

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: P924686

Luminaire Tested: DFN2DIP-PN2F0-020D050US950-RLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P924686  
REPORT IS A COMBINATION OF REPORTS P899492 AND P896349  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-PN2F0-020D050US950-RLLFLL  
Description: 2 foot, Pentagon Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

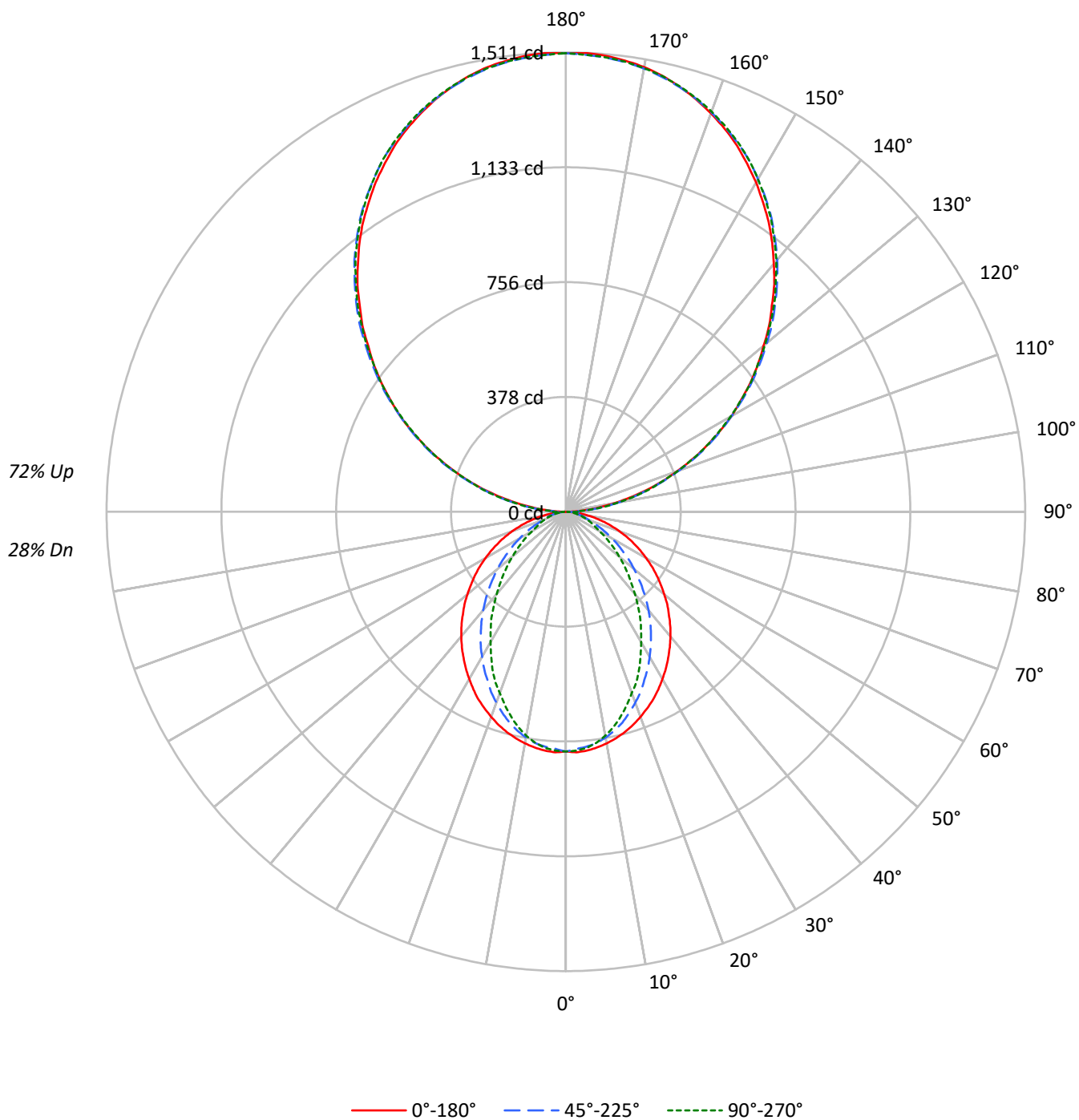
Lumens per Lamp: N/A  
Luminaire Lumens: 5843.3 lumens  
Efficiency: N/A  
Efficacy: 101.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 2.17' x L: 2.29' x H: 0.1')  
CIE Type: Semi-Indirect

Input Watts (W): 57.5  
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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CATALOG NUMBER: DFN2DIP-PN2F0-020D050US950-RLLFLL

### Luminous Intensity Polar Plot



TEST NUMBER: P924686

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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   | 102 | 102 | 102 | 102 | 91 | 91 | 91 | 91 | 71 | 71 | 71 | 53 | 53 | 53 | 36 | 36 | 36 |
| 1   | 93  | 89  | 85  | 82  | 83 | 80 | 77 | 74 | 62 | 60 | 59 | 47 | 45 | 44 | 32 | 31 | 31 |
| 2   | 85  | 78  | 72  | 67  | 76 | 70 | 65 | 61 | 55 | 52 | 49 | 41 | 39 | 37 | 28 | 27 | 26 |
| 3   | 78  | 69  | 62  | 56  | 69 | 62 | 56 | 51 | 49 | 45 | 41 | 37 | 34 | 32 | 25 | 24 | 23 |
| 4   | 71  | 61  | 53  | 48  | 63 | 55 | 48 | 44 | 43 | 39 | 35 | 33 | 30 | 27 | 23 | 21 | 20 |
| 5   | 65  | 54  | 47  | 41  | 58 | 49 | 42 | 37 | 39 | 34 | 31 | 29 | 26 | 24 | 21 | 19 | 17 |
| 6   | 60  | 49  | 41  | 35  | 54 | 44 | 37 | 32 | 35 | 30 | 27 | 27 | 23 | 21 | 19 | 17 | 15 |
| 7   | 55  | 44  | 36  | 31  | 50 | 40 | 33 | 28 | 32 | 27 | 23 | 24 | 21 | 19 | 17 | 15 | 14 |
| 8   | 51  | 40  | 32  | 27  | 46 | 36 | 30 | 25 | 29 | 24 | 21 | 22 | 19 | 16 | 16 | 14 | 12 |
| 9   | 48  | 36  | 29  | 24  | 43 | 33 | 27 | 22 | 26 | 22 | 19 | 20 | 17 | 15 | 15 | 13 | 11 |
| 10  | 45  | 33  | 26  | 22  | 40 | 30 | 24 | 20 | 24 | 20 | 17 | 19 | 16 | 13 | 14 | 12 | 10 |

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

|     | 0°   | 45°  | 90°  |
|-----|------|------|------|
| 0°  | 1708 | 1708 | 1708 |
| 5°  | 1708 | 1677 | 1689 |
| 10° | 1688 | 1641 | 1632 |
| 15° | 1662 | 1583 | 1545 |
| 20° | 1629 | 1505 | 1438 |
| 25° | 1595 | 1418 | 1336 |
| 30° | 1549 | 1329 | 1206 |
| 35° | 1505 | 1234 | 1093 |
| 40° | 1460 | 1136 | 963  |
| 45° | 1407 | 1028 | 846  |
| 50° | 1353 | 919  | 732  |
| 55° | 1296 | 803  | 622  |
| 60° | 1230 | 683  | 510  |
| 65° | 1154 | 560  | 456  |
| 70° | 1061 | 446  | 409  |
| 75° | 945  | 386  | 367  |
| 80° | 777  | 314  | 311  |
| 85° | 507  | 194  | 220  |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2034 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 73.9   | 1.3       |
| 10°-20°   | 202.9  | 3.5       |
| 20°-30°   | 284.8  | 4.9       |
| 30°-40°   | 310.5  | 5.3       |
| 40°-50°   | 285.4  | 4.9       |
| 50°-60°   | 224.1  | 3.8       |
| 60°-70°   | 145.9  | 2.5       |
| 70°-80°   | 75.1   | 1.3       |
| 80°-90°   | 23.4   | 0.4       |
| 90°-100°  | 93.4   | 1.6       |
| 100°-110° | 296.6  | 5.1       |
| 110°-120° | 507.6  | 8.7       |
| 120°-130° | 667.5  | 11.4      |
| 130°-140° | 749.3  | 12.8      |
| 140°-150° | 734.8  | 12.6      |
| 150°-160° | 616.4  | 10.5      |
| 160°-170° | 408.8  | 7.0       |
| 170°-180° | 142.9  | 2.4       |
| 0°-30°    | 561.6  | 9.6       |
| 0°-40°    | 872.1  | 14.9      |
| 0°-60°    | 1381.7 | 23.6      |
| 0°-90°    | 1626.1 | 27.8      |
| 90°-120°  | 897.5  | 15.4      |
| 90°-150°  | 3049.2 | 52.2      |
| 90°-180°  | 4217.0 | 72.2      |
| 0°-180°   | 5843.3 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°   | 22.5° | 45°  | 67.5° | 90°  | Flux |
|------|------|-------|------|-------|------|------|
| 0°   | 789  | 789   | 789  | 789   | 789  |      |
| 5°   | 789  | 785   | 776  | 782   | 780  | 75   |
| 15°  | 750  | 742   | 718  | 704   | 697  | 211  |
| 25°  | 681  | 658   | 611  | 582   | 571  | 313  |
| 35°  | 587  | 550   | 488  | 442   | 427  | 367  |
| 45°  | 480  | 432   | 357  | 306   | 289  | 370  |
| 55°  | 365  | 309   | 232  | 189   | 176  | 326  |
| 65°  | 246  | 188   | 124  | 100   | 98   | 244  |
| 75°  | 131  | 81    | 57   | 52    | 51   | 139  |
| 85°  | 31   | 16    | 14   | 14    | 14   | 35   |
| 90°  | 1    | 16    | 45   | 42    | 43   | 6    |
| 95°  | 66   | 79    | 81   | 81    | 79   | 74   |
| 105° | 274  | 277   | 280  | 282   | 282  | 289  |
| 115° | 509  | 517   | 514  | 513   | 509  | 504  |
| 125° | 741  | 752   | 749  | 744   | 743  | 662  |
| 135° | 958  | 972   | 975  | 974   | 970  | 741  |
| 145° | 1163 | 1172  | 1180 | 1181  | 1176 | 727  |
| 155° | 1330 | 1334  | 1338 | 1344  | 1340 | 612  |
| 165° | 1447 | 1446  | 1446 | 1455  | 1449 | 408  |
| 175° | 1506 | 1502  | 1500 | 1509  | 1501 | 143  |
| 180° | 1509 | 1509  | 1509 | 1509  | 1509 |      |

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**CANDELA DISTRIBUTION (FULL):**

|        | 0°    | 22.5° | 45°   | 67.5° | 90°   |
|--------|-------|-------|-------|-------|-------|
| 0°     | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 |
| 2.5°   | 792.1 | 788.6 | 780.7 | 787.9 | 786.5 |
| 5°     | 788.6 | 785.0 | 775.7 | 782.2 | 780.0 |
| 7.5°   | 782.2 | 777.9 | 767.9 | 770.7 | 767.1 |
| 10°    | 773.6 | 768.5 | 754.3 | 752.1 | 747.9 |
| 12.5°  | 762.9 | 756.4 | 737.2 | 733.0 | 725.0 |
| 15°    | 750.0 | 742.1 | 717.9 | 704.3 | 697.3 |
| 17.5°  | 735.1 | 723.6 | 693.7 | 677.9 | 666.6 |
| 20°    | 717.9 | 703.6 | 668.0 | 650.2 | 634.4 |
| 22.5°  | 699.4 | 683.0 | 641.6 | 617.3 | 606.6 |
| 25°    | 680.9 | 658.0 | 610.8 | 581.7 | 570.9 |
| 27.5°  | 658.7 | 634.4 | 582.3 | 548.7 | 532.3 |
| 30°    | 635.2 | 608.0 | 550.9 | 514.6 | 495.2 |
| 32.5°  | 612.3 | 579.5 | 521.0 | 478.1 | 460.3 |
| 35°    | 586.6 | 550.3 | 487.5 | 442.5 | 426.7 |
| 37.5°  | 561.6 | 522.3 | 456.0 | 406.8 | 388.9 |
| 40°    | 535.2 | 492.5 | 423.2 | 372.5 | 353.9 |
| 42.5°  | 508.1 | 462.5 | 390.4 | 337.5 | 319.8 |
| 45°    | 479.6 | 431.7 | 356.9 | 306.1 | 289.0 |
| 47.5°  | 452.5 | 401.8 | 324.7 | 274.0 | 258.3 |
| 50°    | 422.5 | 371.9 | 293.4 | 244.0 | 229.2 |
| 52.5°  | 393.1 | 339.6 | 263.3 | 216.3 | 202.7 |
| 55°    | 364.6 | 309.0 | 231.9 | 189.2 | 175.5 |
| 57.5°  | 335.4 | 278.3 | 204.2 | 164.2 | 152.7 |
| 60°    | 305.5 | 248.3 | 174.9 | 138.5 | 127.1 |
| 62.5°  | 276.2 | 219.1 | 149.9 | 115.6 | 109.9 |
| 65°    | 246.2 | 188.4 | 124.2 | 100.0 | 97.8  |
| 67.5°  | 217.7 | 159.8 | 100.0 | 87.8  | 85.7  |
| 70°    | 187.7 | 132.0 | 82.7  | 75.7  | 72.8  |
| 72.5°  | 159.1 | 106.3 | 69.2  | 63.5  | 62.1  |
| 75°    | 131.3 | 81.3  | 57.0  | 52.1  | 51.4  |
| 77.5°  | 103.5 | 57.8  | 44.9  | 42.1  | 40.6  |
| 80°    | 77.8  | 41.4  | 34.2  | 31.4  | 31.4  |
| 82.5°  | 54.2  | 27.9  | 23.6  | 22.1  | 22.1  |
| 85°    | 30.6  | 15.6  | 13.5  | 13.5  | 13.5  |
| 87.5°  | 11.4  | 5.7   | 5.7   | 5.0   | 5.0   |
| 90°    | 1.3   | 16.4  | 44.6  | 41.9  | 43.2  |
| 92.5°  | 28.2  | 38.2  | 39.6  | 40.9  | 40.9  |
| 95°    | 66.4  | 79.2  | 81.4  | 81.4  | 79.2  |
| 97.5°  | 110.5 | 122.3 | 127.4 | 127.4 | 127.4 |
| 100°   | 161.4 | 171.9 | 175.5 | 175.5 | 174.2 |
| 102.5° | 215.1 | 222.9 | 227.8 | 229.2 | 227.8 |
| 105°   | 273.8 | 277.4 | 280.2 | 282.4 | 282.4 |
| 107.5° | 332.0 | 337.4 | 337.4 | 338.4 | 332.0 |
| 110°   | 388.4 | 395.7 | 395.7 | 395.7 | 392.0 |

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**CANDELA DISTRIBUTION (continued):**

|        | 0°     | 22.5°  | 45°    | 67.5°  | 90°    |
|--------|--------|--------|--------|--------|--------|
| 112.5° | 449.3  | 457.1  | 455.7  | 452.1  | 449.3  |
| 115°   | 509.3  | 516.7  | 514.4  | 513.1  | 509.3  |
| 117.5° | 569.0  | 579.0  | 572.6  | 569.0  | 565.3  |
| 120°   | 629.0  | 639.0  | 629.0  | 629.0  | 624.9  |
| 122.5° | 683.5  | 696.3  | 689.9  | 686.3  | 683.5  |
| 125°   | 740.9  | 752.2  | 748.6  | 744.5  | 743.2  |
| 127.5° | 796.8  | 810.9  | 805.9  | 800.4  | 796.8  |
| 130°   | 849.2  | 865.5  | 863.2  | 860.5  | 855.5  |
| 132.5° | 907.8  | 920.5  | 921.5  | 915.1  | 911.5  |
| 135°   | 958.3  | 972.3  | 975.1  | 973.7  | 970.1  |
| 137.5° | 1014.7 | 1026.0 | 1028.3 | 1027.4 | 1021.9 |
| 140°   | 1064.2 | 1075.6 | 1081.9 | 1081.9 | 1077.0 |
| 142.5° | 1115.1 | 1126.6 | 1130.2 | 1131.5 | 1126.6 |
| 145°   | 1163.4 | 1172.5 | 1179.7 | 1181.1 | 1176.1 |
| 147.5° | 1206.6 | 1218.0 | 1223.4 | 1225.7 | 1220.6 |
| 150°   | 1251.2 | 1258.9 | 1263.9 | 1268.0 | 1263.9 |
| 152.5° | 1290.8 | 1298.5 | 1304.8 | 1309.8 | 1304.8 |
| 155°   | 1330.3 | 1333.9 | 1338.0 | 1344.4 | 1340.3 |
| 157.5° | 1364.4 | 1367.1 | 1369.4 | 1378.5 | 1372.1 |
| 160°   | 1394.8 | 1397.6 | 1398.9 | 1406.7 | 1401.2 |
| 162.5° | 1423.1 | 1423.1 | 1424.4 | 1433.1 | 1426.7 |
| 165°   | 1447.2 | 1445.8 | 1445.8 | 1454.9 | 1448.6 |
| 167.5° | 1469.0 | 1464.9 | 1464.9 | 1474.0 | 1467.6 |
| 170°   | 1485.4 | 1481.8 | 1480.4 | 1489.5 | 1481.8 |
| 172.5° | 1496.7 | 1493.1 | 1491.8 | 1500.8 | 1493.1 |
| 175°   | 1505.9 | 1502.2 | 1499.5 | 1508.6 | 1500.8 |
| 177.5° | 1510.8 | 1507.2 | 1504.5 | 1512.2 | 1504.5 |
| 180°   | 1508.6 | 1508.6 | 1508.6 | 1508.6 | 1508.6 |

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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 | 6.35             | 7.02 | 7.48  | 8.14  | 9.70  | 2.32           | 2.99 | 3.45 | 4.11 | 5.67 |
|                 | 3H   | 7.99             | 8.60 | 9.13  | 9.73  | 11.30 | 3.48           | 4.08 | 4.62 | 5.21 | 6.78 |
|                 | 4H   | 8.58             | 9.15 | 9.73  | 10.28 | 11.86 | 3.91           | 4.48 | 5.06 | 5.61 | 7.19 |
|                 | 6H   | 8.98             | 9.50 | 10.13 | 10.64 | 12.23 | 4.21           | 4.73 | 5.36 | 5.86 | 7.45 |
|                 | 8H   | 9.09             | 9.59 | 10.25 | 10.74 | 12.32 | 4.28           | 4.79 | 5.44 | 5.93 | 7.51 |
|                 | 12H  | 9.14             | 9.61 | 10.30 | 10.75 | 12.36 | 4.31           | 4.79 | 5.48 | 5.93 | 7.54 |
| 4H              | 2H   | 6.34             | 6.92 | 7.50  | 8.04  | 9.62  | 2.88           | 3.46 | 4.04 | 4.59 | 6.16 |
|                 | 3H   | 8.13             | 8.61 | 9.29  | 9.77  | 11.36 | 4.20           | 4.68 | 5.36 | 5.83 | 7.42 |
|                 | 4H   | 8.80             | 9.24 | 9.97  | 10.39 | 12.00 | 4.73           | 5.17 | 5.89 | 6.31 | 7.92 |
|                 | 6H   | 9.29             | 9.67 | 10.46 | 10.83 | 12.43 | 5.12           | 5.49 | 6.29 | 6.66 | 8.26 |
|                 | 8H   | 9.45             | 9.80 | 10.62 | 10.96 | 12.58 | 5.23           | 5.58 | 6.40 | 6.74 | 8.36 |
|                 | 12H  | 9.53             | 9.85 | 10.71 | 11.01 | 12.64 | 5.28           | 5.60 | 6.46 | 6.77 | 8.39 |
| 8H              | 4H   | 8.75             | 9.11 | 9.92  | 10.26 | 11.88 | 4.98           | 5.33 | 6.15 | 6.49 | 8.11 |
|                 | 6H   | 9.29             | 9.58 | 10.48 | 10.78 | 12.40 | 5.47           | 5.76 | 6.66 | 6.96 | 8.57 |
|                 | 8H   | 9.50             | 9.75 | 10.69 | 10.93 | 12.56 | 5.65           | 5.90 | 6.84 | 7.08 | 8.71 |
|                 | 12H  | 9.61             | 9.83 | 10.81 | 11.01 | 12.68 | 5.74           | 5.97 | 6.94 | 7.14 | 8.81 |
| 12H             | 4H   | 8.70             | 9.02 | 9.88  | 10.19 | 11.81 | 4.98           | 5.29 | 6.16 | 6.46 | 8.08 |
|                 | 6H   | 9.27             | 9.52 | 10.46 | 10.70 | 12.33 | 5.51           | 5.77 | 6.71 | 6.94 | 8.58 |
|                 | 8H   | 9.47             | 9.69 | 10.66 | 10.86 | 12.53 | 5.70           | 5.92 | 6.90 | 7.10 | 8.77 |

END OF REPORT