

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: P926617

Luminaire Tested: DFN2DIP-TR4F0-100D120US950-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P926617  
REPORT IS A COMBINATION OF REPORTS P902046 AND P898849  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-TR4F0-100D120US950-RLLONL  
Description: 4 foot, Triangle Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

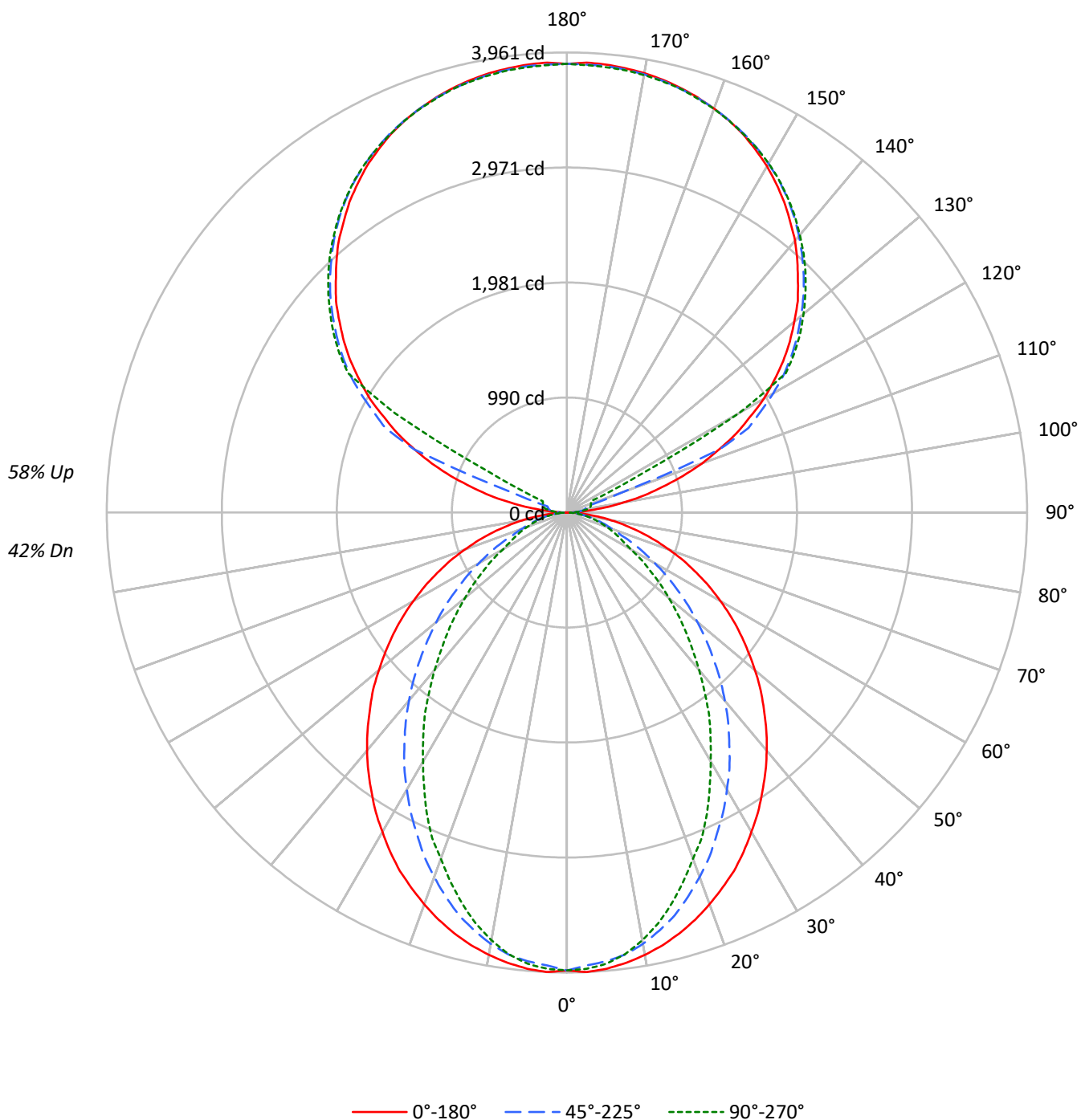
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19442.5 lumens  
Efficiency: N/A  
Efficacy: 101.1 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.43' x L: 3.96' x H: 0.1')  
CIE Type: General Diffuse  
  
Input Watts (W): 192.4  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9972  
Total Harmonic Distortion (THDi): 0.128  
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   | 105 | 105 | 105 | 105 | 96 | 96 | 96 | 96 | 79 | 79 | 79 | 63 | 63 | 63 | 49 | 49 | 49 |
| 1   | 96  | 92  | 89  | 85  | 88 | 84 | 81 | 78 | 70 | 67 | 65 | 56 | 55 | 53 | 43 | 43 | 42 |
| 2   | 88  | 81  | 75  | 70  | 80 | 74 | 69 | 65 | 61 | 58 | 55 | 50 | 47 | 45 | 39 | 37 | 36 |
| 3   | 81  | 72  | 65  | 59  | 73 | 66 | 60 | 55 | 55 | 50 | 46 | 44 | 41 | 39 | 35 | 33 | 31 |
| 4   | 74  | 64  | 56  | 50  | 67 | 58 | 52 | 47 | 49 | 44 | 40 | 40 | 36 | 33 | 31 | 29 | 27 |
| 5   | 68  | 57  | 49  | 43  | 62 | 52 | 45 | 40 | 44 | 39 | 35 | 36 | 32 | 29 | 28 | 26 | 24 |
| 6   | 63  | 51  | 43  | 38  | 57 | 47 | 40 | 35 | 39 | 34 | 30 | 32 | 29 | 26 | 26 | 23 | 21 |
| 7   | 58  | 46  | 38  | 33  | 53 | 43 | 36 | 31 | 36 | 31 | 27 | 30 | 26 | 23 | 24 | 21 | 19 |
| 8   | 54  | 42  | 34  | 29  | 49 | 39 | 32 | 27 | 33 | 28 | 24 | 27 | 23 | 20 | 22 | 19 | 17 |
| 9   | 50  | 38  | 31  | 26  | 46 | 35 | 29 | 25 | 30 | 25 | 22 | 25 | 21 | 18 | 20 | 17 | 15 |
| 10  | 47  | 35  | 28  | 23  | 43 | 33 | 26 | 22 | 28 | 23 | 19 | 23 | 19 | 17 | 19 | 16 | 14 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 3132 | 3132 | 3132 |
| 5°  | 3137 | 3083 | 3102 |
| 10° | 3106 | 3022 | 3001 |
| 15° | 3064 | 2922 | 2845 |
| 20° | 3007 | 2784 | 2653 |
| 25° | 2949 | 2630 | 2469 |
| 30° | 2871 | 2472 | 2234 |
| 35° | 2795 | 2302 | 2028 |
| 40° | 2718 | 2126 | 1792 |
| 45° | 2628 | 1930 | 1577 |
| 50° | 2534 | 1733 | 1368 |
| 55° | 2437 | 1522 | 1167 |
| 60° | 2325 | 1302 | 961  |
| 65° | 2195 | 1078 | 865  |
| 70° | 2038 | 869  | 782  |
| 75° | 1841 | 766  | 711  |
| 80° | 1556 | 642  | 617  |
| 85° | 1084 | 428  | 463  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 2628 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 369.5   | 1.9       |
| 10°-20°   | 1014.4  | 5.2       |
| 20°-30°   | 1424.2  | 7.3       |
| 30°-40°   | 1552.5  | 8.0       |
| 40°-50°   | 1426.9  | 7.3       |
| 50°-60°   | 1120.6  | 5.8       |
| 60°-70°   | 729.4   | 3.8       |
| 70°-80°   | 375.5   | 1.9       |
| 80°-90°   | 102.6   | 0.5       |
| 90°-100°  | 127.4   | 0.7       |
| 100°-110° | 474.9   | 2.4       |
| 110°-120° | 1259.5  | 6.5       |
| 120°-130° | 2089.1  | 10.7      |
| 130°-140° | 2219.1  | 11.4      |
| 140°-150° | 2062.4  | 10.6      |
| 150°-160° | 1658.1  | 8.5       |
| 160°-170° | 1068.4  | 5.5       |
| 170°-180° | 367.7   | 1.9       |
| 0°-30°    | 2808.2  | 14.4      |
| 0°-40°    | 4360.7  | 22.4      |
| 0°-60°    | 6908.2  | 35.5      |
| 0°-90°    | 8115.8  | 41.7      |
| 90°-120°  | 1861.9  | 9.6       |
| 90°-150°  | 8232.4  | 42.3      |
| 90°-180°  | 11327.0 | 58.3      |
| 0°-180°   | 19442.5 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 3943 | 3943  | 3943 | 3943  | 3943 |      |
| 5°   | 3943 | 3925  | 3878 | 3911  | 3900 | 374  |
| 15°  | 3750 | 3711  | 3590 | 3522  | 3486 | 1057 |
| 25°  | 3404 | 3290  | 3054 | 2908  | 2854 | 1566 |
| 35°  | 2933 | 2751  | 2437 | 2212  | 2134 | 1836 |
| 45°  | 2398 | 2159  | 1784 | 1531  | 1445 | 1852 |
| 55°  | 1823 | 1545  | 1160 | 946   | 878  | 1629 |
| 65°  | 1231 | 942   | 621  | 500   | 489  | 1221 |
| 75°  | 656  | 407   | 285  | 260   | 257  | 694  |
| 85°  | 153  | 78    | 68   | 68    | 68   | 176  |
| 90°  | 3    | 34    | 56   | 70    | 75   | 18   |
| 95°  | 182  | 89    | 109  | 123   | 120  | 215  |
| 105° | 850  | 934   | 171  | 201   | 212  | 908  |
| 115° | 1607 | 1655  | 1725 | 430   | 229  | 1582 |
| 125° | 2273 | 2309  | 2362 | 2382  | 2390 | 2027 |
| 135° | 2812 | 2857  | 2882 | 2910  | 2905 | 2173 |
| 145° | 3263 | 3260  | 3307 | 3327  | 3313 | 2041 |
| 155° | 3592 | 3567  | 3601 | 3618  | 3595 | 1655 |
| 165° | 3785 | 3769  | 3777 | 3796  | 3777 | 1069 |
| 175° | 3872 | 3852  | 3858 | 3878  | 3850 | 368  |
| 180° | 3864 | 3864  | 3864 | 3864  | 3864 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 3942.9 | 3942.9 | 3942.9 | 3942.9 | 3942.9 |
| 2.5°   | 3960.6 | 3942.9 | 3903.5 | 3939.4 | 3932.3 |
| 5°     | 3942.9 | 3925.0 | 3878.5 | 3910.7 | 3900.0 |
| 7.5°   | 3910.7 | 3889.5 | 3839.5 | 3853.5 | 3835.7 |
| 10°    | 3867.9 | 3842.9 | 3771.7 | 3760.8 | 3739.6 |
| 12.5°  | 3814.6 | 3782.3 | 3685.8 | 3664.6 | 3625.2 |
| 15°    | 3750.2 | 3710.8 | 3589.6 | 3521.9 | 3486.3 |
| 17.5°  | 3675.2 | 3618.0 | 3468.2 | 3389.8 | 3332.6 |
| 20°    | 3589.6 | 3518.1 | 3339.8 | 3250.9 | 3172.0 |
| 22.5°  | 3496.9 | 3414.7 | 3207.6 | 3086.6 | 3033.1 |
| 25°    | 3404.2 | 3289.9 | 3054.3 | 2908.2 | 2854.5 |
| 27.5°  | 3293.6 | 3172.0 | 2911.6 | 2743.9 | 2661.8 |
| 30°    | 3175.9 | 3039.9 | 2754.5 | 2572.8 | 2476.3 |
| 32.5°  | 3061.6 | 2897.2 | 2605.0 | 2390.7 | 2301.3 |
| 35°    | 2933.2 | 2751.1 | 2437.3 | 2212.4 | 2133.6 |
| 37.5°  | 2808.3 | 2611.8 | 2280.2 | 2033.7 | 1944.7 |
| 40°    | 2676.2 | 2462.3 | 2115.9 | 1862.6 | 1769.9 |
| 42.5°  | 2540.6 | 2312.3 | 1952.0 | 1687.7 | 1598.7 |
| 45°    | 2397.9 | 2158.6 | 1784.3 | 1530.6 | 1445.0 |
| 47.5°  | 2262.4 | 2009.1 | 1623.7 | 1370.0 | 1291.7 |
| 50°    | 2112.4 | 1859.2 | 1466.6 | 1220.2 | 1145.6 |
| 52.5°  | 1965.9 | 1698.3 | 1316.7 | 1081.2 | 1013.4 |
| 55°    | 1823.2 | 1545.0 | 1159.6 | 945.7  | 877.9  |
| 57.5°  | 1677.1 | 1391.6 | 1020.7 | 820.7  | 763.6  |
| 60°    | 1527.2 | 1241.7 | 874.2  | 692.4  | 635.3  |
| 62.5°  | 1381.0 | 1095.6 | 749.2  | 578.1  | 549.7  |
| 65°    | 1231.1 | 941.9  | 620.9  | 499.7  | 488.7  |
| 67.5°  | 1088.4 | 799.2  | 499.7  | 438.7  | 428.2  |
| 70°    | 938.4  | 660.3  | 413.7  | 378.2  | 363.9  |
| 72.5°  | 795.7  | 531.5  | 346.0  | 317.6  | 310.4  |
| 75°    | 656.4  | 406.6  | 285.4  | 260.4  | 257.0  |
| 77.5°  | 517.5  | 288.9  | 224.9  | 210.5  | 203.3  |
| 80°    | 388.8  | 207.1  | 171.1  | 157.1  | 157.1  |
| 82.5°  | 271.0  | 139.3  | 117.7  | 110.6  | 110.6  |
| 85°    | 153.3  | 78.3   | 67.7   | 67.7   | 67.7   |
| 87.5°  | 57.1   | 28.4   | 28.4   | 25.0   | 25.0   |
| 90°    | 2.7    | 33.5   | 55.8   | 70.0   | 75.4   |
| 92.5°  | 70.0   | 58.8   | 67.1   | 72.7   | 75.4   |
| 95°    | 181.5  | 89.3   | 108.9  | 123.2  | 120.2  |
| 97.5°  | 327.0  | 98.0   | 142.4  | 151.0  | 153.7  |
| 100°   | 494.9  | 111.9  | 159.3  | 181.5  | 187.3  |
| 102.5° | 679.2  | 673.9  | 164.9  | 195.6  | 204.2  |
| 105°   | 849.8  | 933.9  | 170.7  | 201.2  | 212.5  |
| 107.5° | 1048.4 | 1118.1 | 176.3  | 206.8  | 218.1  |
| 110°   | 1238.6 | 1297.1 | 489.3  | 209.8  | 220.8  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1417.5 | 1467.6 | 1420.2 | 215.1  | 223.7  |
| 115°   | 1607.4 | 1654.9 | 1724.9 | 430.5  | 229.4  |
| 117.5° | 1772.4 | 1828.2 | 1876.0 | 1475.9 | 743.6  |
| 120°   | 1957.0 | 1998.8 | 2049.3 | 2082.9 | 1705.4 |
| 122.5° | 2113.4 | 2158.2 | 2214.3 | 2230.9 | 2233.9 |
| 125°   | 2272.7 | 2309.3 | 2362.4 | 2381.9 | 2390.2 |
| 127.5° | 2418.1 | 2457.3 | 2499.5 | 2527.3 | 2530.0 |
| 130°   | 2555.2 | 2600.0 | 2630.6 | 2661.5 | 2658.8 |
| 132.5° | 2695.0 | 2731.5 | 2762.0 | 2787.3 | 2784.6 |
| 135°   | 2812.5 | 2857.3 | 2882.2 | 2910.5 | 2904.8 |
| 137.5° | 2935.4 | 2968.8 | 2997.1 | 3024.9 | 3016.6 |
| 140°   | 3055.6 | 3078.1 | 3108.6 | 3133.9 | 3120.0 |
| 142.5° | 3156.4 | 3176.1 | 3212.2 | 3234.4 | 3220.5 |
| 145°   | 3262.7 | 3259.7 | 3307.1 | 3326.8 | 3312.8 |
| 147.5° | 3354.6 | 3346.3 | 3393.9 | 3407.8 | 3396.8 |
| 150°   | 3444.2 | 3424.7 | 3469.5 | 3486.1 | 3472.2 |
| 152.5° | 3519.6 | 3497.4 | 3539.2 | 3556.1 | 3536.6 |
| 155°   | 3592.3 | 3567.4 | 3601.0 | 3617.6 | 3595.3 |
| 157.5° | 3651.1 | 3628.8 | 3654.1 | 3673.7 | 3651.1 |
| 160°   | 3701.5 | 3684.6 | 3701.5 | 3718.1 | 3698.6 |
| 162.5° | 3746.1 | 3729.5 | 3743.4 | 3763.0 | 3737.8 |
| 165°   | 3785.2 | 3768.6 | 3776.9 | 3796.5 | 3776.9 |
| 167.5° | 3816.1 | 3799.1 | 3807.8 | 3827.4 | 3802.2 |
| 170°   | 3841.3 | 3824.4 | 3830.0 | 3849.6 | 3824.4 |
| 172.5° | 3857.9 | 3841.3 | 3847.0 | 3866.6 | 3841.3 |
| 175°   | 3871.8 | 3852.3 | 3857.9 | 3877.5 | 3849.6 |
| 177.5° | 3877.5 | 3857.9 | 3860.9 | 3880.5 | 3855.3 |
| 180°   | 3863.6 | 3863.6 | 3863.6 | 3863.6 | 3863.6 |

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CATALOG NUMBER: DFN2DIP-TR4F0-100D120US950-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 | 10.29            | 11.05 | 11.32 | 12.09 | 13.47 | 6.26           | 7.03  | 7.29  | 8.06  | 9.45  |
|                 | 3H   | 11.96            | 12.64 | 13.00 | 13.69 | 15.09 | 7.44           | 8.13  | 8.49  | 9.17  | 10.58 |
|                 | 4H   | 12.56            | 13.21 | 13.62 | 14.26 | 15.67 | 7.89           | 8.54  | 8.95  | 9.59  | 11.00 |
|                 | 6H   | 12.98            | 13.58 | 14.04 | 14.63 | 16.05 | 8.21           | 8.81  | 9.27  | 9.86  | 11.28 |
|                 | 8H   | 13.11            | 13.67 | 14.17 | 14.74 | 16.16 | 8.30           | 8.87  | 9.37  | 9.93  | 11.35 |
|                 | 12H  | 13.17            | 13.71 | 14.24 | 14.76 | 16.21 | 8.34           | 8.88  | 9.41  | 9.94  | 11.38 |
| 4H              | 2H   | 10.30            | 10.95 | 11.36 | 11.99 | 13.41 | 6.85           | 7.50  | 7.91  | 8.54  | 9.96  |
|                 | 3H   | 12.12            | 12.66 | 13.19 | 13.73 | 15.16 | 8.19           | 8.73  | 9.26  | 9.81  | 11.23 |
|                 | 4H   | 12.81            | 13.30 | 13.88 | 14.37 | 15.82 | 8.74           | 9.23  | 9.81  | 10.30 | 11.75 |
|                 | 6H   | 13.32            | 13.75 | 14.40 | 14.83 | 16.28 | 9.16           | 9.58  | 10.24 | 10.67 | 12.11 |
|                 | 8H   | 13.49            | 13.89 | 14.58 | 14.97 | 16.43 | 9.28           | 9.68  | 10.37 | 10.76 | 12.22 |
|                 | 12H  | 13.59            | 13.94 | 14.69 | 15.04 | 16.50 | 9.35           | 9.70  | 10.45 | 10.80 | 12.26 |
| 8H              | 4H   | 12.77            | 13.17 | 13.85 | 14.25 | 15.71 | 9.01           | 9.41  | 10.10 | 10.49 | 11.95 |
|                 | 6H   | 13.34            | 13.66 | 14.44 | 14.78 | 16.24 | 9.53           | 9.86  | 10.64 | 10.98 | 12.43 |
|                 | 8H   | 13.55            | 13.84 | 14.66 | 14.94 | 16.42 | 9.72           | 10.01 | 10.83 | 11.11 | 12.59 |
|                 | 12H  | 13.69            | 13.94 | 14.80 | 15.04 | 16.55 | 9.84           | 10.09 | 10.95 | 11.19 | 12.70 |
| 12H             | 4H   | 12.72            | 13.08 | 13.82 | 14.17 | 15.64 | 9.02           | 9.37  | 10.11 | 10.47 | 11.93 |
|                 | 6H   | 13.31            | 13.60 | 14.42 | 14.70 | 16.18 | 9.58           | 9.87  | 10.69 | 10.97 | 12.45 |
|                 | 8H   | 13.53            | 13.78 | 14.64 | 14.88 | 16.39 | 9.79           | 10.04 | 10.90 | 11.14 | 12.65 |

END OF REPORT