

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: **FLDSQ4C60D010 FEU4C609030 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: FLDSQ4C60D010 FEU4C609030 F4LC-SQ-LI
 Description: 4 INCH 6000 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-SQ TRIM WITH LI FINISH
 Light Source: -
 Ballast/Driver: -

Summary

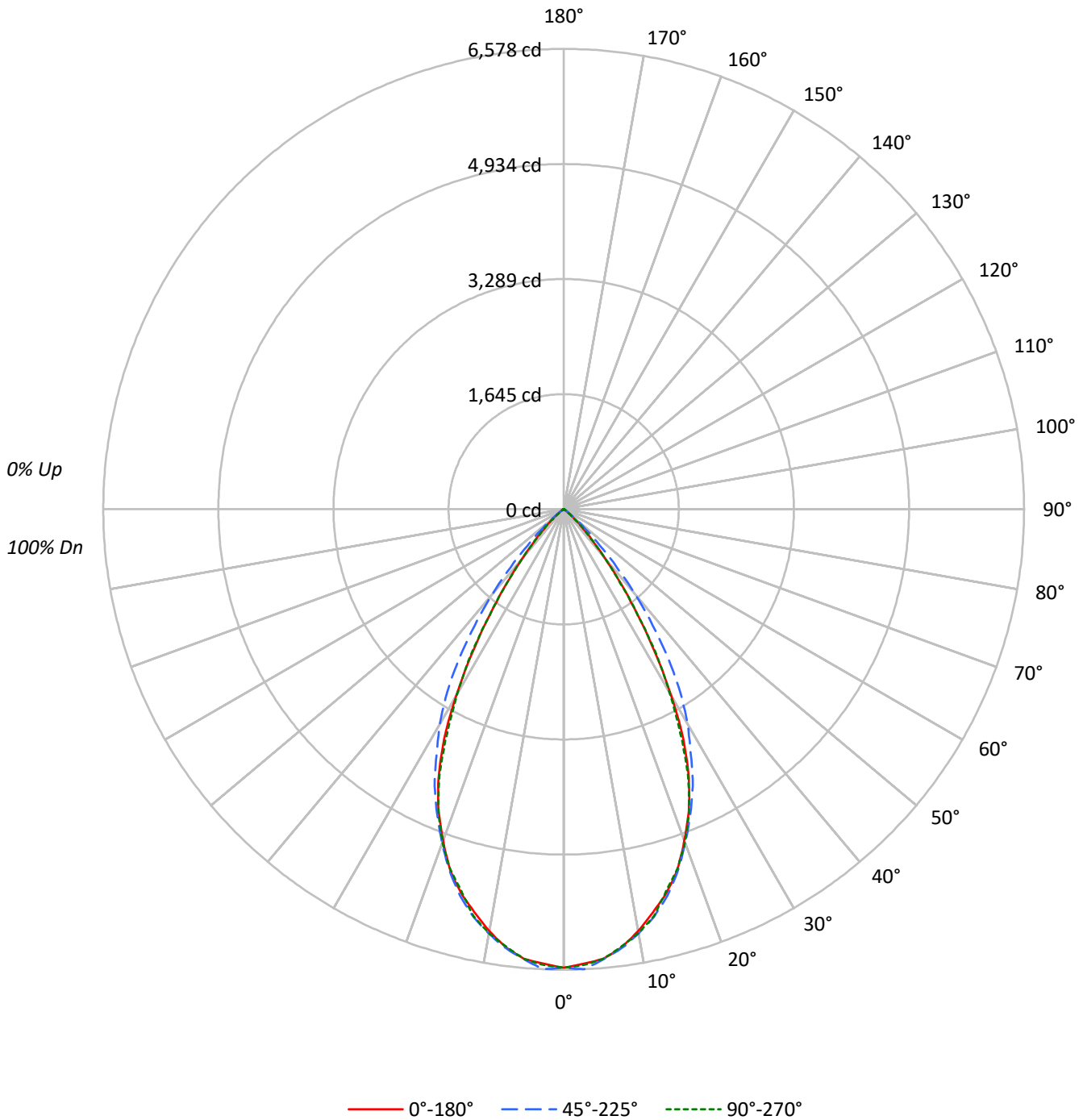
Lumens per Lamp: N/A
 Luminaire Lumens: 6046.0 lumens
 Efficiency: N/A
 Efficacy: 84.0 lumens/watt
 Spacing Criteria (0/90/45): 0.91 / 0.9 / 0.94
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
 CIE Type: Direct

Input Watts (W): 72
 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#
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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° | 631886 | 631886 | 631886 |
| 5° | 624624 | 625428 | 624624 |
| 10° | 599641 | 603315 | 602502 |
| 15° | 566891 | 571046 | 563974 |
| 20° | 517360 | 521200 | 519927 |
| 25° | 450491 | 464661 | 447382 |
| 30° | 342559 | 394011 | 337478 |
| 35° | 215629 | 306304 | 217596 |
| 40° | 116334 | 202287 | 114243 |
| 45° | 55074 | 99927 | 54487 |
| 50° | 20625 | 37467 | 20625 |
| 55° | 9791 | 11910 | 9118 |
| 60° | 6426 | 5635 | 6426 |
| 65° | 3790 | 3790 | 3790 |
| 70° | 2342 | 3555 | 2342 |
| 75° | 1566 | 1566 | 1566 |
| 80° | 2334 | 2334 | 2334 |
| 85° | 0 | 0 | 0 |

TEST NUMBER: P#
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ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 607.2 | 10.0 |
| 10°-20° | 1591.3 | 26.3 |
| 20°-30° | 1943.9 | 32.2 |
| 30°-40° | 1359.6 | 22.5 |
| 40°-50° | 445.6 | 7.4 |
| 50°-60° | 70.8 | 1.2 |
| 60°-70° | 19.4 | 0.3 |
| 70°-80° | 6.5 | 0.1 |
| 80°-90° | 1.8 | 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° | 4142.4 | 68.5 |
| 0°-40° | 5502.0 | 91.0 |
| 0°-60° | 6018.4 | 99.5 |
| 0°-90° | 6046.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 6046.0 | 100.0 |

CANDELA DISTRIBUTION:

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|------|-------|------|-------|------|------|
| 0° | 6549 | 6549 | 6549 | 6549 | 6549 | |
| 5° | 6449 | 6451 | 6457 | 6418 | 6449 | 605 |
| 15° | 5675 | 5698 | 5717 | 5679 | 5646 | 1583 |
| 25° | 4231 | 4296 | 4364 | 4285 | 4202 | 1901 |
| 35° | 1831 | 2161 | 2600 | 2128 | 1847 | 1168 |
| 45° | 404 | 497 | 732 | 491 | 399 | 339 |
| 55° | 58 | 62 | 71 | 62 | 54 | 58 |
| 65° | 17 | 21 | 17 | 21 | 17 | 18 |
| 75° | 4 | 4 | 4 | 4 | 4 | 6 |
| 85° | 0 | 0 | 0 | 0 | 0 | 2 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

TEST NUMBER: P#
 CATALOG NUMBER: FLDSQ4C60D010 FEU4C609030 F4LC-SQ-LI

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 |
| 2.5° | 6498.8 | 6544.7 | 6532.1 | 6561.3 | 6561.3 | 6528.0 | 6536.4 | 6548.8 | 6565.4 | 6578.0 | 6478.0 |
| 5° | 6448.9 | 6490.5 | 6453.0 | 6494.6 | 6469.6 | 6432.3 | 6494.6 | 6461.3 | 6482.2 | 6457.2 | 6473.9 |
| 7.5° | 6315.8 | 6382.4 | 6307.5 | 6357.4 | 6340.8 | 6319.9 | 6344.8 | 6336.5 | 6349.1 | 6328.2 | 6282.5 |
| 10° | 6120.2 | 6174.4 | 6124.5 | 6195.1 | 6161.8 | 6141.1 | 6161.8 | 6182.7 | 6178.5 | 6157.7 | 6182.7 |
| 12.5° | 5895.6 | 5957.9 | 5933.0 | 5974.6 | 5937.2 | 5937.2 | 5987.1 | 5974.6 | 5978.8 | 5962.2 | 5991.2 |
| 15° | 5675.0 | 5720.9 | 5683.4 | 5737.5 | 5720.9 | 5675.0 | 5695.8 | 5695.8 | 5729.2 | 5716.6 | 5683.4 |
| 17.5° | 5400.5 | 5437.9 | 5396.3 | 5408.8 | 5392.2 | 5383.9 | 5471.1 | 5412.9 | 5446.2 | 5421.2 | 5425.5 |
| 20° | 5038.5 | 5055.2 | 5042.6 | 5075.9 | 5055.2 | 5080.1 | 5071.8 | 5063.5 | 5063.5 | 5075.9 | 5046.8 |
| 22.5° | 4672.3 | 4672.3 | 4684.9 | 4693.2 | 4709.8 | 4684.9 | 4734.8 | 4693.2 | 4697.3 | 4726.5 | 4718.1 |
| 25° | 4231.4 | 4218.8 | 4248.0 | 4289.6 | 4306.2 | 4285.4 | 4351.9 | 4318.6 | 4343.6 | 4364.5 | 4318.6 |
| 27.5° | 3694.7 | 3694.7 | 3723.7 | 3794.5 | 3806.9 | 3831.9 | 3923.4 | 3923.4 | 3956.7 | 3927.6 | 3960.9 |
| 30° | 3074.6 | 3120.5 | 3157.8 | 3249.3 | 3278.5 | 3332.7 | 3428.3 | 3474.1 | 3549.0 | 3536.4 | 3519.8 |
| 32.5° | 2438.1 | 2500.6 | 2504.7 | 2600.4 | 2679.4 | 2770.9 | 2899.9 | 3008.1 | 3062.2 | 3099.6 | 3058.0 |
| 35° | 1830.6 | 1868.1 | 1901.4 | 1968.0 | 2101.1 | 2221.8 | 2338.3 | 2479.7 | 2575.5 | 2600.4 | 2562.9 |
| 37.5° | 1339.8 | 1348.1 | 1381.4 | 1443.7 | 1543.5 | 1660.2 | 1801.6 | 1955.4 | 2055.4 | 2092.8 | 2051.2 |
| 40° | 923.6 | 931.9 | 948.6 | 1002.7 | 1085.9 | 1169.1 | 1281.5 | 1439.6 | 1531.1 | 1606.0 | 1551.8 |
| 42.5° | 619.9 | 628.2 | 644.8 | 686.4 | 732.3 | 811.2 | 898.7 | 998.5 | 1085.9 | 1119.2 | 1090.0 |
| 45° | 403.6 | 403.6 | 411.9 | 441.1 | 466.1 | 528.4 | 590.8 | 653.2 | 711.4 | 732.3 | 711.4 |
| 47.5° | 237.2 | 241.3 | 249.6 | 270.5 | 299.5 | 324.5 | 370.3 | 411.9 | 428.5 | 445.2 | 436.9 |
| 50° | 137.4 | 137.4 | 149.8 | 162.3 | 183.0 | 199.7 | 216.3 | 232.9 | 241.3 | 249.6 | 241.3 |
| 52.5° | 74.9 | 79.1 | 83.2 | 87.4 | 95.8 | 112.4 | 124.8 | 124.8 | 129.0 | 133.1 | 129.0 |
| 55° | 58.2 | 58.2 | 58.2 | 58.2 | 62.5 | 62.5 | 62.5 | 66.6 | 66.6 | 70.8 | 66.6 |
| 57.5° | 41.6 | 41.6 | 41.6 | 45.8 | 45.8 | 45.8 | 41.6 | 41.6 | 41.6 | 41.6 | 41.6 |
| 60° | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 29.2 | 29.2 | 29.2 | 29.2 |
| 62.5° | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| 65° | 16.6 | 16.6 | 20.9 | 20.9 | 20.9 | 20.9 | 20.9 | 16.6 | 16.6 | 16.6 | 16.6 |
| 67.5° | 12.6 | 12.6 | 12.6 | 12.6 | 16.6 | 16.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| 70° | 8.3 | 8.3 | 8.3 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| 72.5° | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| 75° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 77.5° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 80° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 82.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.2 | 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° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 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#
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CANDELA DISTRIBUTION (continued):

| | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 | 6548.8 |
| 2.5° | 6548.8 | 6478.0 | 6486.3 | 6523.8 | 6502.9 | 6523.8 | 6519.7 | 6519.7 |
| 5° | 6478.0 | 6457.2 | 6424.0 | 6411.4 | 6436.4 | 6490.5 | 6482.2 | 6448.9 |
| 7.5° | 6344.8 | 6290.9 | 6328.2 | 6344.8 | 6324.1 | 6357.4 | 6374.0 | 6303.3 |
| 10° | 6186.8 | 6166.1 | 6157.7 | 6166.1 | 6157.7 | 6191.0 | 6149.4 | 6149.4 |
| 12.5° | 5962.2 | 5928.9 | 5928.9 | 5978.8 | 5949.6 | 5924.6 | 5957.9 | 5953.8 |
| 15° | 5737.5 | 5670.8 | 5670.8 | 5687.4 | 5700.0 | 5683.4 | 5687.4 | 5645.8 |
| 17.5° | 5404.6 | 5383.9 | 5354.7 | 5400.5 | 5412.9 | 5396.3 | 5408.8 | 5387.9 |
| 20° | 5092.5 | 5092.5 | 5038.5 | 5059.2 | 5075.9 | 5088.4 | 5096.8 | 5063.5 |
| 22.5° | 4693.2 | 4701.5 | 4664.0 | 4705.6 | 4718.1 | 4676.5 | 4684.9 | 4676.5 |
| 25° | 4327.0 | 4322.9 | 4293.7 | 4277.0 | 4285.4 | 4268.7 | 4264.6 | 4202.2 |
| 27.5° | 3923.4 | 3881.8 | 3819.5 | 3836.1 | 3765.3 | 3707.1 | 3707.1 | 3611.3 |
| 30° | 3486.5 | 3415.9 | 3332.7 | 3249.3 | 3187.0 | 3120.5 | 3082.9 | 3029.0 |
| 32.5° | 2974.8 | 2879.2 | 2775.1 | 2662.7 | 2592.1 | 2492.3 | 2438.1 | 2467.3 |
| 35° | 2467.3 | 2325.7 | 2184.3 | 2072.0 | 1963.7 | 1905.5 | 1838.9 | 1847.3 |
| 37.5° | 1976.3 | 1776.6 | 1651.8 | 1531.1 | 1439.6 | 1364.7 | 1335.5 | 1327.2 |
| 40° | 1443.7 | 1285.6 | 1160.8 | 1073.4 | 1011.1 | 952.8 | 919.6 | 907.0 |
| 42.5° | 998.5 | 886.3 | 786.3 | 715.6 | 674.0 | 636.5 | 619.9 | 615.8 |
| 45° | 649.1 | 582.5 | 516.0 | 466.1 | 432.8 | 407.8 | 403.6 | 399.3 |
| 47.5° | 407.8 | 374.4 | 332.8 | 295.4 | 266.2 | 249.6 | 237.2 | 237.2 |
| 50° | 232.9 | 220.5 | 199.7 | 179.0 | 162.3 | 154.0 | 141.4 | 137.4 |
| 52.5° | 124.8 | 124.8 | 116.5 | 99.8 | 87.4 | 79.1 | 79.1 | 74.9 |
| 55° | 66.6 | 66.6 | 62.5 | 62.5 | 58.2 | 58.2 | 58.2 | 54.2 |
| 57.5° | 41.6 | 41.6 | 45.8 | 45.8 | 41.6 | 41.6 | 41.6 | 41.6 |
| 60° | 29.2 | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 | 33.3 |
| 62.5° | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| 65° | 16.6 | 20.9 | 20.9 | 20.9 | 20.9 | 16.6 | 16.6 | 16.6 |
| 67.5° | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 |
| 70° | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 8.3 | 8.3 | 8.3 |
| 72.5° | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 |
| 75° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 77.5° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 80° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 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° | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

(END OF REPORT)