

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: P911082

Luminaire Tested: DFN2DIP-PN2F0-040D040US850-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P911082  
REPORT IS A COMBINATION OF REPORTS P899486 AND P896349  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-040D040US850-RLLFLL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

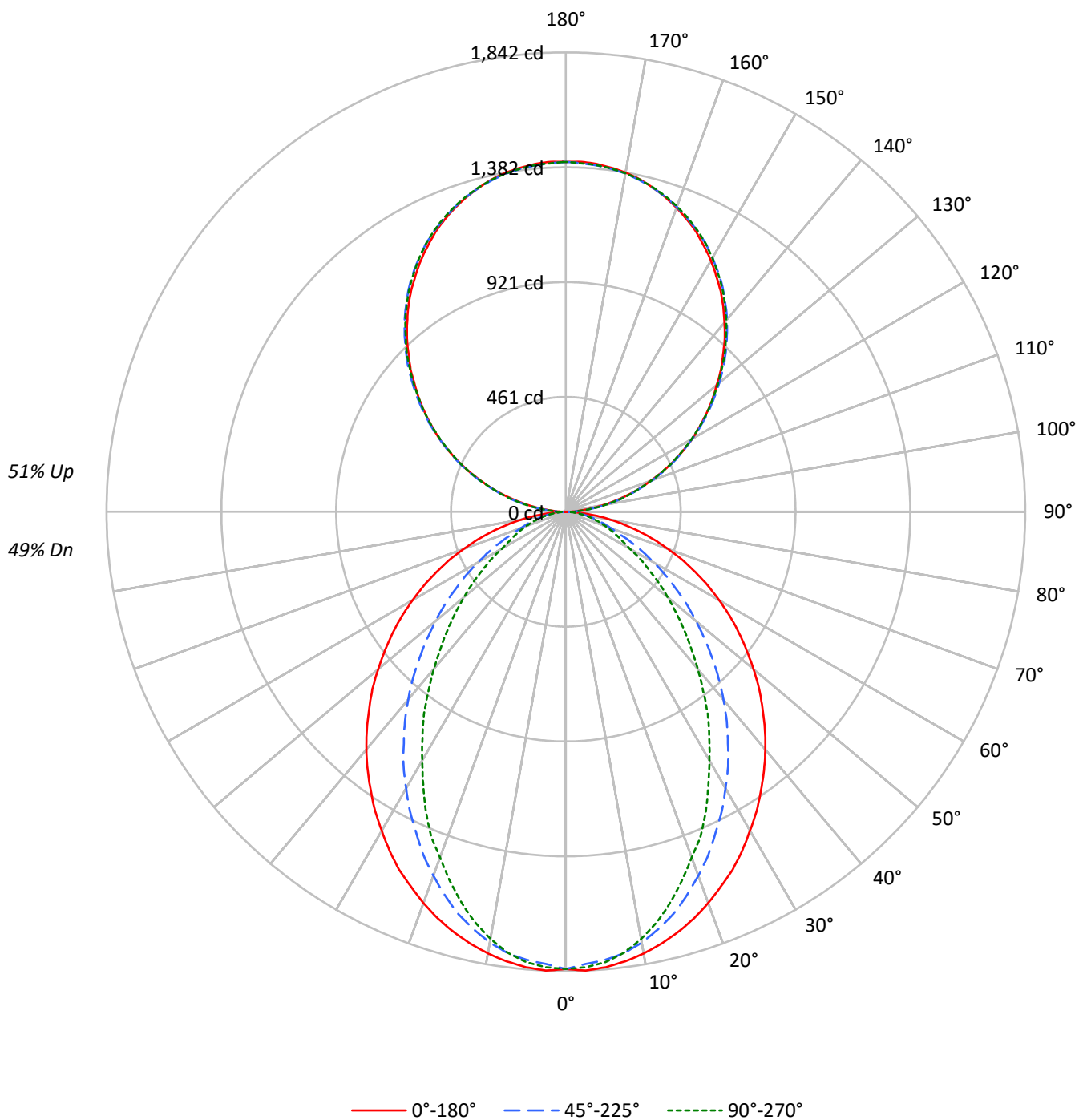
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7696.4 lumens  
Efficiency: N/A  
Efficacy: 109.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 70.2  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9613  
Total Harmonic Distortion (THDi): 0.083  
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: P911082

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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   | 107 | 107 | 107 | 107 | 99 | 99 | 99 | 99 | 83 | 83 | 83 | 68 | 68 | 68 | 55 | 55 | 55 |
| 1   | 98  | 94  | 90  | 87  | 90 | 87 | 84 | 81 | 73 | 71 | 69 | 61 | 59 | 58 | 50 | 49 | 48 |
| 2   | 90  | 83  | 77  | 72  | 82 | 76 | 71 | 67 | 65 | 61 | 58 | 54 | 51 | 49 | 44 | 42 | 41 |
| 3   | 82  | 73  | 66  | 60  | 75 | 68 | 61 | 57 | 58 | 53 | 49 | 48 | 45 | 42 | 40 | 37 | 35 |
| 4   | 75  | 65  | 57  | 51  | 69 | 60 | 54 | 48 | 51 | 46 | 42 | 43 | 40 | 36 | 36 | 33 | 31 |
| 5   | 69  | 58  | 50  | 44  | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 39 | 35 | 32 | 32 | 29 | 27 |
| 6   | 64  | 52  | 44  | 39  | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 30 | 26 | 24 |
| 7   | 59  | 47  | 40  | 34  | 55 | 44 | 37 | 32 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 22 |
| 8   | 55  | 43  | 36  | 30  | 51 | 40 | 33 | 29 | 35 | 29 | 26 | 30 | 26 | 23 | 25 | 22 | 20 |
| 9   | 51  | 39  | 32  | 27  | 47 | 37 | 30 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 |
| 10  | 48  | 36  | 29  | 24  | 44 | 34 | 28 | 23 | 30 | 24 | 21 | 25 | 21 | 19 | 22 | 18 | 16 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3971 | 3971 | 3971 |
| 5°  | 3971 | 3899 | 3927 |
| 10° | 3925 | 3814 | 3794 |
| 15° | 3865 | 3680 | 3591 |
| 20° | 3787 | 3498 | 3344 |
| 25° | 3707 | 3296 | 3105 |
| 30° | 3602 | 3090 | 2805 |
| 35° | 3499 | 2869 | 2541 |
| 40° | 3394 | 2641 | 2240 |
| 45° | 3272 | 2389 | 1968 |
| 50° | 3146 | 2136 | 1702 |
| 55° | 3013 | 1867 | 1446 |
| 60° | 2859 | 1586 | 1185 |
| 65° | 2682 | 1302 | 1060 |
| 70° | 2467 | 1038 | 951  |
| 75° | 2196 | 898  | 854  |
| 80° | 1807 | 729  | 723  |
| 85° | 1181 | 454  | 513  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3272 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 171.8  | 2.2       |
| 10°-20°   | 471.7  | 6.1       |
| 20°-30°   | 662.3  | 8.6       |
| 30°-40°   | 721.9  | 9.4       |
| 40°-50°   | 663.5  | 8.6       |
| 50°-60°   | 521.1  | 6.8       |
| 60°-70°   | 339.2  | 4.4       |
| 70°-80°   | 174.6  | 2.3       |
| 80°-90°   | 48.6   | 0.6       |
| 90°-100°  | 86.8   | 1.1       |
| 100°-110° | 275.8  | 3.6       |
| 110°-120° | 472.0  | 6.1       |
| 120°-130° | 620.8  | 8.1       |
| 130°-140° | 696.8  | 9.1       |
| 140°-150° | 683.3  | 8.9       |
| 150°-160° | 573.2  | 7.4       |
| 160°-170° | 380.1  | 4.9       |
| 170°-180° | 132.9  | 1.7       |
| 0°-30°    | 1305.8 | 17.0      |
| 0°-40°    | 2027.7 | 26.3      |
| 0°-60°    | 3212.2 | 41.7      |
| 0°-90°    | 3774.6 | 49.0      |
| 90°-120°  | 834.7  | 10.8      |
| 90°-150°  | 2835.6 | 36.8      |
| 90°-180°  | 3922.0 | 51.0      |
| 0°-180°   | 7696.4 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1833 | 1833  | 1833 | 1833  | 1833 |      |
| 5°   | 1833 | 1825  | 1804 | 1818  | 1814 | 174  |
| 15°  | 1744 | 1726  | 1669 | 1638  | 1621 | 491  |
| 25°  | 1583 | 1530  | 1420 | 1352  | 1327 | 728  |
| 35°  | 1364 | 1279  | 1133 | 1029  | 992  | 854  |
| 45°  | 1115 | 1004  | 830  | 712   | 672  | 861  |
| 55°  | 848  | 718   | 539  | 440   | 408  | 758  |
| 65°  | 572  | 438   | 289  | 232   | 227  | 568  |
| 75°  | 305  | 189   | 133  | 121   | 120  | 323  |
| 85°  | 71   | 36    | 32   | 32    | 32   | 82   |
| 90°  | 1    | 15    | 42   | 39    | 40   | 8    |
| 95°  | 62   | 74    | 76   | 76    | 74   | 69   |
| 105° | 255  | 258   | 260  | 263   | 263  | 269  |
| 115° | 474  | 480   | 478  | 477   | 474  | 469  |
| 125° | 689  | 700   | 696  | 692   | 691  | 616  |
| 135° | 891  | 904   | 907  | 906   | 902  | 689  |
| 145° | 1082 | 1090  | 1097 | 1098  | 1094 | 676  |
| 155° | 1237 | 1240  | 1244 | 1250  | 1246 | 569  |
| 165° | 1346 | 1345  | 1345 | 1353  | 1347 | 380  |
| 175° | 1400 | 1397  | 1394 | 1403  | 1396 | 133  |
| 180° | 1403 | 1403  | 1403 | 1403  | 1403 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1833.4 | 1833.4 | 1833.4 | 1833.4 | 1833.4 |
| 2.5°   | 1841.7 | 1833.4 | 1815.1 | 1831.8 | 1828.4 |
| 5°     | 1833.4 | 1825.1 | 1803.5 | 1818.4 | 1813.5 |
| 7.5°   | 1818.4 | 1808.6 | 1785.4 | 1791.8 | 1783.6 |
| 10°    | 1798.6 | 1786.9 | 1753.8 | 1748.7 | 1738.9 |
| 12.5°  | 1773.7 | 1758.8 | 1713.8 | 1704.0 | 1685.7 |
| 15°    | 1743.8 | 1725.5 | 1669.2 | 1637.7 | 1621.1 |
| 17.5°  | 1709.0 | 1682.4 | 1612.6 | 1576.2 | 1549.6 |
| 20°    | 1669.2 | 1635.9 | 1552.9 | 1511.6 | 1475.0 |
| 22.5°  | 1626.0 | 1587.9 | 1491.5 | 1435.2 | 1410.4 |
| 25°    | 1582.9 | 1529.8 | 1420.2 | 1352.3 | 1327.3 |
| 27.5°  | 1531.5 | 1475.0 | 1353.9 | 1275.9 | 1237.6 |
| 30°    | 1476.7 | 1413.5 | 1280.8 | 1196.3 | 1151.5 |
| 32.5°  | 1423.6 | 1347.2 | 1211.2 | 1111.7 | 1070.1 |
| 35°    | 1364.0 | 1279.2 | 1133.3 | 1028.7 | 992.1  |
| 37.5°  | 1305.8 | 1214.5 | 1060.2 | 945.6  | 904.3  |
| 40°    | 1244.4 | 1144.9 | 983.9  | 866.1  | 823.0  |
| 42.5°  | 1181.3 | 1075.2 | 907.6  | 784.7  | 743.4  |
| 45°    | 1115.0 | 1003.8 | 829.6  | 711.8  | 671.9  |
| 47.5°  | 1052.0 | 934.2  | 755.0  | 637.1  | 600.6  |
| 50°    | 982.2  | 864.5  | 681.9  | 567.4  | 532.7  |
| 52.5°  | 914.1  | 789.7  | 612.3  | 502.7  | 471.2  |
| 55°    | 847.8  | 718.4  | 539.2  | 439.7  | 408.2  |
| 57.5°  | 779.8  | 647.1  | 474.5  | 381.6  | 355.1  |
| 60°    | 710.1  | 577.3  | 406.4  | 321.9  | 295.4  |
| 62.5°  | 642.2  | 509.5  | 348.3  | 268.8  | 255.6  |
| 65°    | 572.5  | 437.9  | 288.7  | 232.3  | 227.2  |
| 67.5°  | 506.1  | 371.6  | 232.3  | 204.1  | 199.1  |
| 70°    | 436.4  | 307.0  | 192.4  | 175.9  | 169.1  |
| 72.5°  | 370.1  | 247.2  | 160.9  | 147.7  | 144.4  |
| 75°    | 305.2  | 189.1  | 132.7  | 121.1  | 119.6  |
| 77.5°  | 240.7  | 134.3  | 104.6  | 97.9   | 94.5   |
| 80°    | 180.8  | 96.3   | 79.5   | 73.1   | 73.1   |
| 82.5°  | 126.1  | 64.8   | 54.8   | 51.3   | 51.3   |
| 85°    | 71.3   | 36.5   | 31.5   | 31.5   | 31.5   |
| 87.5°  | 26.6   | 13.2   | 13.2   | 11.6   | 11.6   |
| 90°    | 1.2    | 15.2   | 41.5   | 38.9   | 40.1   |
| 92.5°  | 26.2   | 35.5   | 36.8   | 38.0   | 38.0   |
| 95°    | 61.8   | 73.6   | 75.7   | 75.7   | 73.6   |
| 97.5°  | 102.8  | 113.8  | 118.4  | 118.4  | 118.4  |
| 100°   | 150.2  | 159.9  | 163.2  | 163.2  | 162.0  |
| 102.5° | 200.1  | 207.3  | 211.9  | 213.1  | 211.9  |
| 105°   | 254.6  | 258.0  | 260.5  | 262.6  | 262.6  |
| 107.5° | 308.7  | 313.8  | 313.8  | 314.6  | 308.7  |
| 110°   | 361.2  | 368.0  | 368.0  | 368.0  | 364.6  |



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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 417.9  | 425.1  | 423.7  | 420.4  | 417.9  |
| 115°   | 473.7  | 480.5  | 478.3  | 477.1  | 473.7  |
| 117.5° | 529.1  | 538.4  | 532.5  | 529.1  | 525.8  |
| 120°   | 585.0  | 594.2  | 585.0  | 585.0  | 581.1  |
| 122.5° | 635.7  | 647.5  | 641.7  | 638.2  | 635.7  |
| 125°   | 689.0  | 699.6  | 696.2  | 692.3  | 691.1  |
| 127.5° | 741.0  | 754.1  | 749.5  | 744.4  | 741.0  |
| 130°   | 789.6  | 804.9  | 802.8  | 800.3  | 795.6  |
| 132.5° | 844.2  | 856.0  | 856.9  | 850.9  | 847.6  |
| 135°   | 891.2  | 904.3  | 906.8  | 905.5  | 902.2  |
| 137.5° | 943.6  | 954.2  | 956.3  | 955.4  | 950.4  |
| 140°   | 989.7  | 1000.3 | 1006.2 | 1006.2 | 1001.5 |
| 142.5° | 1037.1 | 1047.7 | 1051.0 | 1052.3 | 1047.7 |
| 145°   | 1081.9 | 1090.4 | 1097.1 | 1098.5 | 1093.8 |
| 147.5° | 1122.1 | 1132.6 | 1137.7 | 1139.8 | 1135.2 |
| 150°   | 1163.6 | 1170.8 | 1175.4 | 1179.2 | 1175.4 |
| 152.5° | 1200.4 | 1207.5 | 1213.5 | 1218.1 | 1213.5 |
| 155°   | 1237.1 | 1240.5 | 1244.3 | 1250.3 | 1246.4 |
| 157.5° | 1268.9 | 1271.4 | 1273.5 | 1282.0 | 1276.0 |
| 160°   | 1297.2 | 1299.7 | 1301.0 | 1308.2 | 1303.1 |
| 162.5° | 1323.4 | 1323.4 | 1324.7 | 1332.7 | 1326.8 |
| 165°   | 1345.9 | 1344.6 | 1344.6 | 1353.0 | 1347.1 |
| 167.5° | 1366.2 | 1362.3 | 1362.3 | 1370.8 | 1364.8 |
| 170°   | 1381.4 | 1377.9 | 1376.7 | 1385.1 | 1377.9 |
| 172.5° | 1391.9 | 1388.6 | 1387.2 | 1395.8 | 1388.6 |
| 175°   | 1400.4 | 1397.0 | 1394.5 | 1402.9 | 1395.8 |
| 177.5° | 1405.1 | 1401.7 | 1399.1 | 1406.3 | 1399.1 |
| 180°   | 1402.9 | 1402.9 | 1402.9 | 1402.9 | 1402.9 |

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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 | 11.73            | 12.55 | 12.70 | 13.53 | 14.82 | 7.70           | 8.52  | 8.67  | 9.50  | 10.79 |
|                 | 3H   | 13.39            | 14.12 | 14.37 | 15.11 | 16.42 | 8.87           | 9.60  | 9.85  | 10.59 | 11.90 |
|                 | 4H   | 13.98            | 14.68 | 14.98 | 15.67 | 16.99 | 9.31           | 10.00 | 10.30 | 11.00 | 12.31 |
|                 | 6H   | 14.39            | 15.03 | 15.39 | 16.02 | 17.35 | 9.61           | 10.25 | 10.62 | 11.25 | 12.58 |
|                 | 8H   | 14.50            | 15.11 | 15.52 | 16.13 | 17.45 | 9.69           | 10.30 | 10.71 | 11.32 | 12.65 |
|                 | 12H  | 14.56            | 15.13 | 15.57 | 16.14 | 17.49 | 9.73           | 10.31 | 10.75 | 11.32 | 12.67 |
| 4H              | 2H   | 11.74            | 12.44 | 12.75 | 13.43 | 14.75 | 8.28           | 8.98  | 9.28  | 9.97  | 11.29 |
|                 | 3H   | 13.55            | 14.13 | 14.56 | 15.15 | 16.48 | 9.61           | 10.19 | 10.62 | 11.21 | 12.54 |
|                 | 4H   | 14.22            | 14.75 | 15.24 | 15.77 | 17.12 | 10.14          | 10.67 | 11.16 | 11.69 | 13.04 |
|                 | 6H   | 14.72            | 15.17 | 15.75 | 16.21 | 17.56 | 10.54          | 11.00 | 11.57 | 12.04 | 13.39 |
|                 | 8H   | 14.88            | 15.31 | 15.91 | 16.34 | 17.70 | 10.66          | 11.09 | 11.69 | 12.12 | 13.48 |
|                 | 12H  | 14.97            | 15.35 | 16.01 | 16.40 | 17.77 | 10.72          | 11.10 | 11.77 | 12.15 | 13.52 |
| 8H              | 4H   | 14.19            | 14.61 | 15.22 | 15.64 | 17.01 | 10.41          | 10.84 | 11.44 | 11.87 | 13.23 |
|                 | 6H   | 14.73            | 15.08 | 15.78 | 16.15 | 17.52 | 10.91          | 11.26 | 11.96 | 12.33 | 13.69 |
|                 | 8H   | 14.93            | 15.24 | 16.00 | 16.30 | 17.68 | 11.08          | 11.39 | 12.15 | 12.45 | 13.83 |
|                 | 12H  | 15.06            | 15.33 | 16.12 | 16.38 | 17.81 | 11.19          | 11.46 | 12.25 | 12.51 | 13.94 |
| 12H             | 4H   | 14.14            | 14.52 | 15.19 | 15.57 | 16.94 | 10.41          | 10.79 | 11.46 | 11.84 | 13.21 |
|                 | 6H   | 14.70            | 15.01 | 15.77 | 16.07 | 17.45 | 10.95          | 11.26 | 12.01 | 12.32 | 13.70 |
|                 | 8H   | 14.91            | 15.18 | 15.97 | 16.23 | 17.66 | 11.14          | 11.42 | 12.21 | 12.47 | 13.89 |

END OF REPORT