

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: P906907

Luminaire Tested: DFN2DIP-SQ4F0-120D120US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P906907  
REPORT IS A COMBINATION OF REPORTS P901700 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-120D120US835-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

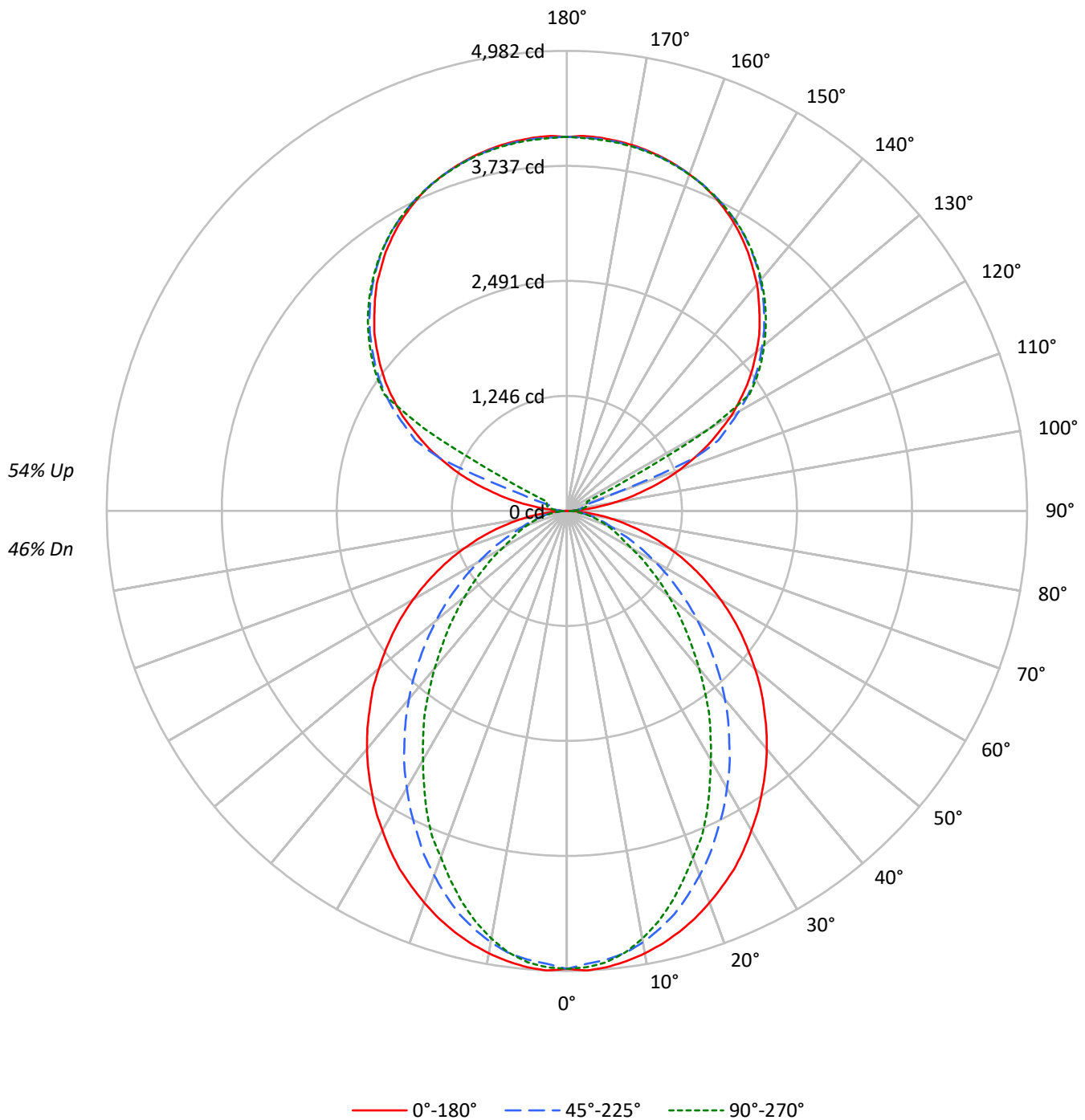
Lumens per Lamp: N/A  
Luminaire Lumens: 22080.0 lumens  
Efficiency: N/A  
Efficacy: 106.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 207.7  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9933  
Total Harmonic Distortion (THDi): 0.066  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P906907

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US835-RLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P906907

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US835-RLLONL

**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 | 50 | 30 | 10 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 |    |    | 46 |
| 1   | 97  | 93  | 90  | 86  | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 47 | 46 | 45 |    |    | 40 |
| 2   | 89  | 82  | 76  | 71  | 82 | 76 | 70 | 66 | 63 | 60 | 57 | 52 | 50 | 48 | 42 | 40 | 39 |    |    | 34 |
| 3   | 81  | 72  | 65  | 60  | 75 | 67 | 61 | 56 | 56 | 52 | 48 | 47 | 43 | 41 | 38 | 35 | 34 |    |    | 29 |
| 4   | 75  | 64  | 57  | 51  | 68 | 60 | 53 | 48 | 50 | 45 | 41 | 42 | 38 | 35 | 34 | 31 | 29 |    |    | 26 |
| 5   | 69  | 58  | 50  | 44  | 63 | 53 | 46 | 41 | 45 | 40 | 36 | 38 | 34 | 31 | 31 | 28 | 26 |    |    | 23 |
| 6   | 63  | 52  | 44  | 38  | 58 | 48 | 41 | 36 | 41 | 36 | 32 | 34 | 30 | 27 | 28 | 25 | 23 |    |    | 20 |
| 7   | 59  | 47  | 39  | 34  | 54 | 44 | 37 | 32 | 37 | 32 | 28 | 31 | 27 | 24 | 26 | 23 | 21 |    |    | 18 |
| 8   | 55  | 43  | 35  | 30  | 50 | 40 | 33 | 28 | 34 | 29 | 25 | 29 | 25 | 22 | 24 | 21 | 19 |    |    | 16 |
| 9   | 51  | 39  | 32  | 27  | 47 | 36 | 30 | 25 | 31 | 26 | 22 | 27 | 23 | 20 | 22 | 19 | 17 |    |    | 15 |
| 10  | 48  | 36  | 29  | 24  | 44 | 33 | 27 | 23 | 29 | 24 | 20 | 25 | 21 | 18 | 20 | 18 | 15 |    |    | 13 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3480 | 3480 | 3480 |
| 5°  | 3486 | 3425 | 3448 |
| 10° | 3451 | 3359 | 3337 |
| 15° | 3403 | 3249 | 3164 |
| 20° | 3341 | 3096 | 2952 |
| 25° | 3276 | 2925 | 2747 |
| 30° | 3190 | 2750 | 2487 |
| 35° | 3105 | 2561 | 2259 |
| 40° | 3019 | 2366 | 1996 |
| 45° | 2919 | 2149 | 1759 |
| 50° | 2815 | 1931 | 1527 |
| 55° | 2707 | 1697 | 1303 |
| 60° | 2582 | 1452 | 1074 |
| 65° | 2438 | 1204 | 968  |
| 70° | 2263 | 971  | 877  |
| 75° | 2044 | 858  | 800  |
| 80° | 1726 | 722  | 697  |
| 85° | 1202 | 486  | 531  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2919 cd/sqm

TEST NUMBER: P906907

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US835-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 464.8   | 2.1       |
| 10°-20°   | 1276.0  | 5.8       |
| 20°-30°   | 1791.5  | 8.1       |
| 30°-40°   | 1952.8  | 8.8       |
| 40°-50°   | 1794.9  | 8.1       |
| 50°-60°   | 1409.6  | 6.4       |
| 60°-70°   | 917.5   | 4.2       |
| 70°-80°   | 472.3   | 2.1       |
| 80°-90°   | 127.7   | 0.6       |
| 90°-100°  | 133.5   | 0.6       |
| 100°-110° | 497.8   | 2.3       |
| 110°-120° | 1320.3  | 6.0       |
| 120°-130° | 2189.8  | 9.9       |
| 130°-140° | 2326.1  | 10.5      |
| 140°-150° | 2161.8  | 9.8       |
| 150°-160° | 1738.1  | 7.9       |
| 160°-170° | 1119.9  | 5.1       |
| 170°-180° | 385.5   | 1.7       |
| 0°-30°    | 3532.3  | 16.0      |
| 0°-40°    | 5485.2  | 24.8      |
| 0°-60°    | 8689.6  | 39.4      |
| 0°-90°    | 10207.1 | 46.2      |
| 90°-120°  | 1951.7  | 8.8       |
| 90°-150°  | 8629.4  | 39.1      |
| 90°-180°  | 11873.0 | 53.8      |
| 0°-180°   | 22080.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 4960 | 4960  | 4960 | 4960  | 4960 |      |
| 5°   | 4960 | 4937  | 4879 | 4919  | 4906 | 470  |
| 15°  | 4717 | 4668  | 4515 | 4430  | 4385 | 1329 |
| 25°  | 4282 | 4138  | 3842 | 3658  | 3590 | 1969 |
| 35°  | 3690 | 3460  | 3066 | 2783  | 2684 | 2309 |
| 45°  | 3016 | 2715  | 2244 | 1925  | 1818 | 2329 |
| 55°  | 2293 | 1943  | 1459 | 1190  | 1104 | 2049 |
| 65°  | 1549 | 1185  | 781  | 629   | 615  | 1535 |
| 75°  | 826  | 511   | 359  | 328   | 323  | 873  |
| 85°  | 193  | 99    | 85   | 85    | 85   | 221  |
| 90°  | 3    | 35    | 58   | 73    | 79   | 21   |
| 95°  | 190  | 94    | 114  | 129   | 126  | 225  |
| 105° | 891  | 979   | 179  | 211   | 223  | 952  |
| 115° | 1685 | 1735  | 1808 | 451   | 240  | 1659 |
| 125° | 2382 | 2421  | 2476 | 2497  | 2506 | 2125 |
| 135° | 2948 | 2995  | 3021 | 3051  | 3045 | 2277 |
| 145° | 3420 | 3417  | 3467 | 3487  | 3472 | 2139 |
| 155° | 3766 | 3739  | 3775 | 3792  | 3769 | 1735 |
| 165° | 3968 | 3950  | 3959 | 3980  | 3959 | 1121 |
| 175° | 4058 | 4038  | 4044 | 4064  | 4035 | 386  |
| 180° | 4050 | 4050  | 4050 | 4050  | 4050 |      |

TEST NUMBER: P906907

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US835-RLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 4959.6 | 4959.6 | 4959.6 | 4959.6 | 4959.6 |
| 2.5°   | 4982.0 | 4959.6 | 4910.1 | 4955.3 | 4946.2 |
| 5°     | 4959.6 | 4937.2 | 4878.6 | 4919.1 | 4905.8 |
| 7.5°   | 4919.1 | 4892.4 | 4829.6 | 4847.2 | 4824.8 |
| 10°    | 4865.3 | 4833.9 | 4744.3 | 4730.5 | 4703.9 |
| 12.5°  | 4798.1 | 4757.7 | 4636.2 | 4609.6 | 4560.1 |
| 15°    | 4717.2 | 4667.7 | 4515.3 | 4430.0 | 4385.3 |
| 17.5°  | 4622.9 | 4551.0 | 4362.4 | 4263.9 | 4192.0 |
| 20°    | 4515.3 | 4425.3 | 4201.0 | 4089.1 | 3990.0 |
| 22.5°  | 4398.6 | 4295.3 | 4034.8 | 3882.4 | 3815.3 |
| 25°    | 4282.0 | 4138.1 | 3841.9 | 3658.1 | 3590.5 |
| 27.5°  | 4142.9 | 3990.0 | 3662.4 | 3451.5 | 3348.1 |
| 30°    | 3994.8 | 3823.9 | 3464.8 | 3236.2 | 3114.8 |
| 32.5°  | 3851.0 | 3644.3 | 3276.7 | 3007.2 | 2894.8 |
| 35°    | 3689.6 | 3460.5 | 3065.7 | 2782.9 | 2683.8 |
| 37.5°  | 3532.4 | 3285.3 | 2868.1 | 2558.1 | 2446.2 |
| 40°    | 3366.2 | 3097.2 | 2661.5 | 2342.9 | 2226.2 |
| 42.5°  | 3195.7 | 2908.6 | 2455.3 | 2122.9 | 2011.0 |
| 45°    | 3016.2 | 2715.3 | 2244.3 | 1925.3 | 1817.6 |
| 47.5°  | 2845.7 | 2527.2 | 2042.4 | 1723.4 | 1624.8 |
| 50°    | 2657.2 | 2338.6 | 1844.8 | 1534.8 | 1441.0 |
| 52.5°  | 2472.9 | 2136.2 | 1656.2 | 1360.0 | 1274.8 |
| 55°    | 2293.4 | 1943.4 | 1458.6 | 1189.5 | 1104.3 |
| 57.5°  | 2109.5 | 1750.5 | 1283.8 | 1032.4 | 960.5  |
| 60°    | 1921.0 | 1561.9 | 1099.5 | 871.0  | 799.1  |
| 62.5°  | 1737.2 | 1378.1 | 942.4  | 727.2  | 691.4  |
| 65°    | 1548.6 | 1184.8 | 781.0  | 628.6  | 614.8  |
| 67.5°  | 1369.1 | 1005.2 | 628.6  | 551.9  | 538.6  |
| 70°    | 1180.5 | 830.5  | 520.5  | 475.7  | 457.6  |
| 72.5°  | 1001.0 | 668.6  | 435.2  | 399.5  | 390.5  |
| 75°    | 825.7  | 511.4  | 359.1  | 327.6  | 323.3  |
| 77.5°  | 651.0  | 363.3  | 282.9  | 264.8  | 255.7  |
| 80°    | 489.1  | 260.5  | 215.2  | 197.6  | 197.6  |
| 82.5°  | 341.0  | 175.2  | 148.1  | 139.0  | 139.0  |
| 85°    | 192.9  | 98.6   | 85.2   | 85.2   | 85.2   |
| 87.5°  | 71.9   | 35.7   | 35.7   | 31.4   | 31.4   |
| 90°    | 2.8    | 35.1   | 58.5   | 73.4   | 79.0   |
| 92.5°  | 73.4   | 61.6   | 70.3   | 76.2   | 79.0   |
| 95°    | 190.3  | 93.6   | 114.1  | 129.1  | 126.0  |
| 97.5°  | 342.8  | 102.7  | 149.3  | 158.3  | 161.1  |
| 100°   | 518.8  | 117.3  | 167.0  | 190.3  | 196.3  |
| 102.5° | 712.0  | 706.4  | 172.9  | 205.0  | 214.0  |
| 105°   | 890.8  | 978.9  | 178.9  | 210.9  | 222.7  |
| 107.5° | 1098.9 | 1172.0 | 184.8  | 216.8  | 228.6  |
| 110°   | 1298.3 | 1359.6 | 512.9  | 219.9  | 231.4  |

TEST NUMBER: P906907

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US835-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1485.9 | 1538.4 | 1488.7 | 225.5  | 234.5  |
| 115°   | 1684.9 | 1734.7 | 1808.1 | 451.3  | 240.5  |
| 117.5° | 1857.9 | 1916.4 | 1966.5 | 1547.1 | 779.5  |
| 120°   | 2051.4 | 2095.2 | 2148.1 | 2183.3 | 1787.6 |
| 122.5° | 2215.3 | 2262.3 | 2321.1 | 2338.5 | 2341.6 |
| 125°   | 2382.3 | 2420.6 | 2476.3 | 2496.8 | 2505.5 |
| 127.5° | 2534.7 | 2575.8 | 2620.0 | 2649.2 | 2652.0 |
| 130°   | 2678.4 | 2725.4 | 2757.4 | 2789.8 | 2787.0 |
| 132.5° | 2824.9 | 2863.2 | 2895.2 | 2921.7 | 2918.9 |
| 135°   | 2948.1 | 2995.1 | 3021.2 | 3050.8 | 3044.9 |
| 137.5° | 3076.9 | 3112.0 | 3141.6 | 3170.8 | 3162.1 |
| 140°   | 3202.9 | 3226.5 | 3258.5 | 3285.0 | 3270.4 |
| 142.5° | 3308.6 | 3329.2 | 3367.1 | 3390.4 | 3375.8 |
| 145°   | 3420.0 | 3416.9 | 3466.6 | 3487.2 | 3472.5 |
| 147.5° | 3516.4 | 3507.7 | 3557.5 | 3572.1 | 3560.6 |
| 150°   | 3610.3 | 3589.8 | 3636.8 | 3654.2 | 3639.6 |
| 152.5° | 3689.3 | 3666.0 | 3709.9 | 3727.6 | 3707.1 |
| 155°   | 3765.5 | 3739.4 | 3774.6 | 3792.0 | 3768.7 |
| 157.5° | 3827.1 | 3803.8 | 3830.3 | 3850.8 | 3827.1 |
| 160°   | 3880.0 | 3862.3 | 3880.0 | 3897.4 | 3876.9 |
| 162.5° | 3926.7 | 3909.3 | 3923.9 | 3944.4 | 3918.0 |
| 165°   | 3967.7 | 3950.3 | 3959.0 | 3979.6 | 3959.0 |
| 167.5° | 4000.1 | 3982.3 | 3991.4 | 4011.9 | 3985.5 |
| 170°   | 4026.5 | 4008.8 | 4014.7 | 4035.2 | 4008.8 |
| 172.5° | 4043.9 | 4026.5 | 4032.5 | 4053.0 | 4026.5 |
| 175°   | 4058.5 | 4038.0 | 4043.9 | 4064.5 | 4035.2 |
| 177.5° | 4064.5 | 4043.9 | 4047.1 | 4067.6 | 4041.2 |
| 180°   | 4049.9 | 4049.9 | 4049.9 | 4049.9 | 4049.9 |

TEST NUMBER: P906907

CATALOG NUMBER: DFN2DIP-SQ4F0-120D120US835-RLONL

**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 | 11.13            | 11.93 | 12.12 | 12.93 | 14.26 | 7.09           | 7.89  | 8.09  | 8.89  | 10.22 |
|                 | 3H   | 12.81            | 13.52 | 13.81 | 14.54 | 15.88 | 8.28           | 8.99  | 9.28  | 10.00 | 11.35 |
|                 | 4H   | 13.42            | 14.10 | 14.44 | 15.11 | 16.47 | 8.73           | 9.40  | 9.75  | 10.42 | 11.77 |
|                 | 6H   | 13.84            | 14.47 | 14.87 | 15.48 | 16.85 | 9.05           | 9.67  | 10.08 | 10.69 | 12.06 |
|                 | 8H   | 13.97            | 14.56 | 15.01 | 15.60 | 16.96 | 9.14           | 9.73  | 10.17 | 10.76 | 12.13 |
|                 | 12H  | 14.03            | 14.60 | 15.07 | 15.63 | 17.01 | 9.18           | 9.74  | 10.22 | 10.77 | 12.16 |
| 4H              | 2H   | 11.14            | 11.82 | 12.17 | 12.84 | 14.19 | 7.68           | 8.36  | 8.71  | 9.38  | 10.73 |
|                 | 3H   | 12.98            | 13.54 | 14.01 | 14.58 | 15.95 | 9.03           | 9.60  | 10.07 | 10.64 | 12.01 |
|                 | 4H   | 13.67            | 14.18 | 14.71 | 15.22 | 16.61 | 9.58           | 10.09 | 10.62 | 11.13 | 12.52 |
|                 | 6H   | 14.19            | 14.63 | 15.24 | 15.69 | 17.07 | 10.00          | 10.44 | 11.05 | 11.50 | 12.89 |
|                 | 8H   | 14.36            | 14.78 | 15.42 | 15.83 | 17.23 | 10.13          | 10.54 | 11.18 | 11.59 | 12.99 |
|                 | 12H  | 14.46            | 14.83 | 15.53 | 15.90 | 17.31 | 10.19          | 10.56 | 11.26 | 11.63 | 13.04 |
| 8H              | 4H   | 13.64            | 14.05 | 14.69 | 15.10 | 16.50 | 9.86           | 10.27 | 10.91 | 11.32 | 12.73 |
|                 | 6H   | 14.20            | 14.55 | 15.28 | 15.64 | 17.04 | 10.38          | 10.72 | 11.45 | 11.81 | 13.21 |
|                 | 8H   | 14.42            | 14.72 | 15.51 | 15.80 | 17.22 | 10.57          | 10.87 | 11.65 | 11.95 | 13.37 |
|                 | 12H  | 14.56            | 14.83 | 15.65 | 15.90 | 17.36 | 10.69          | 10.95 | 11.77 | 12.02 | 13.48 |
| 12H             | 4H   | 13.59            | 13.96 | 14.65 | 15.02 | 16.43 | 9.86           | 10.24 | 10.93 | 11.30 | 12.71 |
|                 | 6H   | 14.18            | 14.48 | 15.26 | 15.56 | 16.98 | 10.43          | 10.73 | 11.51 | 11.81 | 13.22 |
|                 | 8H   | 14.40            | 14.67 | 15.49 | 15.74 | 17.20 | 10.64          | 10.90 | 11.72 | 11.97 | 13.43 |

END OF REPORT