

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: P925789

Luminaire Tested: DFN2DIP-SQ4F0-060D140US950-FLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P925789  
REPORT IS A COMBINATION OF REPORTS P901705 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-060D140US950-FLLONL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

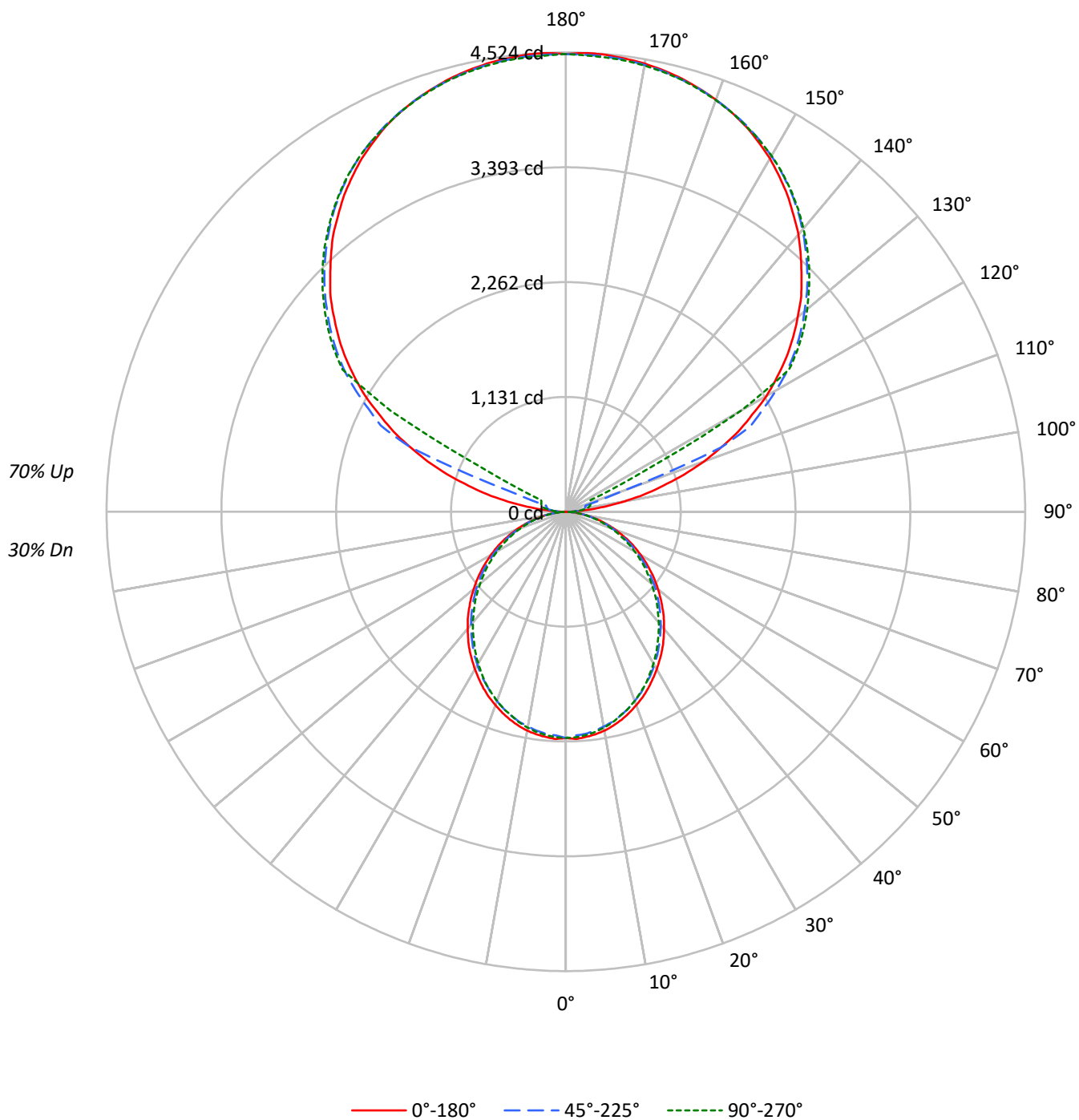
Lumens per Lamp: N/A  
Luminaire Lumens: 18889.2 lumens  
Efficiency: N/A  
Efficacy: 121.2 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 155.8  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.946  
Total Harmonic Distortion (THDi): 0.132  
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   | 102 | 102 | 102 | 102 | 92 | 92 | 92 | 92 | 72 | 72 | 72 | 54 | 54 | 54 | 38 | 38 | 38 |
| 1   | 93  | 89  | 85  | 82  | 84 | 80 | 77 | 74 | 63 | 61 | 59 | 48 | 46 | 45 | 33 | 33 | 32 |
| 2   | 85  | 78  | 72  | 67  | 76 | 70 | 65 | 61 | 55 | 52 | 49 | 42 | 40 | 38 | 29 | 28 | 27 |
| 3   | 77  | 68  | 61  | 56  | 69 | 62 | 56 | 51 | 49 | 45 | 41 | 37 | 34 | 32 | 26 | 24 | 23 |
| 4   | 71  | 60  | 53  | 47  | 63 | 54 | 48 | 43 | 43 | 39 | 35 | 33 | 30 | 27 | 23 | 21 | 20 |
| 5   | 65  | 54  | 46  | 40  | 58 | 48 | 42 | 37 | 39 | 34 | 30 | 29 | 26 | 23 | 21 | 19 | 17 |
| 6   | 60  | 48  | 40  | 35  | 53 | 43 | 37 | 32 | 35 | 30 | 26 | 27 | 23 | 20 | 19 | 17 | 15 |
| 7   | 55  | 43  | 35  | 30  | 49 | 39 | 32 | 28 | 31 | 26 | 23 | 24 | 21 | 18 | 17 | 15 | 13 |
| 8   | 51  | 39  | 32  | 26  | 46 | 35 | 29 | 24 | 28 | 24 | 20 | 22 | 19 | 16 | 16 | 14 | 12 |
| 9   | 47  | 36  | 28  | 23  | 42 | 32 | 26 | 22 | 26 | 21 | 18 | 20 | 17 | 14 | 15 | 12 | 11 |
| 10  | 44  | 32  | 26  | 21  | 40 | 30 | 23 | 19 | 24 | 19 | 16 | 19 | 15 | 13 | 14 | 11 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1563 | 1563 | 1563 |
| 5°  | 1565 | 1541 | 1552 |
| 10° | 1553 | 1521 | 1531 |
| 15° | 1530 | 1496 | 1499 |
| 20° | 1499 | 1462 | 1466 |
| 25° | 1468 | 1420 | 1427 |
| 30° | 1430 | 1382 | 1378 |
| 35° | 1393 | 1337 | 1326 |
| 40° | 1348 | 1291 | 1277 |
| 45° | 1304 | 1245 | 1227 |
| 50° | 1255 | 1197 | 1168 |
| 55° | 1203 | 1141 | 1115 |
| 60° | 1145 | 1075 | 1054 |
| 65° | 1082 | 1007 | 981  |
| 70° | 1002 | 923  | 904  |
| 75° | 890  | 824  | 832  |
| 80° | 756  | 697  | 695  |
| 85° | 547  | 476  | 467  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2418 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 209.6   | 1.1       |
| 10°-20°   | 589.8   | 3.1       |
| 20°-30°   | 866.8   | 4.6       |
| 30°-40°   | 1006.7  | 5.3       |
| 40°-50°   | 1005.5  | 5.3       |
| 50°-60°   | 876.7   | 4.6       |
| 60°-70°   | 648.1   | 3.4       |
| 70°-80°   | 366.7   | 1.9       |
| 80°-90°   | 104.7   | 0.6       |
| 90°-100°  | 148.7   | 0.8       |
| 100°-110° | 554.1   | 2.9       |
| 110°-120° | 1469.5  | 7.8       |
| 120°-130° | 2437.3  | 12.9      |
| 130°-140° | 2588.9  | 13.7      |
| 140°-150° | 2406.1  | 12.7      |
| 150°-160° | 1934.5  | 10.2      |
| 160°-170° | 1246.5  | 6.6       |
| 170°-180° | 429.0   | 2.3       |
| 0°-30°    | 1666.2  | 8.8       |
| 0°-40°    | 2673.0  | 14.2      |
| 0°-60°    | 4555.2  | 24.1      |
| 0°-90°    | 5674.7  | 30.0      |
| 90°-120°  | 2172.2  | 11.5      |
| 90°-150°  | 9604.5  | 50.8      |
| 90°-180°  | 13215.0 | 70.0      |
| 0°-180°   | 18889.2 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2227 | 2227  | 2227 | 2227  | 2227 |      |
| 5°   | 2227 | 2219  | 2195 | 2212  | 2208 | 211  |
| 15°  | 2120 | 2108  | 2080 | 2088  | 2078 | 597  |
| 25°  | 1919 | 1902  | 1866 | 1870  | 1866 | 883  |
| 35°  | 1656 | 1634  | 1600 | 1587  | 1576 | 1034 |
| 45°  | 1347 | 1332  | 1300 | 1276  | 1268 | 1040 |
| 55°  | 1020 | 1007  | 981  | 955   | 945  | 912  |
| 65°  | 688  | 675   | 653  | 634   | 623  | 680  |
| 75°  | 360  | 356   | 345  | 332   | 336  | 384  |
| 85°  | 88   | 86    | 84   | 77    | 75   | 98   |
| 90°  | 3    | 39    | 65   | 82    | 88   | 17   |
| 95°  | 212  | 104   | 127  | 144   | 140  | 251  |
| 105° | 992  | 1090  | 199  | 235   | 248  | 1059 |
| 115° | 1875 | 1931  | 2012 | 502   | 268  | 1846 |
| 125° | 2652 | 2694  | 2756 | 2779  | 2789 | 2365 |
| 135° | 3281 | 3334  | 3363 | 3396  | 3389 | 2535 |
| 145° | 3806 | 3803  | 3858 | 3881  | 3865 | 2381 |
| 155° | 4191 | 4162  | 4201 | 4220  | 4194 | 1931 |
| 165° | 4416 | 4397  | 4406 | 4429  | 4406 | 1248 |
| 175° | 4517 | 4494  | 4501 | 4524  | 4491 | 430  |
| 180° | 4508 | 4508  | 4508 | 4508  | 4508 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2227.2 | 2227.2 | 2227.2 | 2227.2 | 2227.2 |
| 2.5°   | 2240.2 | 2229.5 | 2205.8 | 2227.2 | 2223.1 |
| 5°     | 2227.2 | 2218.8 | 2195.2 | 2212.2 | 2208.1 |
| 7.5°   | 2212.2 | 2199.5 | 2175.9 | 2193.2 | 2188.9 |
| 10°    | 2188.9 | 2173.9 | 2148.1 | 2165.2 | 2158.8 |
| 12.5°  | 2156.6 | 2143.8 | 2118.2 | 2128.9 | 2124.6 |
| 15°    | 2120.2 | 2107.5 | 2079.5 | 2088.2 | 2077.5 |
| 17.5°  | 2075.2 | 2062.5 | 2034.6 | 2045.2 | 2034.6 |
| 20°    | 2025.9 | 2013.2 | 1983.2 | 1989.6 | 1981.2 |
| 22.5°  | 1976.9 | 1957.5 | 1929.6 | 1929.6 | 1925.3 |
| 25°    | 1918.9 | 1901.9 | 1865.5 | 1869.6 | 1865.5 |
| 27.5°  | 1854.6 | 1839.6 | 1811.8 | 1805.5 | 1794.9 |
| 30°    | 1790.6 | 1773.2 | 1741.2 | 1734.8 | 1726.2 |
| 32.5°  | 1721.9 | 1709.2 | 1674.8 | 1661.9 | 1653.3 |
| 35°    | 1655.6 | 1634.2 | 1599.9 | 1586.9 | 1576.2 |
| 37.5°  | 1580.6 | 1561.2 | 1527.0 | 1511.9 | 1501.2 |
| 40°    | 1503.5 | 1486.2 | 1452.0 | 1432.9 | 1424.2 |
| 42.5°  | 1428.5 | 1411.3 | 1377.2 | 1355.6 | 1342.9 |
| 45°    | 1347.2 | 1332.2 | 1299.9 | 1276.5 | 1267.9 |
| 47.5°  | 1267.9 | 1252.9 | 1218.6 | 1195.0 | 1182.2 |
| 50°    | 1184.3 | 1173.6 | 1143.7 | 1113.6 | 1102.9 |
| 52.5°  | 1102.9 | 1087.9 | 1060.2 | 1036.6 | 1021.6 |
| 55°    | 1019.5 | 1006.6 | 980.9  | 955.2  | 944.6  |
| 57.5°  | 936.0  | 925.3  | 897.3  | 871.7  | 863.0  |
| 60°    | 852.3  | 843.9  | 814.0  | 790.3  | 783.9  |
| 62.5°  | 770.9  | 755.9  | 734.6  | 713.2  | 704.6  |
| 65°    | 687.5  | 674.7  | 653.3  | 633.9  | 623.2  |
| 67.5°  | 601.9  | 591.0  | 571.9  | 556.9  | 548.3  |
| 70°    | 522.6  | 514.0  | 494.6  | 479.7  | 471.3  |
| 72.5°  | 441.2  | 432.6  | 422.0  | 407.0  | 400.6  |
| 75°    | 359.7  | 355.7  | 344.7  | 332.0  | 336.3  |
| 77.5°  | 287.0  | 278.4  | 274.0  | 267.7  | 261.3  |
| 80°    | 214.3  | 212.0  | 207.7  | 201.3  | 197.0  |
| 82.5°  | 145.7  | 145.7  | 143.6  | 135.0  | 135.0  |
| 85°    | 87.7   | 85.7   | 83.6   | 77.0   | 75.0   |
| 87.5°  | 38.6   | 34.3   | 30.0   | 23.7   | 21.4   |
| 90°    | 3.1    | 39.1   | 65.1   | 81.8   | 88.0   |
| 92.5°  | 81.8   | 68.6   | 78.2   | 84.8   | 88.0   |
| 95°    | 211.9  | 104.2  | 127.1  | 143.7  | 140.2  |
| 97.5°  | 381.5  | 114.3  | 166.2  | 176.2  | 179.4  |
| 100°   | 577.5  | 130.5  | 185.9  | 211.9  | 218.5  |
| 102.5° | 792.4  | 786.2  | 192.5  | 228.1  | 238.2  |
| 105°   | 991.5  | 1089.5 | 199.1  | 234.7  | 247.8  |
| 107.5° | 1223.1 | 1304.4 | 205.7  | 241.3  | 254.4  |
| 110°   | 1445.0 | 1513.2 | 570.9  | 244.8  | 257.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1653.8 | 1712.2 | 1656.9 | 251.0  | 261.0  |
| 115°   | 1875.4 | 1930.7 | 2012.5 | 502.4  | 267.6  |
| 117.5° | 2067.8 | 2132.9 | 2188.7 | 1722.0 | 867.6  |
| 120°   | 2283.2 | 2332.0 | 2390.8 | 2429.9 | 1989.6 |
| 122.5° | 2465.6 | 2517.9 | 2583.3 | 2602.7 | 2606.2 |
| 125°   | 2651.5 | 2694.1 | 2756.1 | 2778.9 | 2788.6 |
| 127.5° | 2821.2 | 2866.9 | 2916.0 | 2948.5 | 2951.7 |
| 130°   | 2981.1 | 3033.4 | 3069.0 | 3105.1 | 3101.9 |
| 132.5° | 3144.2 | 3186.7 | 3222.4 | 3251.8 | 3248.8 |
| 135°   | 3281.3 | 3333.6 | 3362.6 | 3395.5 | 3388.9 |
| 137.5° | 3424.6 | 3463.7 | 3496.6 | 3529.1 | 3519.5 |
| 140°   | 3564.8 | 3591.1 | 3626.7 | 3656.2 | 3639.9 |
| 142.5° | 3682.5 | 3705.3 | 3747.6 | 3773.5 | 3757.2 |
| 145°   | 3806.5 | 3802.9 | 3858.4 | 3881.3 | 3864.9 |
| 147.5° | 3913.8 | 3904.1 | 3959.5 | 3975.7 | 3962.9 |
| 150°   | 4018.3 | 3995.4 | 4047.7 | 4067.1 | 4050.9 |
| 152.5° | 4106.2 | 4080.3 | 4129.1 | 4148.9 | 4126.0 |
| 155°   | 4191.0 | 4162.0 | 4201.1 | 4220.5 | 4194.5 |
| 157.5° | 4259.6 | 4233.7 | 4263.1 | 4285.9 | 4259.6 |
| 160°   | 4318.5 | 4298.7 | 4318.5 | 4337.8 | 4315.0 |
| 162.5° | 4370.4 | 4351.0 | 4367.3 | 4390.1 | 4360.7 |
| 165°   | 4416.1 | 4396.7 | 4406.4 | 4429.2 | 4406.4 |
| 167.5° | 4452.1 | 4432.4 | 4442.4 | 4465.3 | 4435.8 |
| 170°   | 4481.5 | 4461.8 | 4468.3 | 4491.2 | 4461.8 |
| 172.5° | 4500.9 | 4481.5 | 4488.1 | 4511.0 | 4481.5 |
| 175°   | 4517.2 | 4494.3 | 4500.9 | 4523.8 | 4491.2 |
| 177.5° | 4523.8 | 4500.9 | 4504.4 | 4527.2 | 4497.8 |
| 180°   | 4507.5 | 4507.5 | 4507.5 | 4507.5 | 4507.5 |

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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 | 6.63             | 7.33  | 7.74  | 8.44  | 9.97  | 6.18           | 6.89  | 7.30  | 8.00  | 9.53  |
|                 | 3H   | 8.28             | 8.91  | 9.40  | 10.03 | 11.58 | 7.79           | 8.42  | 8.91  | 9.54  | 11.09 |
|                 | 4H   | 8.86             | 9.47  | 9.99  | 10.58 | 12.13 | 8.37           | 8.97  | 9.50  | 10.09 | 11.64 |
|                 | 6H   | 9.26             | 9.81  | 10.40 | 10.93 | 12.49 | 8.76           | 9.31  | 9.90  | 10.43 | 11.99 |
|                 | 8H   | 9.36             | 9.89  | 10.50 | 11.02 | 12.58 | 8.86           | 9.39  | 10.00 | 10.52 | 12.08 |
|                 | 12H  | 9.41             | 9.91  | 10.55 | 11.03 | 12.61 | 8.90           | 9.40  | 10.04 | 10.52 | 12.10 |
| 4H              | 2H   | 7.07             | 7.67  | 8.21  | 8.79  | 10.34 | 6.72           | 7.32  | 7.85  | 8.43  | 9.98  |
|                 | 3H   | 8.93             | 9.43  | 10.07 | 10.57 | 12.13 | 8.52           | 9.02  | 9.66  | 10.16 | 11.73 |
|                 | 4H   | 9.64             | 10.10 | 10.78 | 11.23 | 12.81 | 9.21           | 9.68  | 10.36 | 10.81 | 12.39 |
|                 | 6H   | 10.15            | 10.54 | 11.30 | 11.70 | 13.27 | 9.72           | 10.11 | 10.87 | 11.27 | 12.84 |
|                 | 8H   | 10.30            | 10.67 | 11.45 | 11.81 | 13.40 | 9.86           | 10.23 | 11.01 | 11.37 | 12.97 |
|                 | 12H  | 10.36            | 10.70 | 11.53 | 11.86 | 13.45 | 9.92           | 10.25 | 11.08 | 11.41 | 13.00 |
| 8H              | 4H   | 9.82             | 10.19 | 10.97 | 11.34 | 12.93 | 9.45           | 9.81  | 10.60 | 10.96 | 12.55 |
|                 | 6H   | 10.45            | 10.76 | 11.62 | 11.94 | 13.53 | 10.07          | 10.37 | 11.24 | 11.56 | 13.15 |
|                 | 8H   | 10.67            | 10.94 | 11.85 | 12.11 | 13.72 | 10.28          | 10.55 | 11.46 | 11.71 | 13.32 |
|                 | 12H  | 10.80            | 11.04 | 11.98 | 12.20 | 13.84 | 10.39          | 10.62 | 11.57 | 11.79 | 13.43 |
| 12H             | 4H   | 9.80             | 10.14 | 10.97 | 11.29 | 12.89 | 9.43           | 9.77  | 10.60 | 10.92 | 12.52 |
|                 | 6H   | 10.48            | 10.75 | 11.66 | 11.91 | 13.52 | 10.11          | 10.38 | 11.29 | 11.54 | 13.15 |
|                 | 8H   | 10.72            | 10.95 | 11.90 | 12.12 | 13.76 | 10.34          | 10.57 | 11.52 | 11.74 | 13.38 |

END OF REPORT