

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P#

Luminaire Tested: **FLDSQ4C50D010 FEU4C509030 F4LC-SQ-LI**

Issue Date: 12/13/2022

Tested By:

Approved By:



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Test Information

Test Method: LM-79-08
 Report Number: P#
 Test Lab: INNOVATION CENTER
 Issue Date: 12/13/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: FAIL-SAFE
 Catalog Number: FLDSQ4C50D010 FEU4C509030 F4LC-SQ-LI
 Description: 4 INCH 5000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

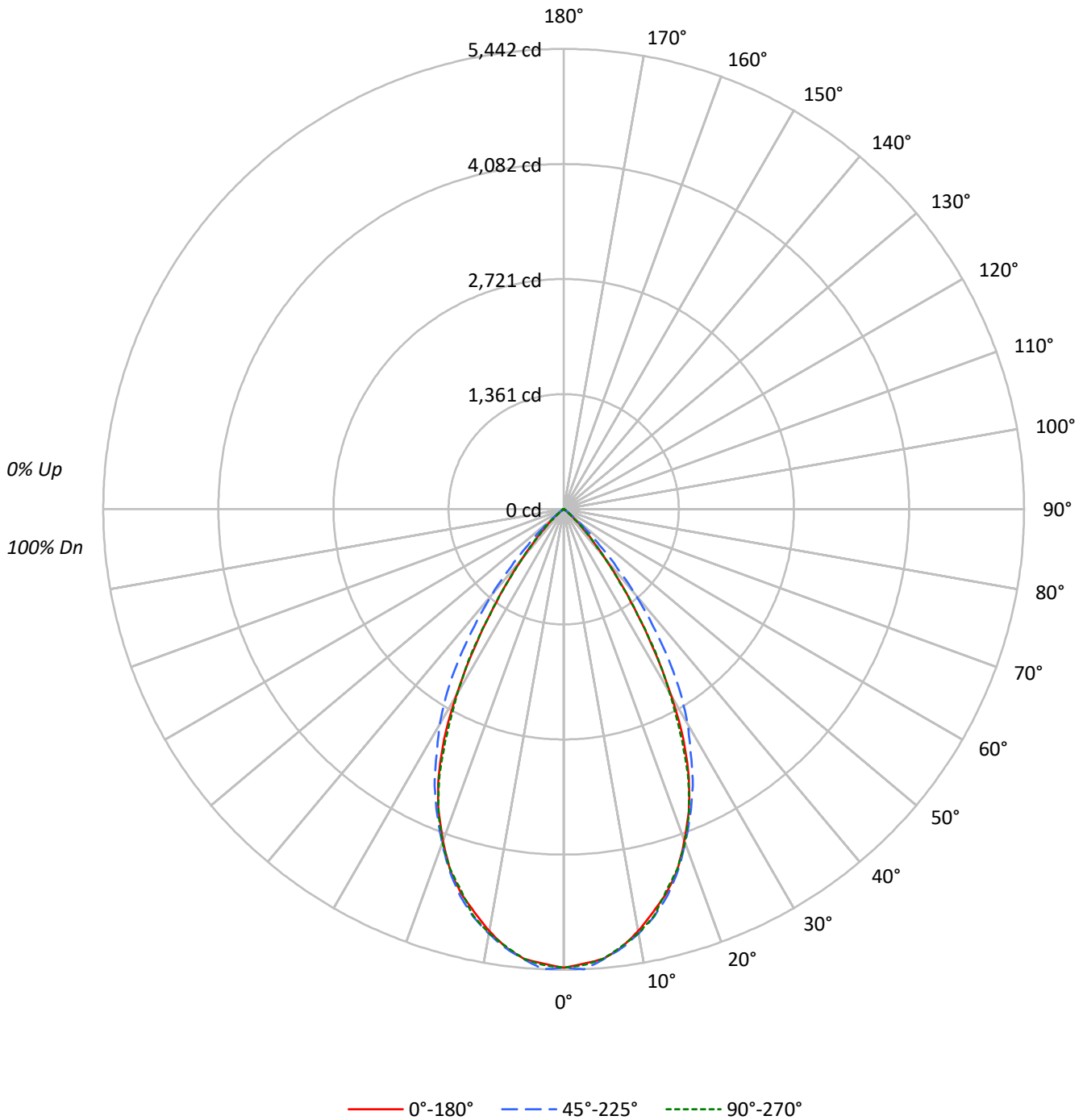
Lumens per Lamp: N/A
 Luminaire Lumens: 5002.0 lumens
 Efficiency: N/A
 Efficacy: 85.7 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 58.4
 Input Voltage (V):
 Input Current (Ain): NR
 Voltage Rise (V): NR
 Power Factor: NR
 Total Harmonic Distortion (THDi): NR
 Frequency (hertz): 60
 Stabilization Time: NR
 Operation Time: NR
 Ambient Temperature (°C): NR
 Test Distance: 25 FT

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | GONIO 1 IN0055 | 4/22/2021 | 10/22/2021 |
| Power Meter | XITRON 2801 IN0197 | 12/1/2020 | 12/1/2021 |
| AC Power Source | CHROMA 61505 IN0196 | 12/1/2020 | 12/1/2021 |
| DC Power Supply | AGILENT E3634A IN0198 | 11/30/2020 | 11/30/2021 |
| Room Thermometer | ONSET IN0143 | 12/1/2020 | 12/1/2021 |

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Luminous Intensity Polar Plot



TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C50D010 FEU4C509030 F4LC-SQ-LI

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| | | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|--|-----|-----|-----|-----|
| RF | 20 | | | | 20 | | | | 20 | | | | 20 | | | | 20 | | | |
| RC | 80 | | | | 70 | | | | 50 | | | | 30 | | | | 10 | 0 | | |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | | 50 | 30 | 10 | | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | | 106 | 106 | 106 | | 102 | 102 | 102 | 100 |
| 1 | 113 | 111 | 108 | 106 | 111 | 108 | 106 | 104 | 104 | 103 | 101 | | 101 | 99 | 98 | | 97 | 96 | 95 | 93 |
| 2 | 108 | 103 | 99 | 95 | 105 | 101 | 97 | 94 | 98 | 95 | 92 | | 95 | 92 | 90 | | 92 | 90 | 88 | 87 |
| 3 | 102 | 96 | 91 | 87 | 100 | 94 | 90 | 86 | 92 | 88 | 84 | | 89 | 86 | 83 | | 87 | 84 | 82 | 80 |
| 4 | 97 | 89 | 84 | 79 | 95 | 88 | 83 | 79 | 86 | 81 | 78 | | 84 | 80 | 77 | | 82 | 79 | 76 | 75 |
| 5 | 92 | 83 | 77 | 73 | 90 | 82 | 77 | 73 | 81 | 76 | 72 | | 79 | 75 | 71 | | 77 | 74 | 71 | 69 |
| 6 | 87 | 78 | 72 | 68 | 86 | 77 | 71 | 67 | 76 | 71 | 67 | | 74 | 70 | 66 | | 73 | 69 | 66 | 64 |
| 7 | 83 | 73 | 67 | 63 | 81 | 73 | 67 | 63 | 71 | 66 | 62 | | 70 | 65 | 62 | | 69 | 65 | 62 | 60 |
| 8 | 79 | 69 | 63 | 59 | 77 | 68 | 62 | 58 | 67 | 62 | 58 | | 66 | 61 | 58 | | 65 | 61 | 58 | 56 |
| 9 | 75 | 65 | 59 | 55 | 74 | 64 | 59 | 55 | 63 | 58 | 55 | | 63 | 58 | 54 | | 62 | 57 | 54 | 53 |
| 10 | 71 | 61 | 55 | 51 | 70 | 61 | 55 | 51 | 60 | 55 | 51 | | 59 | 54 | 51 | | 58 | 54 | 51 | 50 |

AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|-----|--------|--------|--------|
| 0° | 522767 | 522767 | 522767 |
| 5° | 516764 | 517432 | 516764 |
| 10° | 496099 | 499136 | 498470 |
| 15° | 469006 | 472442 | 466589 |
| 20° | 428027 | 431200 | 430142 |
| 25° | 372698 | 384419 | 370132 |
| 30° | 283408 | 325980 | 279197 |
| 35° | 178395 | 253416 | 180020 |
| 40° | 96244 | 167359 | 94518 |
| 45° | 45563 | 82665 | 45085 |
| 50° | 17053 | 30998 | 17053 |
| 55° | 8108 | 9858 | 7536 |
| 60° | 5307 | 4670 | 5307 |
| 65° | 3151 | 3151 | 3151 |
| 70° | 1947 | 2934 | 1947 |
| 75° | 1305 | 1305 | 1305 |
| 80° | 1945 | 1945 | 1945 |
| 85° | 0 | 0 | 0 |

TEST NUMBER: P#
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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 502.3 | 10.0 |
| 10°-20° | 1316.5 | 26.3 |
| 20°-30° | 1608.2 | 32.2 |
| 30°-40° | 1124.8 | 22.5 |
| 40°-50° | 368.6 | 7.4 |
| 50°-60° | 58.6 | 1.2 |
| 60°-70° | 16.0 | 0.3 |
| 70°-80° | 5.4 | 0.1 |
| 80°-90° | 1.5 | 0.0 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-30° | 3427.1 | 68.5 |
| 0°-40° | 4551.9 | 91.0 |
| 0°-60° | 4979.1 | 99.5 |
| 0°-90° | 5002.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 5002.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 5418 | 5418 | 5418 | 5418 | 5418 | |
| 5° | 5335 | 5337 | 5342 | 5310 | 5335 | 500 |
| 15° | 4695 | 4714 | 4730 | 4698 | 4671 | 1310 |
| 25° | 3501 | 3554 | 3611 | 3545 | 3477 | 1573 |
| 35° | 1514 | 1788 | 2151 | 1761 | 1528 | 966 |
| 45° | 334 | 411 | 606 | 406 | 330 | 280 |
| 55° | 48 | 52 | 59 | 52 | 45 | 48 |
| 65° | 14 | 17 | 14 | 17 | 14 | 15 |
| 75° | 4 | 4 | 4 | 4 | 4 | 5 |
| 85° | 0 | 0 | 0 | 0 | 0 | 1 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C50D010 FEU4C509030 F4LC-SQ-LI

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 |
| 2.5° | 5376.6 | 5414.6 | 5404.2 | 5428.3 | 5428.3 | 5400.8 | 5407.7 | 5417.9 | 5431.7 | 5442.1 | 5359.4 |
| 5° | 5335.3 | 5369.8 | 5338.7 | 5373.1 | 5352.5 | 5321.6 | 5373.1 | 5345.6 | 5362.9 | 5342.2 | 5356.0 |
| 7.5° | 5225.2 | 5280.3 | 5218.3 | 5259.6 | 5245.9 | 5228.6 | 5249.2 | 5242.4 | 5252.8 | 5235.5 | 5197.7 |
| 10° | 5063.4 | 5108.2 | 5066.9 | 5125.4 | 5097.8 | 5080.7 | 5097.8 | 5115.1 | 5111.6 | 5094.4 | 5115.1 |
| 12.5° | 4877.6 | 4929.1 | 4908.5 | 4942.9 | 4912.0 | 4912.0 | 4953.3 | 4942.9 | 4946.4 | 4932.6 | 4956.7 |
| 15° | 4695.1 | 4733.0 | 4702.0 | 4746.8 | 4733.0 | 4695.1 | 4712.2 | 4712.2 | 4739.9 | 4729.5 | 4702.0 |
| 17.5° | 4468.0 | 4498.9 | 4464.5 | 4474.8 | 4461.1 | 4454.2 | 4526.4 | 4478.2 | 4505.8 | 4485.1 | 4488.6 |
| 20° | 4168.5 | 4182.3 | 4171.9 | 4199.4 | 4182.3 | 4202.9 | 4196.0 | 4189.1 | 4189.1 | 4199.4 | 4175.4 |
| 22.5° | 3865.5 | 3865.5 | 3875.9 | 3882.8 | 3896.5 | 3875.9 | 3917.2 | 3882.8 | 3886.2 | 3910.3 | 3903.4 |
| 25° | 3500.7 | 3490.3 | 3514.5 | 3548.9 | 3562.7 | 3545.4 | 3600.4 | 3572.9 | 3593.6 | 3610.8 | 3572.9 |
| 27.5° | 3056.7 | 3056.7 | 3080.7 | 3139.3 | 3149.5 | 3170.2 | 3245.9 | 3245.9 | 3273.4 | 3249.4 | 3276.9 |
| 30° | 2543.7 | 2581.6 | 2612.5 | 2688.3 | 2712.4 | 2757.2 | 2836.3 | 2874.2 | 2936.2 | 2925.8 | 2912.0 |
| 32.5° | 2017.1 | 2068.8 | 2072.2 | 2151.4 | 2216.7 | 2292.4 | 2399.2 | 2488.7 | 2533.5 | 2564.4 | 2529.9 |
| 35° | 1514.5 | 1545.6 | 1573.1 | 1628.2 | 1738.3 | 1838.1 | 1934.5 | 2051.5 | 2130.7 | 2151.4 | 2120.3 |
| 37.5° | 1108.4 | 1115.3 | 1142.8 | 1194.4 | 1277.0 | 1373.5 | 1490.5 | 1617.8 | 1700.5 | 1731.4 | 1697.0 |
| 40° | 764.1 | 771.0 | 784.8 | 829.6 | 898.4 | 967.3 | 1060.2 | 1191.0 | 1266.7 | 1328.7 | 1283.9 |
| 42.5° | 512.8 | 519.7 | 533.5 | 567.9 | 605.8 | 671.2 | 743.5 | 826.1 | 898.4 | 926.0 | 901.8 |
| 45° | 333.9 | 333.9 | 340.8 | 364.9 | 385.6 | 437.1 | 488.8 | 540.4 | 588.6 | 605.8 | 588.6 |
| 47.5° | 196.2 | 199.6 | 206.5 | 223.8 | 247.8 | 268.4 | 306.4 | 340.8 | 354.5 | 368.3 | 361.4 |
| 50° | 113.6 | 113.6 | 123.9 | 134.3 | 151.4 | 165.2 | 179.0 | 192.7 | 199.6 | 206.5 | 199.6 |
| 52.5° | 61.9 | 65.5 | 68.8 | 72.3 | 79.2 | 93.0 | 103.2 | 103.2 | 106.8 | 110.1 | 106.8 |
| 55° | 48.2 | 48.2 | 48.2 | 48.2 | 51.7 | 51.7 | 51.7 | 55.1 | 55.1 | 58.6 | 55.1 |
| 57.5° | 34.4 | 34.4 | 34.4 | 37.9 | 37.9 | 37.9 | 34.4 | 34.4 | 34.4 | 34.4 | 34.4 |
| 60° | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 24.2 | 24.2 | 24.2 | 24.2 |
| 62.5° | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 |
| 65° | 13.8 | 13.8 | 17.3 | 17.3 | 17.3 | 17.3 | 17.3 | 13.8 | 13.8 | 13.8 | 13.8 |
| 67.5° | 10.4 | 10.4 | 10.4 | 10.4 | 13.8 | 13.8 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 |
| 70° | 6.9 | 6.9 | 6.9 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 |
| 72.5° | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 |
| 75° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 77.5° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 80° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.5 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C50D010 FEU4C509030 F4LC-SQ-LI

CANDELA DISTRIBUTION (continued):

| | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 | 5417.9 |
| 2.5° | 5417.9 | 5359.4 | 5366.3 | 5397.3 | 5380.0 | 5397.3 | 5393.9 | 5393.9 |
| 5° | 5359.4 | 5342.2 | 5314.7 | 5304.3 | 5325.0 | 5369.8 | 5362.9 | 5335.3 |
| 7.5° | 5249.2 | 5204.6 | 5235.5 | 5249.2 | 5232.1 | 5259.6 | 5273.4 | 5214.8 |
| 10° | 5118.5 | 5101.3 | 5094.4 | 5101.3 | 5094.4 | 5122.0 | 5087.6 | 5087.6 |
| 12.5° | 4932.6 | 4905.1 | 4905.1 | 4946.4 | 4922.2 | 4901.6 | 4929.1 | 4925.7 |
| 15° | 4746.8 | 4691.6 | 4691.6 | 4705.4 | 4715.8 | 4702.0 | 4705.4 | 4670.9 |
| 17.5° | 4471.3 | 4454.2 | 4430.0 | 4468.0 | 4478.2 | 4464.5 | 4474.8 | 4457.6 |
| 20° | 4213.2 | 4213.2 | 4168.5 | 4185.6 | 4199.4 | 4209.8 | 4216.7 | 4189.1 |
| 22.5° | 3882.8 | 3889.7 | 3858.6 | 3893.0 | 3903.4 | 3869.0 | 3875.9 | 3869.0 |
| 25° | 3579.8 | 3576.4 | 3552.3 | 3538.5 | 3545.4 | 3531.6 | 3528.2 | 3476.6 |
| 27.5° | 3245.9 | 3211.5 | 3159.9 | 3173.7 | 3115.1 | 3067.0 | 3067.0 | 2987.7 |
| 30° | 2884.5 | 2826.0 | 2757.2 | 2688.3 | 2636.7 | 2581.6 | 2550.6 | 2505.9 |
| 32.5° | 2461.1 | 2382.0 | 2295.9 | 2202.9 | 2144.5 | 2061.9 | 2017.1 | 2041.3 |
| 35° | 2041.3 | 1924.1 | 1807.1 | 1714.3 | 1624.6 | 1576.5 | 1521.4 | 1528.3 |
| 37.5° | 1635.0 | 1469.8 | 1366.6 | 1266.7 | 1191.0 | 1129.1 | 1104.9 | 1098.0 |
| 40° | 1194.4 | 1063.6 | 960.4 | 888.0 | 836.5 | 788.3 | 760.8 | 750.4 |
| 42.5° | 826.1 | 733.2 | 650.5 | 592.1 | 557.7 | 526.6 | 512.8 | 509.5 |
| 45° | 537.0 | 481.9 | 426.9 | 385.6 | 358.0 | 337.4 | 333.9 | 330.4 |
| 47.5° | 337.4 | 309.7 | 275.3 | 244.4 | 220.3 | 206.5 | 196.2 | 196.2 |
| 50° | 192.7 | 182.5 | 165.2 | 148.1 | 134.3 | 127.4 | 117.0 | 113.6 |
| 52.5° | 103.2 | 103.2 | 96.4 | 82.6 | 72.3 | 65.5 | 65.5 | 61.9 |
| 55° | 55.1 | 55.1 | 51.7 | 51.7 | 48.2 | 48.2 | 48.2 | 44.8 |
| 57.5° | 34.4 | 34.4 | 37.9 | 37.9 | 34.4 | 34.4 | 34.4 | 34.4 |
| 60° | 24.2 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 | 27.5 |
| 62.5° | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 | 20.6 |
| 65° | 13.8 | 17.3 | 17.3 | 17.3 | 17.3 | 13.8 | 13.8 | 13.8 |
| 67.5° | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 |
| 70° | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 6.9 | 6.9 | 6.9 |
| 72.5° | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 | 6.9 |
| 75° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 77.5° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 80° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)