

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: P920515

Luminaire Tested: DFN2DIP-SQ4F0-110D140US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P920515  
REPORT IS A COMBINATION OF REPORTS P901716 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-110D140US935-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

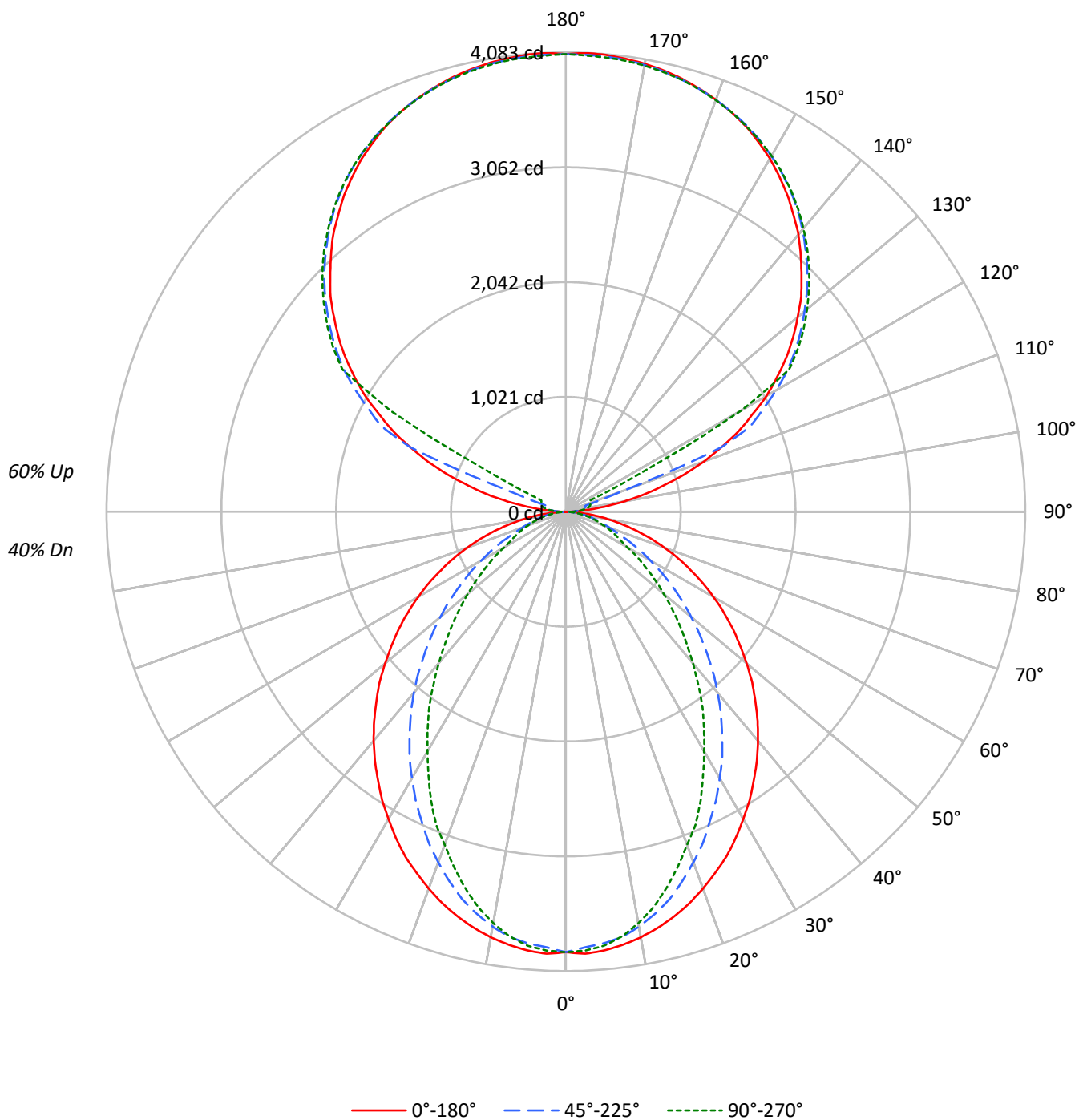
Lumens per Lamp: N/A  
Luminaire Lumens: 19983.8 lumens  
Efficiency: N/A  
Efficacy: 94.8 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 210.9  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9951  
Total Harmonic Distortion (THDi): 0.07  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

TEST NUMBER: P920515

CATALOG NUMBER: DFN2DIP-SQ4F0-110D140US935-RLLONL

### Luminous Intensity Polar Plot



TEST NUMBER: P920515

CATALOG NUMBER: DFN2DIP-SQ4F0-110D140US935-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 |
| RCR |     |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 0   | 105 | 105 | 105 | 105 | 95 | 95 | 95 | 95 | 78 | 78 | 78 | 62 | 62 | 62 | 47 | 47 | 47 |
| 1   | 96  | 92  | 88  | 85  | 87 | 84 | 81 | 78 | 69 | 67 | 65 | 55 | 54 | 52 | 42 | 41 | 41 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 57 | 54 | 49 | 46 | 44 | 38 | 36 | 35 |
| 3   | 80  | 71  | 64  | 59  | 73 | 65 | 59 | 54 | 54 | 50 | 46 | 43 | 40 | 38 | 34 | 32 | 30 |
| 4   | 74  | 63  | 56  | 50  | 67 | 58 | 51 | 46 | 48 | 43 | 39 | 39 | 36 | 33 | 30 | 28 | 26 |
| 5   | 68  | 56  | 49  | 43  | 61 | 52 | 45 | 40 | 43 | 38 | 34 | 35 | 31 | 29 | 28 | 25 | 23 |
| 6   | 62  | 51  | 43  | 37  | 57 | 47 | 40 | 35 | 39 | 34 | 30 | 32 | 28 | 25 | 25 | 23 | 20 |
| 7   | 58  | 46  | 38  | 33  | 53 | 42 | 36 | 31 | 35 | 30 | 27 | 29 | 25 | 22 | 23 | 20 | 18 |
| 8   | 54  | 42  | 34  | 29  | 49 | 38 | 32 | 27 | 32 | 27 | 24 | 27 | 23 | 20 | 21 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 35 | 29 | 24 | 30 | 25 | 21 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 43 | 32 | 26 | 22 | 27 | 23 | 19 | 23 | 19 | 16 | 18 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 2747 | 2747 | 2747 |
| 5°  | 2751 | 2704 | 2721 |
| 10° | 2724 | 2651 | 2633 |
| 15° | 2686 | 2564 | 2497 |
| 20° | 2637 | 2444 | 2330 |
| 25° | 2586 | 2309 | 2168 |
| 30° | 2517 | 2170 | 1963 |
| 35° | 2451 | 2022 | 1783 |
| 40° | 2383 | 1868 | 1576 |
| 45° | 2304 | 1696 | 1388 |
| 50° | 2222 | 1524 | 1205 |
| 55° | 2136 | 1339 | 1029 |
| 60° | 2038 | 1146 | 848  |
| 65° | 1924 | 950  | 764  |
| 70° | 1786 | 767  | 692  |
| 75° | 1613 | 677  | 632  |
| 80° | 1362 | 570  | 551  |
| 85° | 949  | 383  | 419  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2304 cd/sqm

TEST NUMBER: P920515

CATALOG NUMBER: DFN2DIP-SQ4F0-110D140US935-RLLONL

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 366.9   | 1.8       |
| 10°-20°   | 1007.1  | 5.0       |
| 20°-30°   | 1413.9  | 7.1       |
| 30°-40°   | 1541.3  | 7.7       |
| 40°-50°   | 1416.6  | 7.1       |
| 50°-60°   | 1112.5  | 5.6       |
| 60°-70°   | 724.2   | 3.6       |
| 70°-80°   | 372.8   | 1.9       |
| 80°-90°   | 102.3   | 0.5       |
| 90°-100°  | 134.2   | 0.7       |
| 100°-110° | 500.0   | 2.5       |
| 110°-120° | 1326.2  | 6.6       |
| 120°-130° | 2199.7  | 11.0      |
| 130°-140° | 2336.6  | 11.7      |
| 140°-150° | 2171.6  | 10.9      |
| 150°-160° | 1745.9  | 8.7       |
| 160°-170° | 1125.0  | 5.6       |
| 170°-180° | 387.2   | 1.9       |
| 0°-30°    | 2787.9  | 14.0      |
| 0°-40°    | 4329.1  | 21.7      |
| 0°-60°    | 6858.3  | 34.3      |
| 0°-90°    | 8057.5  | 40.3      |
| 90°-120°  | 1960.4  | 9.8       |
| 90°-150°  | 8668.2  | 43.4      |
| 90°-180°  | 11926.0 | 59.7      |
| 0°-180°   | 19983.8 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3914 | 3914  | 3914 | 3914  | 3914 |      |
| 5°   | 3914 | 3897  | 3850 | 3882  | 3872 | 371  |
| 15°  | 3723 | 3684  | 3564 | 3496  | 3461 | 1049 |
| 25°  | 3380 | 3266  | 3032 | 2887  | 2834 | 1554 |
| 35°  | 2912 | 2731  | 2420 | 2196  | 2118 | 1823 |
| 45°  | 2381 | 2143  | 1771 | 1520  | 1435 | 1838 |
| 55°  | 1810 | 1534  | 1151 | 939   | 872  | 1617 |
| 65°  | 1222 | 935   | 616  | 496   | 485  | 1212 |
| 75°  | 652  | 404   | 283  | 259   | 255  | 689  |
| 85°  | 152  | 78    | 67   | 67    | 67   | 175  |
| 90°  | 3    | 35    | 59   | 74    | 79   | 19   |
| 95°  | 191  | 94    | 115  | 130   | 127  | 226  |
| 105° | 895  | 983   | 180  | 212   | 224  | 956  |
| 115° | 1692 | 1742  | 1816 | 453   | 242  | 1666 |
| 125° | 2393 | 2432  | 2487 | 2508  | 2517 | 2134 |
| 135° | 2961 | 3009  | 3035 | 3064  | 3058 | 2288 |
| 145° | 3435 | 3432  | 3482 | 3503  | 3488 | 2149 |
| 155° | 3782 | 3756  | 3792 | 3809  | 3786 | 1743 |
| 165° | 3986 | 3968  | 3977 | 3997  | 3977 | 1126 |
| 175° | 4077 | 4056  | 4062 | 4083  | 4053 | 388  |
| 180° | 4068 | 4068  | 4068 | 4068  | 4068 |      |



TEST NUMBER: P920515

CATALOG NUMBER: DFN2DIP-SQ4F0-110D140US935-RLLONL

**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3914.4 | 3914.4 | 3914.4 | 3914.4 | 3914.4 |
| 2.5°   | 3932.0 | 3914.4 | 3875.3 | 3911.0 | 3903.9 |
| 5°     | 3914.4 | 3896.7 | 3850.5 | 3882.4 | 3871.9 |
| 7.5°   | 3882.4 | 3861.3 | 3811.7 | 3825.7 | 3807.9 |
| 10°    | 3840.0 | 3815.1 | 3744.5 | 3733.5 | 3712.5 |
| 12.5°  | 3786.9 | 3755.0 | 3659.2 | 3638.1 | 3599.0 |
| 15°    | 3723.0 | 3684.0 | 3563.7 | 3496.4 | 3461.0 |
| 17.5°  | 3648.7 | 3591.9 | 3443.0 | 3365.2 | 3308.5 |
| 20°    | 3563.7 | 3492.6 | 3315.6 | 3227.3 | 3149.1 |
| 22.5°  | 3471.6 | 3390.0 | 3184.5 | 3064.2 | 3011.2 |
| 25°    | 3379.5 | 3266.0 | 3032.3 | 2887.2 | 2833.8 |
| 27.5°  | 3269.8 | 3149.1 | 2890.5 | 2724.0 | 2642.5 |
| 30°    | 3152.9 | 3018.0 | 2734.6 | 2554.2 | 2458.3 |
| 32.5°  | 3039.4 | 2876.2 | 2586.1 | 2373.4 | 2284.7 |
| 35°    | 2912.0 | 2731.2 | 2419.7 | 2196.4 | 2118.2 |
| 37.5°  | 2788.0 | 2592.9 | 2263.6 | 2019.0 | 1930.7 |
| 40°    | 2656.8 | 2444.5 | 2100.6 | 1849.1 | 1757.0 |
| 42.5°  | 2522.2 | 2295.6 | 1937.8 | 1675.5 | 1587.2 |
| 45°    | 2380.6 | 2143.0 | 1771.3 | 1519.5 | 1434.6 |
| 47.5°  | 2246.0 | 1994.6 | 1612.0 | 1360.1 | 1282.4 |
| 50°    | 2097.1 | 1845.7 | 1456.0 | 1211.3 | 1137.3 |
| 52.5°  | 1951.7 | 1686.0 | 1307.2 | 1073.4 | 1006.1 |
| 55°    | 1810.0 | 1533.8 | 1151.2 | 938.8  | 871.6  |
| 57.5°  | 1665.0 | 1381.6 | 1013.2 | 814.8  | 758.0  |
| 60°    | 1516.1 | 1232.8 | 867.8  | 687.4  | 630.7  |
| 62.5°  | 1371.1 | 1087.7 | 743.8  | 573.9  | 545.7  |
| 65°    | 1222.2 | 935.0  | 616.4  | 496.1  | 485.2  |
| 67.5°  | 1080.6 | 793.4  | 496.1  | 435.6  | 425.1  |
| 70°    | 931.7  | 655.5  | 410.8  | 375.5  | 361.2  |
| 72.5°  | 790.0  | 527.7  | 343.5  | 315.3  | 308.2  |
| 75°    | 651.7  | 403.6  | 283.4  | 258.6  | 255.2  |
| 77.5°  | 513.8  | 286.8  | 223.3  | 209.0  | 201.8  |
| 80°    | 386.0  | 205.6  | 169.9  | 156.0  | 156.0  |
| 82.5°  | 269.1  | 138.3  | 116.9  | 109.8  | 109.8  |
| 85°    | 152.2  | 77.8   | 67.2   | 67.2   | 67.2   |
| 87.5°  | 56.7   | 28.2   | 28.2   | 24.8   | 24.8   |
| 90°    | 2.8    | 35.3   | 58.7   | 73.8   | 79.4   |
| 92.5°  | 73.8   | 61.9   | 70.6   | 76.5   | 79.4   |
| 95°    | 191.2  | 94.0   | 114.7  | 129.7  | 126.6  |
| 97.5°  | 344.3  | 103.1  | 150.0  | 159.0  | 161.9  |
| 100°   | 521.2  | 117.8  | 167.8  | 191.2  | 197.2  |
| 102.5° | 715.1  | 709.5  | 173.7  | 205.9  | 215.0  |
| 105°   | 894.8  | 983.3  | 179.7  | 211.8  | 223.7  |
| 107.5° | 1103.9 | 1177.2 | 185.6  | 217.7  | 229.6  |
| 110°   | 1304.2 | 1365.7 | 515.2  | 220.9  | 232.5  |

TEST NUMBER: P920515

CATALOG NUMBER: DFN2DIP-SQ4F0-110D140US935-RLLONL

**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1492.5 | 1545.3 | 1495.4 | 226.5  | 235.6  |
| 115°   | 1692.5 | 1742.5 | 1816.3 | 453.4  | 241.5  |
| 117.5° | 1866.2 | 1924.9 | 1975.3 | 1554.1 | 783.0  |
| 120°   | 2060.6 | 2104.6 | 2157.7 | 2193.0 | 1795.6 |
| 122.5° | 2225.2 | 2272.4 | 2331.5 | 2349.0 | 2352.2 |
| 125°   | 2393.1 | 2431.5 | 2487.4 | 2508.0 | 2516.8 |
| 127.5° | 2546.1 | 2587.4 | 2631.7 | 2661.1 | 2663.9 |
| 130°   | 2690.4 | 2737.7 | 2769.8 | 2802.4 | 2799.5 |
| 132.5° | 2837.7 | 2876.1 | 2908.3 | 2934.8 | 2932.0 |
| 135°   | 2961.4 | 3008.6 | 3034.8 | 3064.5 | 3058.5 |
| 137.5° | 3090.7 | 3126.0 | 3155.7 | 3185.1 | 3176.4 |
| 140°   | 3217.3 | 3241.1 | 3273.2 | 3299.8 | 3285.1 |
| 142.5° | 3323.5 | 3344.1 | 3382.3 | 3405.7 | 3391.0 |
| 145°   | 3435.4 | 3432.2 | 3482.2 | 3502.9 | 3488.2 |
| 147.5° | 3532.2 | 3523.5 | 3573.5 | 3588.1 | 3576.6 |
| 150°   | 3626.6 | 3605.9 | 3653.1 | 3670.6 | 3656.0 |
| 152.5° | 3705.9 | 3682.5 | 3726.6 | 3744.4 | 3723.7 |
| 155°   | 3782.4 | 3756.3 | 3791.6 | 3809.1 | 3785.6 |
| 157.5° | 3844.4 | 3820.9 | 3847.5 | 3868.1 | 3844.4 |
| 160°   | 3897.5 | 3879.7 | 3897.5 | 3915.0 | 3894.4 |
| 162.5° | 3944.3 | 3926.8 | 3941.6 | 3962.1 | 3935.6 |
| 165°   | 3985.6 | 3968.1 | 3976.9 | 3997.4 | 3976.9 |
| 167.5° | 4018.1 | 4000.3 | 4009.3 | 4030.0 | 4003.4 |
| 170°   | 4044.6 | 4026.8 | 4032.7 | 4053.4 | 4026.8 |
| 172.5° | 4062.1 | 4044.6 | 4050.6 | 4071.2 | 4044.6 |
| 175°   | 4076.8 | 4056.2 | 4062.1 | 4082.8 | 4053.4 |
| 177.5° | 4082.8 | 4062.1 | 4065.3 | 4085.9 | 4059.3 |
| 180°   | 4068.0 | 4068.0 | 4068.0 | 4068.0 | 4068.0 |

TEST NUMBER: P920515

CATALOG NUMBER: DFN2DIP-SQ4F0-110D140US935-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 | 9.69             | 10.45 | 10.74 | 11.49 | 12.90 | 5.65           | 6.41 | 6.70  | 7.46  | 8.86  |
|                 | 3H   | 11.37            | 12.05 | 12.42 | 13.10 | 14.52 | 6.84           | 7.52 | 7.89  | 8.57  | 9.99  |
|                 | 4H   | 11.98            | 12.62 | 13.04 | 13.67 | 15.11 | 7.29           | 7.93 | 8.35  | 8.98  | 10.41 |
|                 | 6H   | 12.40            | 12.99 | 13.47 | 14.05 | 15.49 | 7.60           | 8.19 | 8.68  | 9.25  | 10.70 |
|                 | 8H   | 12.53            | 13.09 | 13.60 | 14.16 | 15.60 | 7.69           | 8.25 | 8.77  | 9.33  | 10.77 |
|                 | 12H  | 12.59            | 13.12 | 13.67 | 14.19 | 15.65 | 7.73           | 8.27 | 8.82  | 9.33  | 10.80 |
| 4H              | 2H   | 9.70             | 10.34 | 10.77 | 11.40 | 12.83 | 6.24           | 6.88 | 7.31  | 7.94  | 9.37  |
|                 | 3H   | 11.53            | 12.06 | 12.61 | 13.15 | 14.59 | 7.59           | 8.12 | 8.67  | 9.20  | 10.65 |
|                 | 4H   | 12.22            | 12.71 | 13.31 | 13.78 | 15.25 | 8.13           | 8.62 | 9.22  | 9.70  | 11.16 |
|                 | 6H   | 12.74            | 13.16 | 13.83 | 14.25 | 15.71 | 8.55           | 8.97 | 9.64  | 10.06 | 11.53 |
|                 | 8H   | 12.92            | 13.31 | 14.01 | 14.39 | 15.87 | 8.68           | 9.07 | 9.77  | 10.16 | 11.63 |
|                 | 12H  | 13.01            | 13.36 | 14.12 | 14.46 | 15.94 | 8.74           | 9.09 | 9.85  | 10.20 | 11.68 |
| 8H              | 4H   | 12.19            | 12.58 | 13.28 | 13.66 | 15.14 | 8.41           | 8.80 | 9.50  | 9.89  | 11.37 |
|                 | 6H   | 12.75            | 13.08 | 13.87 | 14.21 | 15.68 | 8.93           | 9.25 | 10.04 | 10.38 | 11.85 |
|                 | 8H   | 12.97            | 13.26 | 14.09 | 14.37 | 15.86 | 9.12           | 9.40 | 10.24 | 10.51 | 12.01 |
|                 | 12H  | 13.11            | 13.36 | 14.24 | 14.47 | 16.00 | 9.24           | 9.49 | 10.36 | 10.59 | 12.12 |
| 12H             | 4H   | 12.13            | 12.49 | 13.24 | 13.59 | 15.07 | 8.41           | 8.77 | 9.52  | 9.87  | 11.35 |
|                 | 6H   | 12.73            | 13.01 | 13.85 | 14.12 | 15.62 | 8.98           | 9.26 | 10.10 | 10.37 | 11.87 |
|                 | 8H   | 12.95            | 13.20 | 14.07 | 14.31 | 15.84 | 9.19           | 9.44 | 10.31 | 10.54 | 12.07 |

END OF REPORT