

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: P922694

Luminaire Tested: DFN2DIP-SQ2F0-080D050US940-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P922694  
REPORT IS A COMBINATION OF REPORTS P899806 AND P896659  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ2F0-080D050US940-RLLFLL  
Description: 2 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

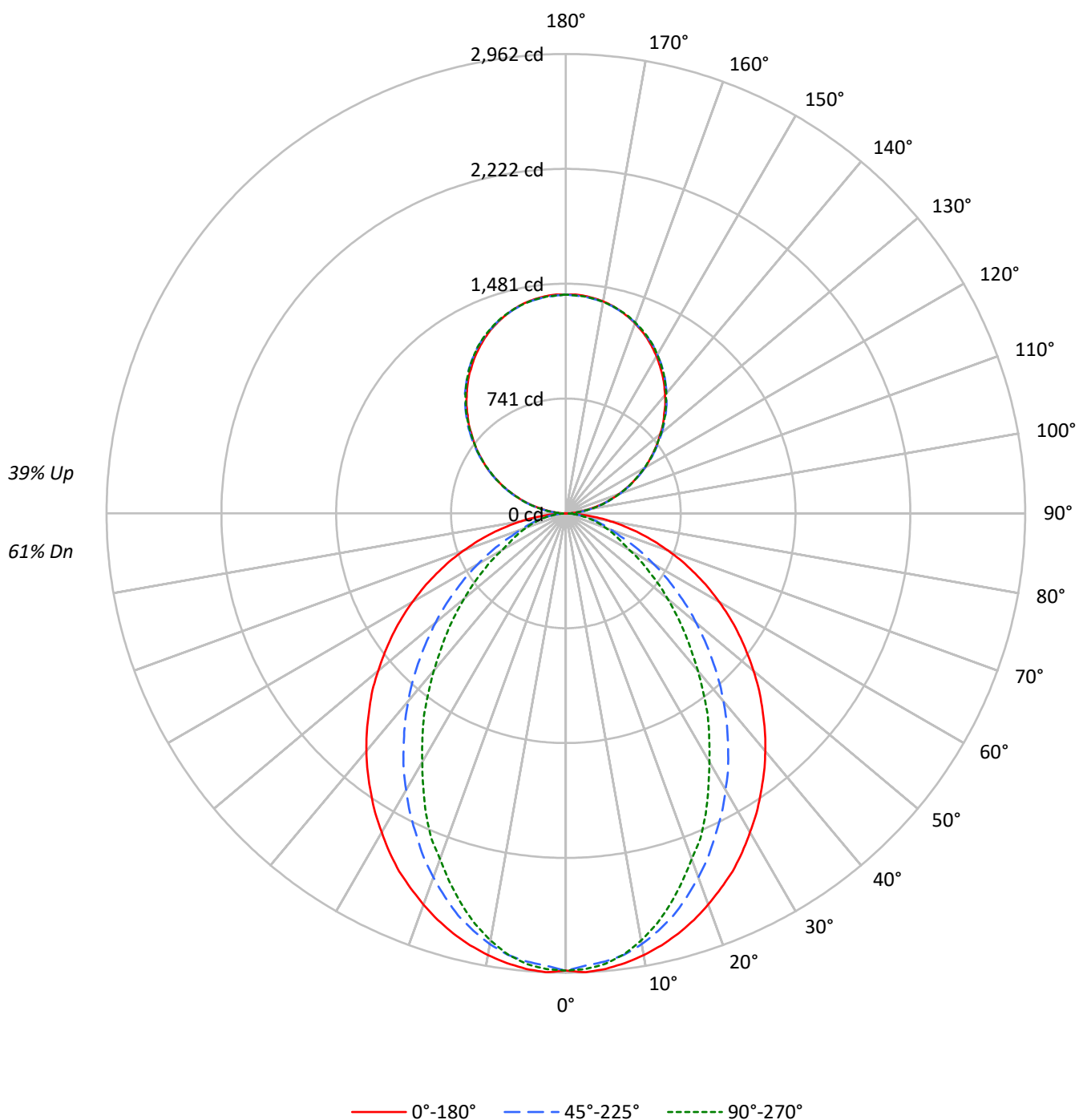
Lumens per Lamp: N/A  
Luminaire Lumens: 10009.5 lumens  
Efficiency: N/A  
Efficacy: 86.0 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.21' x L: 2.21' x H: 0.1')  
CIE Type: Semi-Direct

Input Watts (W): 116.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9957  
Total Harmonic Distortion (THDi): 0.049  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P922694

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US940-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P922694

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US940-RLFL

**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   | 110 | 110 | 110 | 110 | 103 | 103 | 103 | 103 | 89 | 89 | 89 | 77 | 77 | 77 | 66 | 66 | 66 |
| 1   | 101 | 97  | 93  | 89  | 94  | 91  | 87  | 84  | 79 | 77 | 75 | 69 | 67 | 65 | 59 | 58 | 57 |
| 2   | 92  | 85  | 79  | 74  | 86  | 80  | 75  | 70  | 70 | 66 | 63 | 61 | 58 | 56 | 53 | 51 | 49 |
| 3   | 85  | 75  | 68  | 62  | 79  | 71  | 64  | 59  | 62 | 57 | 53 | 55 | 51 | 48 | 47 | 45 | 42 |
| 4   | 78  | 67  | 59  | 53  | 72  | 63  | 56  | 51  | 56 | 50 | 46 | 49 | 45 | 41 | 43 | 39 | 37 |
| 5   | 72  | 60  | 52  | 46  | 67  | 57  | 50  | 44  | 50 | 45 | 40 | 44 | 40 | 36 | 39 | 35 | 32 |
| 6   | 66  | 54  | 46  | 41  | 62  | 51  | 44  | 39  | 46 | 40 | 35 | 40 | 36 | 32 | 35 | 32 | 29 |
| 7   | 61  | 49  | 41  | 36  | 57  | 47  | 39  | 34  | 42 | 36 | 32 | 37 | 32 | 29 | 32 | 29 | 26 |
| 8   | 57  | 45  | 37  | 32  | 53  | 43  | 36  | 31  | 38 | 32 | 28 | 34 | 29 | 26 | 30 | 26 | 23 |
| 9   | 53  | 41  | 34  | 29  | 50  | 39  | 32  | 28  | 35 | 29 | 26 | 31 | 27 | 23 | 28 | 24 | 21 |
| 10  | 50  | 38  | 31  | 26  | 47  | 36  | 29  | 25  | 32 | 27 | 23 | 29 | 25 | 21 | 26 | 22 | 20 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 6483 | 6483 | 6483 |
| 5°  | 6482 | 6366 | 6412 |
| 10° | 6407 | 6227 | 6194 |
| 15° | 6307 | 6008 | 5863 |
| 20° | 6179 | 5711 | 5460 |
| 25° | 6048 | 5381 | 5072 |
| 30° | 5876 | 5044 | 4582 |
| 35° | 5707 | 4683 | 4151 |
| 40° | 5534 | 4310 | 3660 |
| 45° | 5335 | 3900 | 3215 |
| 50° | 5127 | 3486 | 2781 |
| 55° | 4910 | 3046 | 2364 |
| 60° | 4657 | 2588 | 1937 |
| 65° | 4367 | 2124 | 1733 |
| 70° | 4014 | 1692 | 1556 |
| 75° | 3569 | 1465 | 1398 |
| 80° | 2930 | 1190 | 1183 |
| 85° | 1908 | 738  | 842  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 5335 cd/sqm

TEST NUMBER: P922694

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US940-RLFL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 276.3   | 2.8       |
| 10°-20°   | 758.6   | 7.6       |
| 20°-30°   | 1065.0  | 10.6      |
| 30°-40°   | 1160.9  | 11.6      |
| 40°-50°   | 1067.0  | 10.7      |
| 50°-60°   | 838.0   | 8.4       |
| 60°-70°   | 545.4   | 5.4       |
| 70°-80°   | 280.8   | 2.8       |
| 80°-90°   | 75.7    | 0.8       |
| 90°-100°  | 87.3    | 0.9       |
| 100°-110° | 277.2   | 2.8       |
| 110°-120° | 474.5   | 4.7       |
| 120°-130° | 624.0   | 6.2       |
| 130°-140° | 700.4   | 7.0       |
| 140°-150° | 686.8   | 6.9       |
| 150°-160° | 576.1   | 5.8       |
| 160°-170° | 382.1   | 3.8       |
| 170°-180° | 133.5   | 1.3       |
| 0°-30°    | 2099.9  | 21.0      |
| 0°-40°    | 3260.8  | 32.6      |
| 0°-60°    | 5165.8  | 51.6      |
| 0°-90°    | 6067.6  | 60.6      |
| 90°-120°  | 838.9   | 8.4       |
| 90°-150°  | 2850.1  | 28.5      |
| 90°-180°  | 3942.0  | 39.4      |
| 0°-180°   | 10009.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 2948 | 2948  | 2948 | 2948  | 2948 |      |
| 5°   | 2948 | 2935  | 2900 | 2924  | 2916 | 280  |
| 15°  | 2804 | 2775  | 2684 | 2634  | 2607 | 790  |
| 25°  | 2546 | 2460  | 2284 | 2175  | 2134 | 1171 |
| 35°  | 2193 | 2057  | 1822 | 1654  | 1595 | 1373 |
| 45°  | 1793 | 1614  | 1334 | 1144  | 1081 | 1385 |
| 55°  | 1363 | 1155  | 867  | 707   | 656  | 1218 |
| 65°  | 921  | 704   | 464  | 374   | 365  | 913  |
| 75°  | 491  | 304   | 214  | 195   | 192  | 519  |
| 85°  | 115  | 59    | 51   | 51    | 51   | 132  |
| 90°  | 1    | 15    | 42   | 39    | 40   | 10   |
| 95°  | 62   | 74    | 76   | 76    | 74   | 69   |
| 105° | 256  | 259   | 262  | 264   | 264  | 270  |
| 115° | 476  | 483   | 481  | 480   | 476  | 471  |
| 125° | 692  | 703   | 700  | 696   | 695  | 619  |
| 135° | 896  | 909   | 911  | 910   | 907  | 692  |
| 145° | 1087 | 1096  | 1103 | 1104  | 1099 | 679  |
| 155° | 1243 | 1247  | 1251 | 1257  | 1253 | 572  |
| 165° | 1353 | 1351  | 1351 | 1360  | 1354 | 382  |
| 175° | 1408 | 1404  | 1402 | 1410  | 1403 | 134  |
| 180° | 1410 | 1410  | 1410 | 1410  | 1410 |      |

TEST NUMBER: P922694

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US940-RLLFLL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 2948.4 | 2948.4 | 2948.4 | 2948.4 | 2948.4 |
| 2.5°   | 2961.6 | 2948.4 | 2918.9 | 2945.8 | 2940.4 |
| 5°     | 2948.4 | 2935.1 | 2900.2 | 2924.3 | 2916.3 |
| 7.5°   | 2924.3 | 2908.4 | 2871.0 | 2881.6 | 2868.2 |
| 10°    | 2892.3 | 2873.6 | 2820.4 | 2812.2 | 2796.3 |
| 12.5°  | 2852.4 | 2828.3 | 2756.1 | 2740.2 | 2710.8 |
| 15°    | 2804.3 | 2774.8 | 2684.2 | 2633.6 | 2606.9 |
| 17.5°  | 2748.2 | 2705.4 | 2593.4 | 2534.8 | 2492.0 |
| 20°    | 2684.2 | 2630.7 | 2497.4 | 2430.9 | 2371.9 |
| 22.5°  | 2614.9 | 2553.4 | 2398.6 | 2308.0 | 2268.1 |
| 25°    | 2545.5 | 2460.1 | 2283.9 | 2174.7 | 2134.5 |
| 27.5°  | 2462.8 | 2371.9 | 2177.2 | 2051.8 | 1990.4 |
| 30°    | 2374.8 | 2273.1 | 2059.8 | 1923.9 | 1851.6 |
| 32.5°  | 2289.3 | 2166.5 | 1947.9 | 1787.7 | 1720.9 |
| 35°    | 2193.3 | 2057.2 | 1822.5 | 1654.4 | 1595.4 |
| 37.5°  | 2099.9 | 1953.0 | 1705.0 | 1520.7 | 1454.2 |
| 40°    | 2001.2 | 1841.2 | 1582.2 | 1392.8 | 1323.4 |
| 42.5°  | 1899.8 | 1729.1 | 1459.6 | 1262.0 | 1195.4 |
| 45°    | 1793.1 | 1614.2 | 1334.2 | 1144.5 | 1080.6 |
| 47.5°  | 1691.8 | 1502.4 | 1214.2 | 1024.5 | 965.9  |
| 50°    | 1579.6 | 1390.3 | 1096.7 | 912.4  | 856.6  |
| 52.5°  | 1470.1 | 1269.9 | 984.5  | 808.5  | 757.9  |
| 55°    | 1363.3 | 1155.3 | 867.1  | 707.1  | 656.5  |
| 57.5°  | 1254.1 | 1040.6 | 763.2  | 613.8  | 571.0  |
| 60°    | 1141.9 | 928.5  | 653.6  | 517.7  | 475.0  |
| 62.5°  | 1032.7 | 819.2  | 560.3  | 432.3  | 411.1  |
| 65°    | 920.6  | 704.3  | 464.2  | 373.7  | 365.4  |
| 67.5°  | 813.9  | 597.6  | 373.7  | 328.1  | 320.2  |
| 70°    | 701.8  | 493.7  | 309.4  | 282.8  | 272.1  |
| 72.5°  | 595.0  | 397.4  | 258.8  | 237.6  | 232.1  |
| 75°    | 490.9  | 304.1  | 213.5  | 194.7  | 192.3  |
| 77.5°  | 387.0  | 216.0  | 168.2  | 157.4  | 152.0  |
| 80°    | 290.7  | 154.9  | 128.0  | 117.4  | 117.4  |
| 82.5°  | 202.7  | 104.2  | 88.0   | 82.7   | 82.7   |
| 85°    | 114.7  | 58.6   | 50.6   | 50.6   | 50.6   |
| 87.5°  | 42.7   | 21.2   | 21.2   | 18.7   | 18.7   |
| 90°    | 1.2    | 15.3   | 41.6   | 39.1   | 40.4   |
| 92.5°  | 26.4   | 35.7   | 37.0   | 38.3   | 38.3   |
| 95°    | 62.1   | 74.0   | 76.1   | 76.1   | 74.0   |
| 97.5°  | 103.3  | 114.3  | 119.0  | 119.0  | 119.0  |
| 100°   | 150.9  | 160.7  | 164.1  | 164.1  | 162.8  |
| 102.5° | 201.1  | 208.3  | 212.9  | 214.3  | 212.9  |
| 105°   | 255.9  | 259.3  | 261.9  | 263.9  | 263.9  |
| 107.5° | 310.3  | 315.4  | 315.4  | 316.3  | 310.3  |
| 110°   | 363.0  | 369.9  | 369.9  | 369.9  | 366.4  |

TEST NUMBER: P922694

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US940-RLFL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 420.0  | 427.2  | 426.0  | 422.6  | 420.0  |
| 115°   | 476.1  | 483.0  | 480.8  | 479.6  | 476.1  |
| 117.5° | 531.8  | 541.2  | 535.2  | 531.8  | 528.4  |
| 120°   | 587.9  | 597.3  | 587.9  | 587.9  | 584.1  |
| 122.5° | 638.9  | 650.9  | 644.9  | 641.5  | 638.9  |
| 125°   | 692.5  | 703.1  | 699.7  | 695.9  | 694.6  |
| 127.5° | 744.8  | 758.0  | 753.3  | 748.1  | 744.8  |
| 130°   | 793.7  | 809.0  | 806.8  | 804.3  | 799.6  |
| 132.5° | 848.6  | 860.4  | 861.3  | 855.3  | 851.9  |
| 135°   | 895.7  | 908.8  | 911.4  | 910.2  | 906.8  |
| 137.5° | 948.4  | 959.0  | 961.2  | 960.3  | 955.2  |
| 140°   | 994.7  | 1005.4 | 1011.3 | 1011.3 | 1006.7 |
| 142.5° | 1042.3 | 1053.0 | 1056.4 | 1057.7 | 1053.0 |
| 145°   | 1087.4 | 1095.9 | 1102.7 | 1104.0 | 1099.3 |
| 147.5° | 1127.8 | 1138.4 | 1143.5 | 1145.7 | 1140.9 |
| 150°   | 1169.5 | 1176.7 | 1181.3 | 1185.2 | 1181.3 |
| 152.5° | 1206.5 | 1213.7 | 1219.6 | 1224.3 | 1219.6 |
| 155°   | 1243.4 | 1246.8 | 1250.6 | 1256.6 | 1252.8 |
| 157.5° | 1275.3 | 1277.8 | 1280.0 | 1288.5 | 1282.5 |
| 160°   | 1303.8 | 1306.4 | 1307.6 | 1314.8 | 1309.7 |
| 162.5° | 1330.2 | 1330.2 | 1331.4 | 1339.5 | 1333.6 |
| 165°   | 1352.7 | 1351.4 | 1351.4 | 1359.9 | 1354.0 |
| 167.5° | 1373.1 | 1369.2 | 1369.2 | 1377.8 | 1371.8 |
| 170°   | 1388.4 | 1385.0 | 1383.8 | 1392.2 | 1385.0 |
| 172.5° | 1399.0 | 1395.6 | 1394.4 | 1402.8 | 1395.6 |
| 175°   | 1407.6 | 1404.1 | 1401.6 | 1410.1 | 1402.8 |
| 177.5° | 1412.2 | 1408.8 | 1406.2 | 1413.5 | 1406.2 |
| 180°   | 1410.1 | 1410.1 | 1410.1 | 1410.1 | 1410.1 |

TEST NUMBER: P922694

CATALOG NUMBER: DFN2DIP-SQ2F0-080D050US940-RLLFLL

**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 | 14.46            | 15.39 | 15.33 | 16.27 | 17.39 | 10.42          | 11.35 | 11.29 | 12.23 | 13.35 |
|                 | 3H   | 16.13            | 16.96 | 17.01 | 17.85 | 18.99 | 11.60          | 12.43 | 12.48 | 13.32 | 14.46 |
|                 | 4H   | 16.73            | 17.51 | 17.62 | 18.41 | 19.56 | 12.04          | 12.82 | 12.94 | 13.72 | 14.87 |
|                 | 6H   | 17.14            | 17.86 | 18.05 | 18.76 | 19.93 | 12.35          | 13.07 | 13.26 | 13.98 | 15.14 |
|                 | 8H   | 17.26            | 17.94 | 18.17 | 18.87 | 20.03 | 12.44          | 13.12 | 13.35 | 14.04 | 15.21 |
|                 | 12H  | 17.32            | 17.97 | 18.24 | 18.88 | 20.07 | 12.48          | 13.13 | 13.40 | 14.04 | 15.23 |
| 4H              | 2H   | 14.49            | 15.27 | 15.39 | 16.17 | 17.32 | 11.02          | 11.80 | 11.92 | 12.70 | 13.85 |
|                 | 3H   | 16.30            | 16.95 | 17.21 | 17.88 | 19.05 | 12.36          | 13.01 | 13.27 | 13.94 | 15.10 |
|                 | 4H   | 16.98            | 17.57 | 17.91 | 18.50 | 19.69 | 12.89          | 13.48 | 13.82 | 14.41 | 15.60 |
|                 | 6H   | 17.49            | 17.99 | 18.42 | 18.94 | 20.14 | 13.30          | 13.81 | 14.23 | 14.76 | 15.95 |
|                 | 8H   | 17.65            | 18.13 | 18.59 | 19.07 | 20.28 | 13.42          | 13.89 | 14.36 | 14.84 | 16.04 |
|                 | 12H  | 17.74            | 18.17 | 18.70 | 19.13 | 20.34 | 13.48          | 13.90 | 14.43 | 14.87 | 16.08 |
| 8H              | 4H   | 16.95            | 17.43 | 17.89 | 18.37 | 19.58 | 13.17          | 13.64 | 14.11 | 14.59 | 15.79 |
|                 | 6H   | 17.50            | 17.89 | 18.47 | 18.88 | 20.08 | 13.67          | 14.06 | 14.63 | 15.04 | 16.25 |
|                 | 8H   | 17.71            | 18.05 | 18.68 | 19.03 | 20.25 | 13.84          | 14.19 | 14.82 | 15.17 | 16.39 |
|                 | 12H  | 17.83            | 18.14 | 18.81 | 19.11 | 20.38 | 13.95          | 14.26 | 14.93 | 15.23 | 16.50 |
| 12H             | 4H   | 16.91            | 17.34 | 17.87 | 18.30 | 19.51 | 13.18          | 13.60 | 14.13 | 14.56 | 15.78 |
|                 | 6H   | 17.48            | 17.82 | 18.45 | 18.80 | 20.02 | 13.71          | 14.06 | 14.68 | 15.03 | 16.26 |
|                 | 8H   | 17.69            | 17.99 | 18.66 | 18.96 | 20.23 | 13.91          | 14.21 | 14.89 | 15.18 | 16.45 |

END OF REPORT