

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: P905703

Luminaire Tested: DFN2DIP-PN3F0-030D090US835-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P905703  
REPORT IS A COMBINATION OF REPORTS P901116 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-030D090US835-RLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

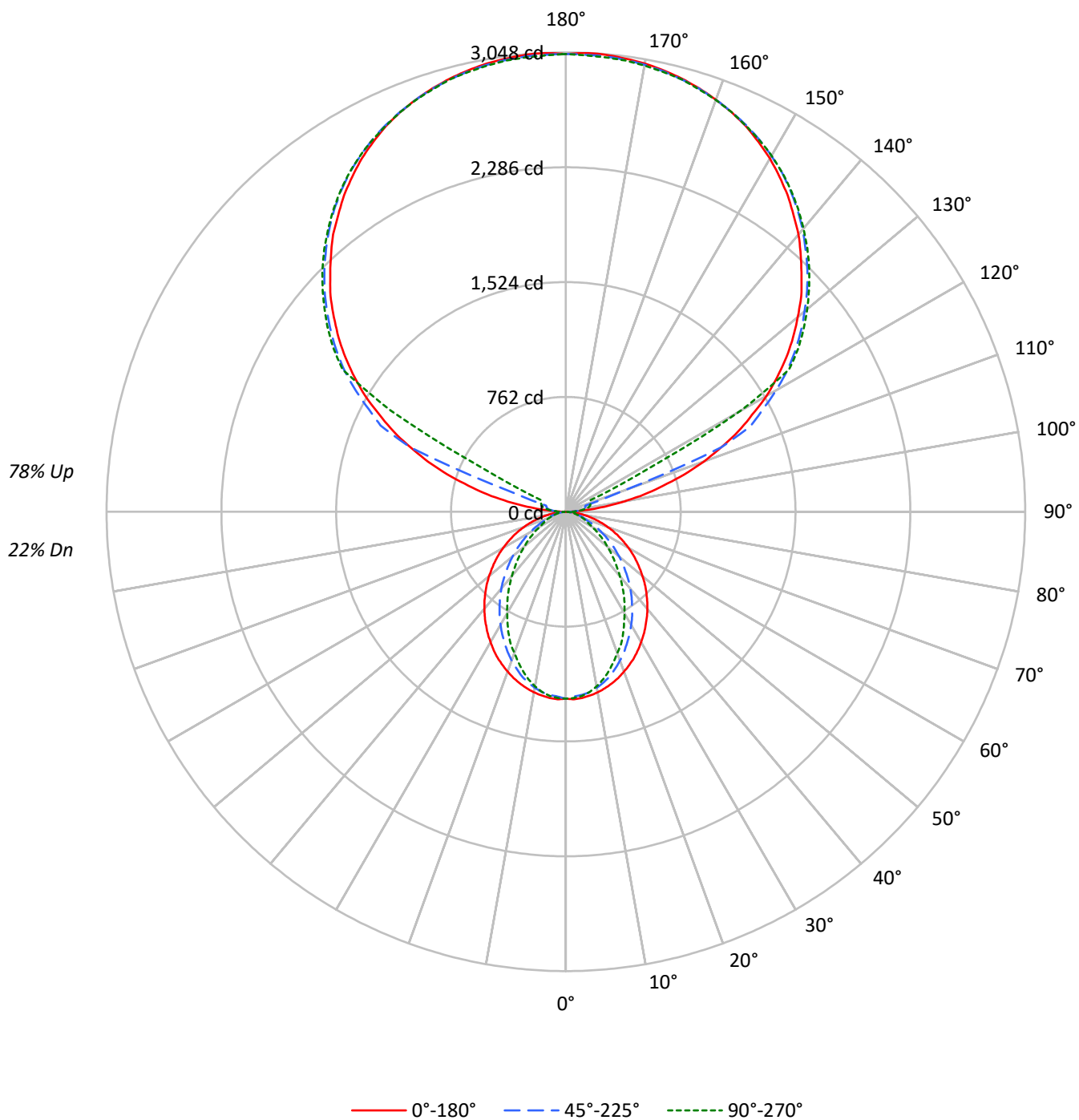
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11460.0 lumens  
Efficiency: N/A  
Efficacy: 120.5 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 95.1  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.099  
Total Harmonic Distortion (THDi): 0.979  
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   | 101 | 101 | 101 | 101 | 89 | 89 | 89 | 89 | 68 | 68 | 68 | 49 | 49 | 49 | 31 | 31 | 31 |
| 1   | 92  | 88  | 84  | 81  | 81 | 78 | 75 | 72 | 60 | 58 | 56 | 43 | 42 | 41 | 27 | 27 | 26 |
| 2   | 84  | 77  | 71  | 66  | 74 | 68 | 64 | 60 | 52 | 49 | 47 | 38 | 36 | 34 | 24 | 23 | 22 |
| 3   | 76  | 68  | 61  | 55  | 68 | 60 | 55 | 50 | 46 | 43 | 39 | 34 | 31 | 29 | 22 | 20 | 19 |
| 4   | 70  | 60  | 52  | 47  | 62 | 53 | 47 | 42 | 41 | 37 | 34 | 30 | 27 | 25 | 20 | 18 | 17 |
| 5   | 64  | 53  | 46  | 40  | 57 | 48 | 41 | 36 | 37 | 32 | 29 | 27 | 24 | 22 | 18 | 16 | 15 |
| 6   | 59  | 48  | 40  | 35  | 52 | 43 | 36 | 31 | 33 | 29 | 25 | 24 | 21 | 19 | 16 | 14 | 13 |
| 7   | 54  | 43  | 35  | 30  | 48 | 38 | 32 | 27 | 30 | 25 | 22 | 22 | 19 | 17 | 15 | 13 | 12 |
| 8   | 50  | 39  | 32  | 27  | 45 | 35 | 29 | 24 | 27 | 23 | 20 | 20 | 17 | 15 | 14 | 12 | 10 |
| 9   | 47  | 35  | 28  | 23  | 42 | 32 | 26 | 21 | 25 | 20 | 17 | 19 | 16 | 13 | 12 | 11 | 9  |
| 10  | 44  | 32  | 25  | 21  | 39 | 29 | 23 | 19 | 23 | 19 | 16 | 17 | 14 | 12 | 12 | 10 | 9  |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1449 | 1449 | 1449 |
| 5°  | 1451 | 1425 | 1435 |
| 10° | 1436 | 1396 | 1388 |
| 15° | 1415 | 1349 | 1315 |
| 20° | 1388 | 1285 | 1226 |
| 25° | 1360 | 1213 | 1140 |
| 30° | 1324 | 1139 | 1031 |
| 35° | 1287 | 1059 | 935  |
| 40° | 1251 | 977  | 826  |
| 45° | 1208 | 886  | 727  |
| 50° | 1164 | 795  | 630  |
| 55° | 1117 | 697  | 537  |
| 60° | 1063 | 595  | 441  |
| 65° | 1002 | 491  | 396  |
| 70° | 927  | 394  | 358  |
| 75° | 832  | 345  | 324  |
| 80° | 696  | 286  | 279  |
| 85° | 473  | 186  | 206  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2048 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 116.2   | 1.0       |
| 10°-20°   | 319.0   | 2.8       |
| 20°-30°   | 447.9   | 3.9       |
| 30°-40°   | 488.2   | 4.3       |
| 40°-50°   | 448.7   | 3.9       |
| 50°-60°   | 352.4   | 3.1       |
| 60°-70°   | 229.4   | 2.0       |
| 70°-80°   | 118.1   | 1.0       |
| 80°-90°   | 35.5    | 0.3       |
| 90°-100°  | 100.2   | 0.9       |
| 100°-110° | 373.4   | 3.3       |
| 110°-120° | 990.2   | 8.6       |
| 120°-130° | 1642.4  | 14.3      |
| 130°-140° | 1744.6  | 15.2      |
| 140°-150° | 1621.4  | 14.1      |
| 150°-160° | 1303.5  | 11.4      |
| 160°-170° | 840.0   | 7.3       |
| 170°-180° | 289.1   | 2.5       |
| 0°-30°    | 883.1   | 7.7       |
| 0°-40°    | 1371.3  | 12.0      |
| 0°-60°    | 2172.4  | 19.0      |
| 0°-90°    | 2555.3  | 22.3      |
| 90°-120°  | 1463.7  | 12.8      |
| 90°-150°  | 6472.0  | 56.5      |
| 90°-180°  | 8905.0  | 77.7      |
| 0°-180°   | 11460.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1240 | 1240  | 1240 | 1240  | 1240 |      |
| 5°   | 1240 | 1234  | 1220 | 1230  | 1226 | 118  |
| 15°  | 1179 | 1167  | 1129 | 1108  | 1096 | 332  |
| 25°  | 1070 | 1034  | 960  | 914   | 898  | 492  |
| 35°  | 922  | 865   | 766  | 696   | 671  | 577  |
| 45°  | 754  | 679   | 561  | 481   | 454  | 582  |
| 55°  | 573  | 486   | 365  | 297   | 276  | 512  |
| 65°  | 387  | 296   | 195  | 157   | 154  | 384  |
| 75°  | 206  | 128   | 90   | 82    | 81   | 218  |
| 85°  | 48   | 25    | 21   | 21    | 21   | 55   |
| 90°  | 2    | 26    | 44   | 55    | 59   | 11   |
| 95°  | 143  | 70    | 86   | 97    | 94   | 169  |
| 105° | 668  | 734   | 134  | 158   | 167  | 714  |
| 115° | 1264 | 1301  | 1356 | 338   | 180  | 1244 |
| 125° | 1787 | 1815  | 1857 | 1873  | 1879 | 1594 |
| 135° | 2211 | 2246  | 2266 | 2288  | 2284 | 1708 |
| 145° | 2565 | 2563  | 2600 | 2615  | 2604 | 1604 |
| 155° | 2824 | 2805  | 2831 | 2844  | 2826 | 1301 |
| 165° | 2976 | 2963  | 2969 | 2985  | 2969 | 841  |
| 175° | 3044 | 3028  | 3033 | 3048  | 3026 | 290  |
| 180° | 3037 | 3037  | 3037 | 3037  | 3037 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1239.9 | 1239.9 | 1239.9 | 1239.9 | 1239.9 |
| 2.5°   | 1245.5 | 1239.9 | 1227.5 | 1238.8 | 1236.6 |
| 5°     | 1239.9 | 1234.3 | 1219.7 | 1229.8 | 1226.4 |
| 7.5°   | 1229.8 | 1223.1 | 1207.4 | 1211.8 | 1206.2 |
| 10°    | 1216.3 | 1208.5 | 1186.1 | 1182.6 | 1176.0 |
| 12.5°  | 1199.5 | 1189.4 | 1159.1 | 1152.4 | 1140.0 |
| 15°    | 1179.3 | 1166.9 | 1128.8 | 1107.5 | 1096.3 |
| 17.5°  | 1155.7 | 1137.8 | 1090.6 | 1066.0 | 1048.0 |
| 20°    | 1128.8 | 1106.3 | 1050.2 | 1022.3 | 997.5  |
| 22.5°  | 1099.7 | 1073.8 | 1008.7 | 970.6  | 953.8  |
| 25°    | 1070.5 | 1034.5 | 960.5  | 914.5  | 897.6  |
| 27.5°  | 1035.7 | 997.5  | 915.6  | 862.9  | 837.0  |
| 30°    | 998.7  | 956.0  | 866.2  | 809.1  | 778.7  |
| 32.5°  | 962.7  | 911.1  | 819.2  | 751.8  | 723.7  |
| 35°    | 922.4  | 865.1  | 766.4  | 695.7  | 671.0  |
| 37.5°  | 883.1  | 821.3  | 717.0  | 639.5  | 611.6  |
| 40°    | 841.6  | 774.3  | 665.4  | 585.7  | 556.6  |
| 42.5°  | 798.9  | 727.2  | 613.8  | 530.7  | 502.7  |
| 45°    | 754.1  | 678.8  | 561.1  | 481.3  | 454.4  |
| 47.5°  | 711.4  | 631.8  | 510.6  | 430.8  | 406.2  |
| 50°    | 664.3  | 584.6  | 461.2  | 383.7  | 360.2  |
| 52.5°  | 618.2  | 534.1  | 414.1  | 340.0  | 318.7  |
| 55°    | 573.3  | 485.8  | 364.6  | 297.4  | 276.1  |
| 57.5°  | 527.4  | 437.6  | 321.0  | 258.1  | 240.1  |
| 60°    | 480.2  | 390.5  | 274.9  | 217.7  | 199.8  |
| 62.5°  | 434.3  | 344.5  | 235.6  | 181.8  | 172.9  |
| 65°    | 387.1  | 296.2  | 195.2  | 157.1  | 153.7  |
| 67.5°  | 342.3  | 251.3  | 157.1  | 138.0  | 134.6  |
| 70°    | 295.1  | 207.6  | 130.1  | 118.9  | 114.4  |
| 72.5°  | 250.2  | 167.1  | 108.8  | 99.9   | 97.6   |
| 75°    | 206.4  | 127.9  | 89.8   | 81.9   | 80.8   |
| 77.5°  | 162.7  | 90.8   | 70.7   | 66.2   | 63.9   |
| 80°    | 122.3  | 65.1   | 53.8   | 49.4   | 49.4   |
| 82.5°  | 85.2   | 43.8   | 37.0   | 34.8   | 34.8   |
| 85°    | 48.2   | 24.6   | 21.3   | 21.3   | 21.3   |
| 87.5°  | 18.0   | 8.9    | 8.9    | 7.9    | 7.9    |
| 90°    | 2.1    | 26.4   | 43.8   | 55.1   | 59.2   |
| 92.5°  | 55.1   | 46.2   | 52.7   | 57.2   | 59.2   |
| 95°    | 142.8  | 70.2   | 85.6   | 96.8   | 94.5   |
| 97.5°  | 257.1  | 77.0   | 112.0  | 118.7  | 120.8  |
| 100°   | 389.1  | 88.0   | 125.3  | 142.8  | 147.2  |
| 102.5° | 534.0  | 529.8  | 129.7  | 153.7  | 160.5  |
| 105°   | 668.1  | 734.2  | 134.1  | 158.2  | 167.0  |
| 107.5° | 824.2  | 879.0  | 138.6  | 162.6  | 171.5  |
| 110°   | 973.7  | 1019.7 | 384.7  | 164.9  | 173.6  |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 1114.4 | 1153.8 | 1116.5 | 169.1  | 175.9  |
| 115°   | 1263.7 | 1301.0 | 1356.1 | 338.5  | 180.3  |
| 117.5° | 1393.4 | 1437.3 | 1474.8 | 1160.4 | 584.6  |
| 120°   | 1538.5 | 1571.4 | 1611.1 | 1637.4 | 1340.7 |
| 122.5° | 1661.5 | 1696.7 | 1740.8 | 1753.8 | 1756.2 |
| 125°   | 1786.7 | 1815.4 | 1857.2 | 1872.6 | 1879.1 |
| 127.5° | 1901.0 | 1931.8 | 1965.0 | 1986.9 | 1989.0 |
| 130°   | 2008.8 | 2044.1 | 2068.1 | 2092.3 | 2090.3 |
| 132.5° | 2118.7 | 2147.4 | 2171.4 | 2191.3 | 2189.2 |
| 135°   | 2211.1 | 2246.3 | 2265.9 | 2288.1 | 2283.7 |
| 137.5° | 2307.7 | 2334.0 | 2356.2 | 2378.1 | 2371.6 |
| 140°   | 2402.1 | 2419.9 | 2443.9 | 2463.7 | 2452.8 |
| 142.5° | 2481.5 | 2496.9 | 2525.3 | 2542.8 | 2531.9 |
| 145°   | 2565.0 | 2562.6 | 2600.0 | 2615.4 | 2604.4 |
| 147.5° | 2637.3 | 2630.8 | 2668.1 | 2679.1 | 2670.4 |
| 150°   | 2707.8 | 2692.4 | 2727.6 | 2740.6 | 2729.7 |
| 152.5° | 2767.0 | 2749.5 | 2782.4 | 2795.7 | 2780.3 |
| 155°   | 2824.2 | 2804.6 | 2830.9 | 2844.0 | 2826.5 |
| 157.5° | 2870.4 | 2852.9 | 2872.7 | 2888.1 | 2870.4 |
| 160°   | 2910.0 | 2896.7 | 2910.0 | 2923.1 | 2907.7 |
| 162.5° | 2945.0 | 2931.9 | 2942.9 | 2958.3 | 2938.5 |
| 165°   | 2975.8 | 2962.7 | 2969.3 | 2984.7 | 2969.3 |
| 167.5° | 3000.1 | 2986.8 | 2993.5 | 3008.9 | 2989.1 |
| 170°   | 3019.9 | 3006.6 | 3011.0 | 3026.4 | 3006.6 |
| 172.5° | 3033.0 | 3019.9 | 3024.3 | 3039.7 | 3019.9 |
| 175°   | 3043.9 | 3028.5 | 3033.0 | 3048.3 | 3026.4 |
| 177.5° | 3048.3 | 3033.0 | 3035.3 | 3050.7 | 3030.9 |
| 180°   | 3037.4 | 3037.4 | 3037.4 | 3037.4 | 3037.4 |

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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 | 4.97             | 5.62 | 6.14 | 6.77 | 8.39  | 0.94           | 1.58 | 2.11 | 2.73 | 4.35 |
|                 | 3H   | 6.63             | 7.21 | 7.80 | 8.36 | 10.00 | 2.11           | 2.68 | 3.28 | 3.84 | 5.48 |
|                 | 4H   | 7.23             | 7.77 | 8.41 | 8.93 | 10.57 | 2.54           | 3.09 | 3.73 | 4.25 | 5.89 |
|                 | 6H   | 7.63             | 8.14 | 8.82 | 9.30 | 10.95 | 2.85           | 3.35 | 4.04 | 4.51 | 6.16 |
|                 | 8H   | 7.75             | 8.23 | 8.94 | 9.40 | 11.05 | 2.93           | 3.41 | 4.12 | 4.59 | 6.23 |
|                 | 12H  | 7.80             | 8.26 | 9.00 | 9.43 | 11.09 | 2.97           | 3.42 | 4.16 | 4.59 | 6.25 |
| 4H              | 2H   | 4.97             | 5.51 | 6.16 | 6.67 | 8.31  | 1.51           | 2.06 | 2.70 | 3.21 | 4.85 |
|                 | 3H   | 6.77             | 7.23 | 7.97 | 8.41 | 10.06 | 2.83           | 3.29 | 4.03 | 4.47 | 6.12 |
|                 | 4H   | 7.45             | 7.87 | 8.65 | 9.04 | 10.71 | 3.37           | 3.79 | 4.56 | 4.96 | 6.63 |
|                 | 6H   | 7.95             | 8.31 | 9.15 | 9.50 | 11.16 | 3.77           | 4.13 | 4.97 | 5.32 | 6.98 |
|                 | 8H   | 8.12             | 8.45 | 9.32 | 9.64 | 11.31 | 3.89           | 4.23 | 5.09 | 5.41 | 7.09 |
|                 | 12H  | 8.20             | 8.51 | 9.41 | 9.70 | 11.38 | 3.95           | 4.25 | 5.16 | 5.45 | 7.13 |
| 8H              | 4H   | 7.40             | 7.74 | 8.60 | 8.92 | 10.60 | 3.63           | 3.97 | 4.83 | 5.15 | 6.83 |
|                 | 6H   | 7.96             | 8.23 | 9.17 | 9.46 | 11.13 | 4.14           | 4.41 | 5.35 | 5.64 | 7.31 |
|                 | 8H   | 8.17             | 8.41 | 9.39 | 9.61 | 11.30 | 4.32           | 4.56 | 5.54 | 5.76 | 7.46 |
|                 | 12H  | 8.29             | 8.50 | 9.52 | 9.71 | 11.43 | 4.43           | 4.64 | 5.65 | 5.84 | 7.56 |
| 12H             | 4H   | 7.35             | 7.65 | 8.56 | 8.85 | 10.53 | 3.63           | 3.93 | 4.84 | 5.13 | 6.81 |
|                 | 6H   | 7.93             | 8.17 | 9.15 | 9.37 | 11.07 | 4.18           | 4.42 | 5.40 | 5.63 | 7.32 |
|                 | 8H   | 8.14             | 8.35 | 9.36 | 9.55 | 11.27 | 4.38           | 4.59 | 5.60 | 5.79 | 7.51 |

END OF REPORT