

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: P919347

Luminaire Tested: DFN2DIP-PN3F0-040D030US935-RLLONL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P919347  
REPORT IS A COMBINATION OF REPORTS P901034 AND P897955  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN3F0-040D030US935-RLLONL  
Description: 3 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

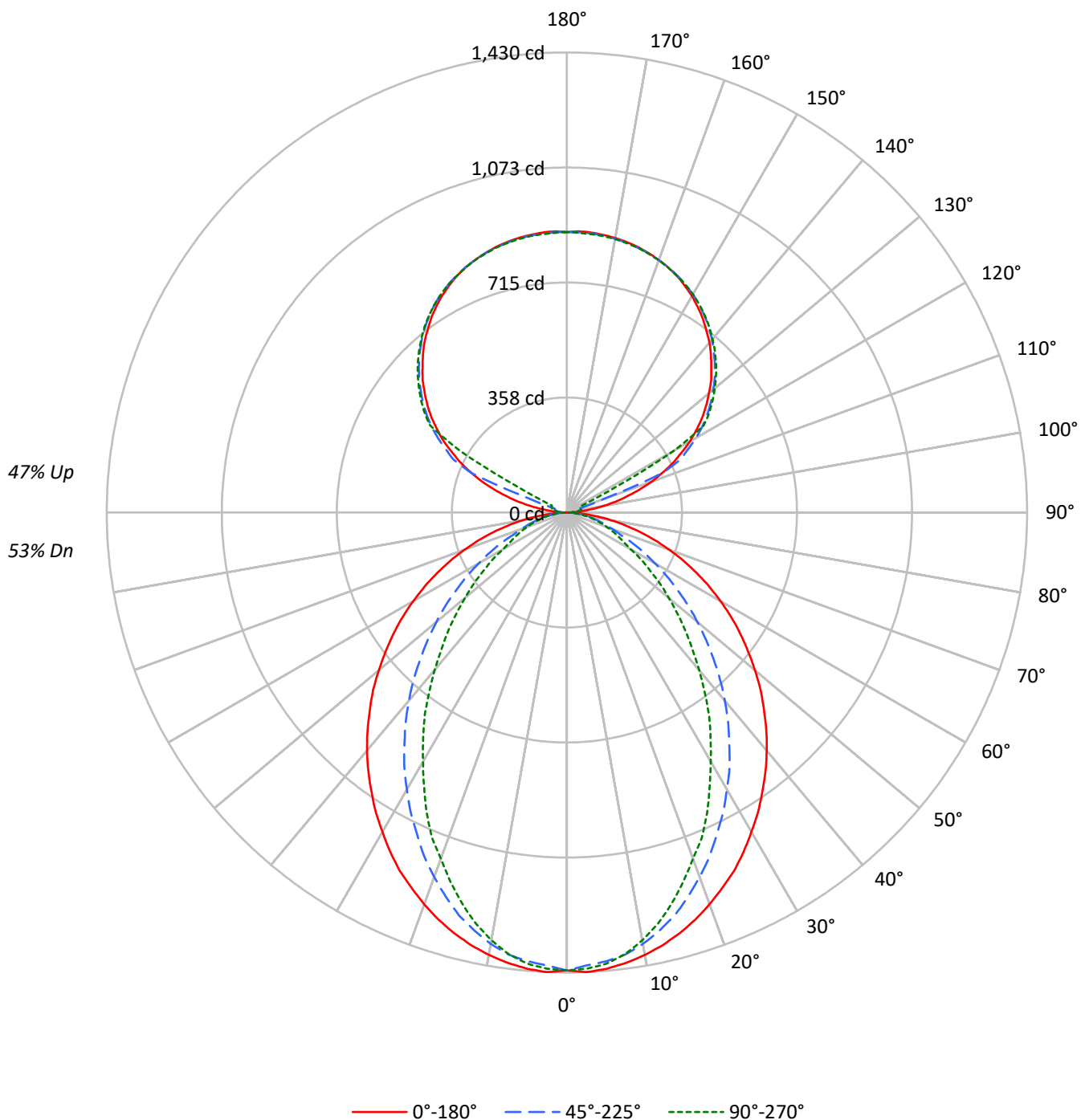
Lumens per Lamp: N/A  
Luminaire Lumens: 5484.6 lumens  
Efficiency: N/A  
Efficacy: 94.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.96' x L: 3.11' x H: 0.1')  
CIE Type: General Diffuse

Input Watts (W): 58  
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   | 108 | 108 | 108 | 108 | 100 | 100 | 100 | 100 | 85 | 85 | 85 | 72 | 72 | 72 | 59 | 59 | 59 |
| 1   | 99  | 95  | 91  | 88  | 92  | 88  | 85  | 82  | 76 | 73 | 71 | 64 | 62 | 61 | 53 | 52 | 51 |
| 2   | 91  | 83  | 78  | 73  | 84  | 78  | 73  | 68  | 67 | 63 | 60 | 57 | 54 | 52 | 47 | 45 | 44 |
| 3   | 83  | 74  | 67  | 61  | 77  | 69  | 63  | 58  | 59 | 55 | 51 | 51 | 47 | 44 | 42 | 40 | 38 |
| 4   | 76  | 66  | 58  | 52  | 70  | 61  | 55  | 49  | 53 | 48 | 44 | 45 | 42 | 38 | 38 | 35 | 33 |
| 5   | 70  | 59  | 51  | 45  | 65  | 55  | 48  | 43  | 48 | 42 | 38 | 41 | 37 | 34 | 35 | 32 | 29 |
| 6   | 65  | 53  | 45  | 39  | 60  | 50  | 43  | 37  | 43 | 38 | 34 | 37 | 33 | 30 | 32 | 28 | 26 |
| 7   | 60  | 48  | 40  | 35  | 56  | 45  | 38  | 33  | 39 | 34 | 30 | 34 | 30 | 26 | 29 | 26 | 23 |
| 8   | 56  | 44  | 36  | 31  | 52  | 41  | 34  | 29  | 36 | 31 | 27 | 31 | 27 | 24 | 27 | 24 | 21 |
| 9   | 52  | 40  | 33  | 28  | 48  | 38  | 31  | 26  | 33 | 28 | 24 | 29 | 25 | 22 | 25 | 22 | 19 |
| 10  | 49  | 37  | 30  | 25  | 45  | 35  | 28  | 24  | 31 | 25 | 22 | 27 | 23 | 20 | 23 | 20 | 17 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1664 | 1664 | 1664 |
| 5°  | 1666 | 1636 | 1647 |
| 10° | 1648 | 1603 | 1593 |
| 15° | 1624 | 1549 | 1510 |
| 20° | 1593 | 1475 | 1407 |
| 25° | 1562 | 1392 | 1308 |
| 30° | 1519 | 1307 | 1184 |
| 35° | 1478 | 1216 | 1074 |
| 40° | 1436 | 1122 | 948  |
| 45° | 1386 | 1017 | 834  |
| 50° | 1336 | 912  | 723  |
| 55° | 1283 | 800  | 616  |
| 60° | 1221 | 683  | 507  |
| 65° | 1150 | 564  | 455  |
| 70° | 1064 | 453  | 411  |
| 75° | 955  | 397  | 372  |
| 80° | 799  | 329  | 320  |
| 85° | 543  | 214  | 237  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 1386 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 133.4  | 2.4       |
| 10°-20°   | 366.2  | 6.7       |
| 20°-30°   | 514.2  | 9.4       |
| 30°-40°   | 560.5  | 10.2      |
| 40°-50°   | 515.1  | 9.4       |
| 50°-60°   | 404.5  | 7.4       |
| 60°-70°   | 263.3  | 4.8       |
| 70°-80°   | 135.6  | 2.5       |
| 80°-90°   | 36.1   | 0.7       |
| 90°-100°  | 28.7   | 0.5       |
| 100°-110° | 107.2  | 2.0       |
| 110°-120° | 284.2  | 5.2       |
| 120°-130° | 471.3  | 8.6       |
| 130°-140° | 500.7  | 9.1       |
| 140°-150° | 465.3  | 8.5       |
| 150°-160° | 374.1  | 6.8       |
| 160°-170° | 241.1  | 4.4       |
| 170°-180° | 83.0   | 1.5       |
| 0°-30°    | 1013.8 | 18.5      |
| 0°-40°    | 1574.2 | 28.7      |
| 0°-60°    | 2493.9 | 45.5      |
| 0°-90°    | 2928.9 | 53.4      |
| 90°-120°  | 420.1  | 7.7       |
| 90°-150°  | 1857.5 | 33.9      |
| 90°-180°  | 2556.0 | 46.6      |
| 0°-180°   | 5484.6 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 1423 | 1423  | 1423 | 1423  | 1423 |      |
| 5°   | 1423 | 1417  | 1400 | 1412  | 1408 | 135  |
| 15°  | 1354 | 1340  | 1296 | 1271  | 1259 | 382  |
| 25°  | 1229 | 1188  | 1103 | 1050  | 1030 | 565  |
| 35°  | 1059 | 993   | 880  | 799   | 770  | 663  |
| 45°  | 866  | 779   | 644  | 553   | 522  | 668  |
| 55°  | 658  | 558   | 419  | 341   | 317  | 588  |
| 65°  | 444  | 340   | 224  | 180   | 176  | 441  |
| 75°  | 237  | 147   | 103  | 94    | 93   | 251  |
| 85°  | 55   | 28    | 24   | 24    | 24   | 64   |
| 90°  | 1    | 8     | 13   | 16    | 17   | 5    |
| 95°  | 41   | 20    | 24   | 28    | 27   | 49   |
| 105° | 192  | 211   | 38   | 45    | 48   | 205  |
| 115° | 363  | 373   | 389  | 97    | 52   | 357  |
| 125° | 513  | 521   | 533  | 537   | 539  | 457  |
| 135° | 635  | 645   | 650  | 657   | 655  | 490  |
| 145° | 736  | 736   | 746  | 751   | 747  | 460  |
| 155° | 810  | 805   | 812  | 816   | 811  | 373  |
| 165° | 854  | 850   | 852  | 857   | 852  | 241  |
| 175° | 874  | 869   | 870  | 875   | 869  | 83   |
| 180° | 872  | 872   | 872  | 872   | 872  |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 0°     | 1423.4 | 1423.4 | 1423.4 | 1423.4 | 1423.4 |
| 2.5°   | 1429.9 | 1423.4 | 1409.2 | 1422.2 | 1419.5 |
| 5°     | 1423.4 | 1416.9 | 1400.2 | 1411.8 | 1408.0 |
| 7.5°   | 1411.8 | 1404.1 | 1386.1 | 1391.1 | 1384.7 |
| 10°    | 1396.4 | 1387.3 | 1361.6 | 1357.6 | 1350.0 |
| 12.5°  | 1377.1 | 1365.5 | 1330.6 | 1322.9 | 1308.7 |
| 15°    | 1353.8 | 1339.6 | 1295.9 | 1271.4 | 1258.6 |
| 17.5°  | 1326.8 | 1306.1 | 1252.0 | 1223.7 | 1203.1 |
| 20°    | 1295.9 | 1270.1 | 1205.7 | 1173.5 | 1145.1 |
| 22.5°  | 1262.4 | 1232.8 | 1158.0 | 1114.2 | 1095.0 |
| 25°    | 1228.9 | 1187.7 | 1102.6 | 1049.9 | 1030.4 |
| 27.5°  | 1189.0 | 1145.1 | 1051.1 | 990.6  | 960.9  |
| 30°    | 1146.5 | 1097.4 | 994.4  | 928.8  | 894.0  |
| 32.5°  | 1105.3 | 1045.9 | 940.4  | 863.1  | 830.8  |
| 35°    | 1058.9 | 993.2  | 879.9  | 798.7  | 770.2  |
| 37.5°  | 1013.8 | 942.9  | 823.1  | 734.2  | 702.1  |
| 40°    | 966.1  | 888.9  | 763.9  | 672.4  | 638.9  |
| 42.5°  | 917.1  | 834.7  | 704.6  | 609.2  | 577.1  |
| 45°    | 865.6  | 779.3  | 644.1  | 552.6  | 521.7  |
| 47.5°  | 816.7  | 725.3  | 586.2  | 494.6  | 466.3  |
| 50°    | 762.6  | 671.1  | 529.4  | 440.5  | 413.5  |
| 52.5°  | 709.7  | 613.1  | 475.4  | 390.3  | 365.8  |
| 55°    | 658.2  | 557.8  | 418.6  | 341.4  | 316.9  |
| 57.5°  | 605.5  | 502.4  | 368.4  | 296.3  | 275.7  |
| 60°    | 551.3  | 448.2  | 315.6  | 249.9  | 229.4  |
| 62.5°  | 498.6  | 395.5  | 270.4  | 208.7  | 198.5  |
| 65°    | 444.4  | 340.0  | 224.1  | 180.4  | 176.4  |
| 67.5°  | 393.0  | 288.5  | 180.4  | 158.4  | 154.5  |
| 70°    | 338.8  | 238.3  | 149.4  | 136.6  | 131.3  |
| 72.5°  | 287.3  | 191.9  | 124.9  | 114.7  | 112.1  |
| 75°    | 236.9  | 146.8  | 103.1  | 94.0   | 92.8   |
| 77.5°  | 186.8  | 104.3  | 81.2   | 76.0   | 73.4   |
| 80°    | 140.3  | 74.7   | 61.7   | 56.7   | 56.7   |
| 82.5°  | 97.9   | 50.3   | 42.5   | 39.9   | 39.9   |
| 85°    | 55.4   | 28.3   | 24.5   | 24.5   | 24.5   |
| 87.5°  | 20.7   | 10.2   | 10.2   | 9.0    | 9.0    |
| 90°    | 0.6    | 7.6    | 12.6   | 15.8   | 17.0   |
| 92.5°  | 15.8   | 13.3   | 15.2   | 16.4   | 17.0   |
| 95°    | 41.0   | 20.1   | 24.5   | 27.8   | 27.1   |
| 97.5°  | 73.8   | 22.1   | 32.1   | 34.1   | 34.7   |
| 100°   | 111.7  | 25.2   | 36.0   | 41.0   | 42.3   |
| 102.5° | 153.3  | 152.1  | 37.2   | 44.1   | 46.1   |
| 105°   | 191.7  | 210.7  | 38.5   | 45.4   | 48.0   |
| 107.5° | 236.5  | 252.3  | 39.8   | 46.7   | 49.2   |
| 110°   | 279.5  | 292.7  | 110.4  | 47.4   | 49.9   |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 112.5° | 319.9 | 331.1 | 320.5 | 48.6  | 50.5  |
| 115°   | 362.7 | 373.4 | 389.2 | 97.1  | 51.7  |
| 117.5° | 399.9 | 412.5 | 423.3 | 333.0 | 167.8 |
| 120°   | 441.5 | 451.0 | 462.4 | 469.9 | 384.8 |
| 122.5° | 476.8 | 487.0 | 499.6 | 503.3 | 504.0 |
| 125°   | 512.8 | 521.0 | 533.0 | 537.4 | 539.3 |
| 127.5° | 545.6 | 554.4 | 564.0 | 570.2 | 570.8 |
| 130°   | 576.5 | 586.7 | 593.6 | 600.5 | 599.9 |
| 132.5° | 608.0 | 616.3 | 623.2 | 628.9 | 628.3 |
| 135°   | 634.6 | 644.7 | 650.3 | 656.7 | 655.4 |
| 137.5° | 662.3 | 669.9 | 676.2 | 682.5 | 680.6 |
| 140°   | 689.4 | 694.5 | 701.4 | 707.1 | 704.0 |
| 142.5° | 712.2 | 716.6 | 724.8 | 729.8 | 726.7 |
| 145°   | 736.2 | 735.5 | 746.2 | 750.6 | 747.4 |
| 147.5° | 756.9 | 755.0 | 765.8 | 768.9 | 766.4 |
| 150°   | 777.1 | 772.7 | 782.8 | 786.5 | 783.4 |
| 152.5° | 794.1 | 789.1 | 798.6 | 802.4 | 798.0 |
| 155°   | 810.5 | 804.9 | 812.4 | 816.2 | 811.2 |
| 157.5° | 823.8 | 818.8 | 824.5 | 828.9 | 823.8 |
| 160°   | 835.2 | 831.4 | 835.2 | 839.0 | 834.5 |
| 162.5° | 845.2 | 841.5 | 844.6 | 849.0 | 843.3 |
| 165°   | 854.0 | 850.3 | 852.2 | 856.6 | 852.2 |
| 167.5° | 861.0 | 857.2 | 859.1 | 863.6 | 857.9 |
| 170°   | 866.7 | 862.9 | 864.2 | 868.6 | 862.9 |
| 172.5° | 870.5 | 866.7 | 868.0 | 872.4 | 866.7 |
| 175°   | 873.6 | 869.2 | 870.5 | 874.9 | 868.6 |
| 177.5° | 874.9 | 870.5 | 871.2 | 875.5 | 869.9 |
| 180°   | 871.8 | 871.8 | 871.8 | 871.8 | 871.8 |

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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 | 9.19             | 10.05 | 10.12 | 11.00 | 12.22 | 5.16           | 6.01 | 6.09 | 6.96  | 8.19  |
|                 | 3H   | 10.86            | 11.63 | 11.81 | 12.59 | 13.84 | 6.34           | 7.11 | 7.29 | 8.06  | 9.31  |
|                 | 4H   | 11.47            | 12.20 | 12.43 | 13.16 | 14.41 | 6.79           | 7.51 | 7.75 | 8.47  | 9.73  |
|                 | 6H   | 11.89            | 12.56 | 12.86 | 13.52 | 14.79 | 7.11           | 7.77 | 8.08 | 8.74  | 10.01 |
|                 | 8H   | 12.01            | 12.65 | 12.99 | 13.63 | 14.90 | 7.19           | 7.83 | 8.17 | 8.81  | 10.08 |
|                 | 12H  | 12.07            | 12.68 | 13.06 | 13.65 | 14.94 | 7.24           | 7.84 | 8.22 | 8.82  | 10.11 |
| 4H              | 2H   | 9.21             | 9.94  | 10.18 | 10.90 | 12.15 | 5.75           | 6.48 | 6.72 | 7.44  | 8.69  |
|                 | 3H   | 11.04            | 11.64 | 12.01 | 12.63 | 13.90 | 7.10           | 7.70 | 8.07 | 8.69  | 9.96  |
|                 | 4H   | 11.72            | 12.27 | 12.71 | 13.26 | 14.55 | 7.64           | 8.19 | 8.63 | 9.18  | 10.47 |
|                 | 6H   | 12.23            | 12.71 | 13.23 | 13.71 | 15.01 | 8.06           | 8.53 | 9.05 | 9.54  | 10.83 |
|                 | 8H   | 12.41            | 12.85 | 13.40 | 13.85 | 15.16 | 8.18           | 8.62 | 9.18 | 9.62  | 10.93 |
|                 | 12H  | 12.50            | 12.90 | 13.52 | 13.91 | 15.23 | 8.24           | 8.64 | 9.26 | 9.66  | 10.97 |
| 8H              | 4H   | 11.69            | 12.13 | 12.69 | 13.13 | 14.44 | 7.92           | 8.36 | 8.92 | 9.36  | 10.67 |
|                 | 6H   | 12.25            | 12.62 | 13.27 | 13.66 | 14.96 | 8.43           | 8.80 | 9.45 | 9.84  | 11.14 |
|                 | 8H   | 12.46            | 12.79 | 13.49 | 13.82 | 15.14 | 8.62           | 8.94 | 9.65 | 9.97  | 11.29 |
|                 | 12H  | 12.60            | 12.88 | 13.63 | 13.91 | 15.28 | 8.73           | 9.02 | 9.77 | 10.04 | 11.41 |
| 12H             | 4H   | 11.64            | 12.04 | 12.66 | 13.06 | 14.37 | 7.93           | 8.32 | 8.94 | 9.34  | 10.65 |
|                 | 6H   | 12.23            | 12.55 | 13.26 | 13.58 | 14.90 | 8.48           | 8.80 | 9.51 | 9.83  | 11.15 |
|                 | 8H   | 12.44            | 12.73 | 13.48 | 13.75 | 15.12 | 8.69           | 8.97 | 9.72 | 9.99  | 11.36 |

END OF REPORT