.05 | 10.35 | 11.00 | 12.21 |
|                 | 4H   | 14.05            | 14.63 | 15.00 | 15.58 | 16.81 | 9.97           | 10.54 | 10.92 | 11.49 | 12.72 |
|                 | 6H   | 14.57            | 15.07 | 15.53 | 16.04 | 17.27 | 10.39          | 10.89 | 11.35 | 11.86 | 13.09 |
|                 | 8H   | 14.75            | 15.21 | 15.71 | 16.18 | 17.43 | 10.52          | 10.99 | 11.49 | 11.95 | 13.20 |
|                 | 12H  | 14.85            | 15.27 | 15.83 | 16.25 | 17.50 | 10.59          | 11.01 | 11.57 | 11.99 | 13.24 |
| 8H              | 4H   | 14.03            | 14.49 | 14.99 | 15.45 | 16.70 | 10.26          | 10.72 | 11.22 | 11.68 | 12.93 |
|                 | 6H   | 14.60            | 14.98 | 15.58 | 15.99 | 17.23 | 10.78          | 11.16 | 11.76 | 12.17 | 13.41 |
|                 | 8H   | 14.82            | 15.15 | 15.81 | 16.15 | 17.41 | 10.97          | 11.31 | 11.97 | 12.30 | 13.57 |
|                 | 12H  | 14.96            | 15.26 | 15.96 | 16.25 | 17.56 | 11.09          | 11.39 | 12.09 | 12.38 | 13.69 |
| 12H             | 4H   | 13.98            | 14.40 | 14.96 | 15.38 | 16.63 | 10.26          | 10.68 | 11.24 | 11.66 | 12.91 |
|                 | 6H   | 14.57            | 14.91 | 15.57 | 15.91 | 17.17 | 10.83          | 11.17 | 11.82 | 12.16 | 13.42 |
|                 | 8H   | 14.80            | 15.09 | 15.80 | 16.09 | 17.39 | 11.04          | 11.34 | 12.04 | 12.33 | 13.64 |

END OF REPORT