

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: P563851

Luminaire Tested: **FLDSQ4C05D010 FEU4C059030 F4LC-DFSSQ-MW-D2W**

Issue Date: 12/13/2022

Tested By:

Approved By:



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**Test Information**

Test Method: LM-79-08  
 Report Number: P563851  
 Test Lab: INNOVATION CENTER  
 Issue Date: 12/13/2022  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: FAIL-SAFE  
 Catalog Number: FLDSQ4C05D010 FEU4C059030 F4LC-DFSSQ-MW-D2W  
 Description: 4 INCH 500 LUMEN FAIL-SAFE LED DOWNLIGHT WITH, 3000K, 90CRI LEDS AND F4LC-DFSSQ TRIM WITH MW FINISH, DIM TO WARM  
 Light Source: -  
 Ballast/Driver: -

**Summary**

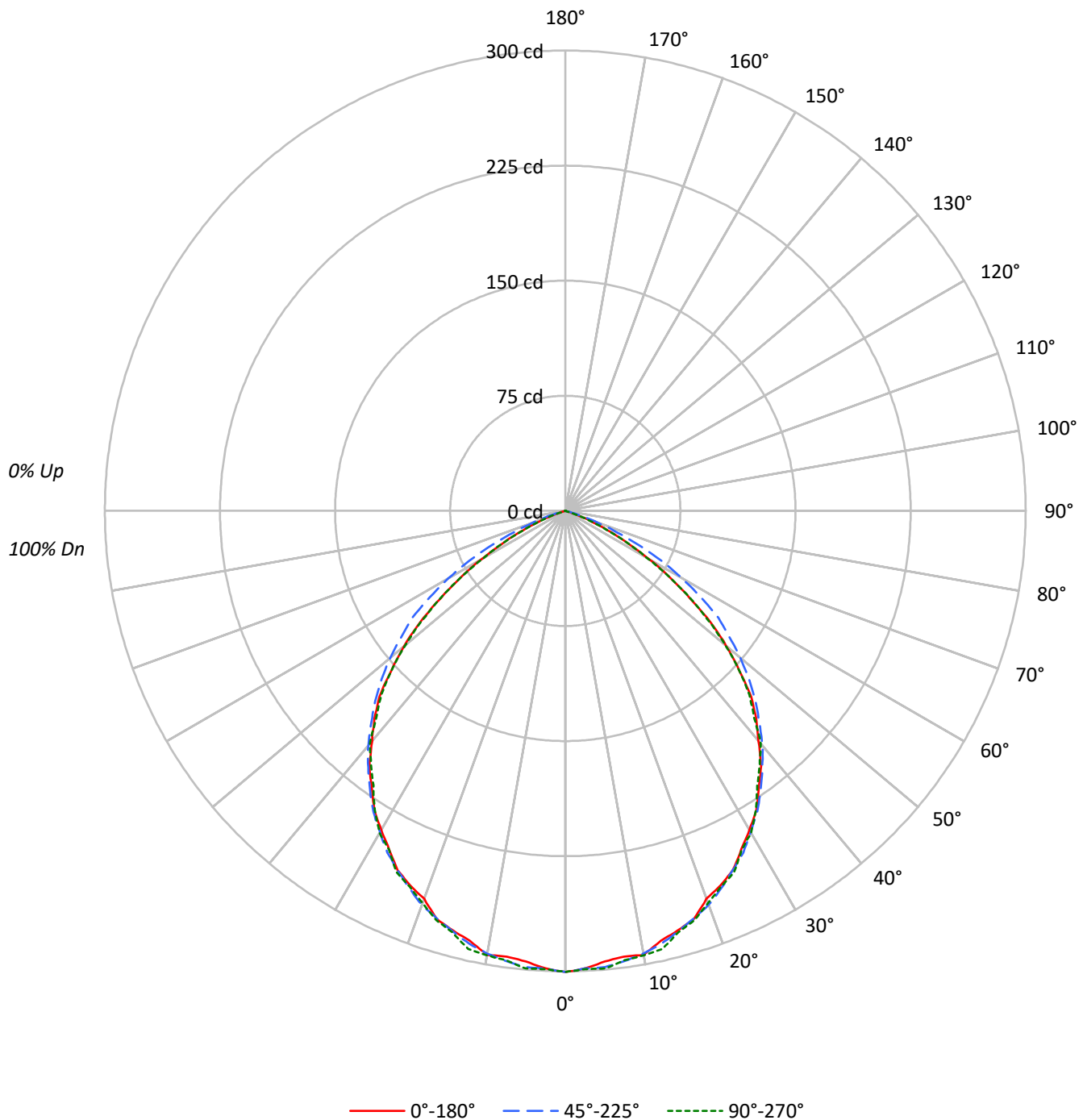
Lumens per Lamp: N/A  
 Luminaire Lumens: 642.0 lumens  
 Efficiency: N/A  
 Efficacy: 89.2 lumens/watt  
 Spacing Criteria (0/90/45): 1.19 / 1.2 / 1.29  
 Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')  
 CIE Type: Direct

Input Watts (W): 7.2  
 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: P563851

CATALOG NUMBER: FLDSQ4C05D010 FEU4C059030 F4LC-DFSSQ-MW-D2W

**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  |  | 0   |
| RCR |     |     |     |     |     |     |     |     |     |     |     |  |     |     |     |  |     |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 |  | 106 | 106 | 106 |  | 100 |
| 1   | 111 | 108 | 104 | 101 | 109 | 105 | 102 | 100 | 101 | 99  | 96  |  | 97  | 95  | 94  |  | 89  |
| 2   | 103 | 96  | 91  | 86  | 100 | 94  | 89  | 85  | 91  | 87  | 83  |  | 88  | 84  | 81  |  | 77  |
| 3   | 95  | 86  | 79  | 74  | 93  | 85  | 78  | 73  | 82  | 76  | 72  |  | 79  | 74  | 71  |  | 67  |
| 4   | 88  | 77  | 70  | 64  | 86  | 76  | 69  | 63  | 74  | 67  | 63  |  | 71  | 66  | 62  |  | 59  |
| 5   | 81  | 70  | 62  | 56  | 79  | 69  | 61  | 56  | 67  | 60  | 55  |  | 65  | 59  | 54  |  | 52  |
| 6   | 75  | 63  | 55  | 49  | 73  | 62  | 55  | 49  | 61  | 54  | 49  |  | 59  | 53  | 48  |  | 46  |
| 7   | 70  | 58  | 50  | 44  | 68  | 57  | 49  | 44  | 55  | 49  | 44  |  | 54  | 48  | 43  |  | 41  |
| 8   | 65  | 53  | 45  | 40  | 64  | 52  | 45  | 39  | 51  | 44  | 39  |  | 50  | 44  | 39  |  | 37  |
| 9   | 61  | 49  | 41  | 36  | 60  | 48  | 41  | 36  | 47  | 40  | 36  |  | 46  | 40  | 35  |  | 33  |
| 10  | 57  | 45  | 38  | 33  | 56  | 44  | 37  | 33  | 44  | 37  | 32  |  | 43  | 37  | 32  |  | 31  |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 28995 | 28995 | 28995 |
| 5°  | 28534 | 28902 | 28989 |
| 10° | 28776 | 28698 | 28815 |
| 15° | 28270 | 28320 | 28399 |
| 20° | 27611 | 28053 | 27919 |
| 25° | 27500 | 27500 | 27681 |
| 30° | 26729 | 26918 | 26974 |
| 35° | 25891 | 26150 | 25690 |
| 40° | 24675 | 25166 | 24952 |
| 45° | 23361 | 23880 | 23129 |
| 50° | 20565 | 22366 | 20445 |
| 55° | 16654 | 20473 | 16738 |
| 60° | 12196 | 16963 | 11945 |
| 65° | 7397  | 12078 | 7215  |
| 70° | 2878  | 6517  | 2765  |
| 75° | 336   | 1752  | 336   |
| 80° | 222   | 222   | 222   |
| 85° | 0     | 0     | 0     |

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 28.4   | 4.4       |
| 10°-20°   | 80.3   | 12.5      |
| 20°-30°   | 119.1  | 18.6      |
| 30°-40°   | 138.0  | 21.5      |
| 40°-50°   | 132.3  | 20.6      |
| 50°-60°   | 97.3   | 15.2      |
| 60°-70°   | 42.0   | 6.5       |
| 70°-80°   | 4.5    | 0.7       |
| 80°-90°   | 0.1    | 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°    | 227.8  | 35.5      |
| 0°-40°    | 365.8  | 57.0      |
| 0°-60°    | 595.4  | 92.7      |
| 0°-90°    | 642.0  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 642.0  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 22.5° | 45° | 67.5° | 90° | Flux |
|-----|-----|-------|-----|-------|-----|------|
| 0°  | 300 | 300   | 300 | 300   | 300 |      |
| 5°  | 295 | 298   | 298 | 299   | 299 | 28   |
| 15° | 283 | 285   | 284 | 284   | 284 | 80   |
| 25° | 258 | 258   | 258 | 259   | 260 | 118  |
| 35° | 220 | 221   | 222 | 222   | 218 | 137  |
| 45° | 171 | 172   | 175 | 172   | 170 | 130  |
| 55° | 99  | 109   | 122 | 109   | 100 | 89   |
| 65° | 32  | 40    | 53  | 40    | 32  | 33   |
| 75° | 1   | 1     | 5   | 1     | 1   | 3    |
| 85° | 0   | 0     | 0   | 0     | 0   | 0    |
| 90° | 0   | 0     | 0   | 0     | 0   |      |

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CATALOG NUMBER: FLDSQ4C05D010 FEU4C059030 F4LC-DFSSQ-MW-D2W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 10°   | 15°   | 20°   | 22.5° | 25°   | 30°   | 35°   | 40°   | 45°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 |
| 2.5°  | 298.4 | 301.8 | 302.2 | 300.1 | 299.3 | 298.0 | 301.0 | 298.8 | 299.7 | 298.8 | 298.4 |
| 5°    | 294.6 | 298.4 | 298.8 | 298.8 | 298.0 | 297.5 | 298.8 | 298.4 | 298.0 | 297.1 | 298.4 |
| 7.5°  | 292.9 | 295.0 | 297.1 | 294.6 | 295.8 | 295.4 | 298.4 | 297.1 | 296.7 | 296.7 | 295.8 |
| 10°   | 293.7 | 293.3 | 295.0 | 292.4 | 293.3 | 292.4 | 295.0 | 295.0 | 294.1 | 293.3 | 292.9 |
| 12.5° | 286.9 | 290.3 | 290.3 | 289.9 | 289.0 | 287.7 | 290.3 | 292.0 | 289.4 | 289.4 | 289.0 |
| 15°   | 283.0 | 283.9 | 284.3 | 284.3 | 283.9 | 284.7 | 286.0 | 284.3 | 284.7 | 282.6 | 283.5 |
| 17.5° | 278.8 | 277.1 | 278.3 | 277.5 | 277.9 | 278.8 | 280.5 | 280.5 | 277.9 | 277.5 | 278.3 |
| 20°   | 268.9 | 274.1 | 274.5 | 271.9 | 272.4 | 272.4 | 275.4 | 272.8 | 274.5 | 272.4 | 273.2 |
| 22.5° | 264.2 | 267.7 | 268.1 | 264.7 | 266.8 | 264.2 | 267.2 | 263.4 | 267.7 | 264.7 | 265.9 |
| 25°   | 258.3 | 257.8 | 259.1 | 257.4 | 257.8 | 257.8 | 260.0 | 258.3 | 259.6 | 257.8 | 258.3 |
| 27.5° | 248.5 | 251.9 | 251.4 | 249.7 | 250.6 | 250.2 | 254.4 | 249.7 | 252.3 | 250.2 | 251.0 |
| 30°   | 239.9 | 242.9 | 242.1 | 240.3 | 240.3 | 239.1 | 243.8 | 242.5 | 242.1 | 242.1 | 241.6 |
| 32.5° | 231.4 | 231.8 | 231.0 | 231.4 | 231.8 | 230.1 | 233.9 | 232.2 | 231.8 | 232.2 | 232.7 |
| 35°   | 219.8 | 219.8 | 220.7 | 219.4 | 221.1 | 221.1 | 224.5 | 222.4 | 222.0 | 220.7 | 222.0 |
| 37.5° | 209.6 | 208.3 | 208.7 | 208.7 | 209.6 | 210.5 | 212.2 | 211.3 | 211.3 | 210.0 | 210.9 |
| 40°   | 195.9 | 195.1 | 196.4 | 196.4 | 197.7 | 197.7 | 199.4 | 198.5 | 199.8 | 199.8 | 199.8 |
| 42.5° | 184.0 | 184.0 | 183.1 | 184.4 | 184.9 | 184.4 | 187.4 | 187.0 | 187.4 | 186.6 | 187.0 |
| 45°   | 171.2 | 171.2 | 170.3 | 169.9 | 172.0 | 171.6 | 175.0 | 173.7 | 175.4 | 174.6 | 175.0 |
| 47.5° | 153.7 | 155.8 | 154.5 | 155.8 | 158.4 | 158.8 | 160.9 | 160.1 | 161.8 | 160.5 | 162.2 |
| 50°   | 137.0 | 137.0 | 138.3 | 140.0 | 142.6 | 143.0 | 145.6 | 147.3 | 148.1 | 148.6 | 149.0 |
| 52.5° | 119.5 | 119.1 | 120.4 | 122.5 | 124.7 | 126.4 | 128.9 | 131.5 | 133.2 | 135.8 | 134.5 |
| 55°   | 99.0  | 99.9  | 101.2 | 103.7 | 107.2 | 109.3 | 111.4 | 114.8 | 117.8 | 119.1 | 121.7 |
| 57.5° | 81.5  | 80.7  | 81.5  | 84.9  | 88.8  | 90.5  | 93.5  | 96.9  | 101.2 | 103.7 | 104.6 |
| 60°   | 63.2  | 63.6  | 64.5  | 67.5  | 70.4  | 73.0  | 74.3  | 79.8  | 83.7  | 86.2  | 87.9  |
| 62.5° | 46.5  | 47.4  | 48.2  | 50.8  | 53.8  | 55.9  | 58.1  | 62.8  | 66.2  | 68.7  | 70.4  |
| 65°   | 32.4  | 32.9  | 34.2  | 35.4  | 38.4  | 40.5  | 42.3  | 46.1  | 49.5  | 51.7  | 52.9  |
| 67.5° | 20.1  | 20.5  | 21.3  | 23.1  | 25.2  | 26.9  | 28.6  | 31.2  | 34.2  | 36.3  | 36.7  |
| 70°   | 10.2  | 10.7  | 11.1  | 12.4  | 14.1  | 14.9  | 16.2  | 18.4  | 20.5  | 22.2  | 23.1  |
| 72.5° | 3.4   | 3.4   | 3.8   | 4.7   | 5.6   | 6.4   | 6.8   | 9.0   | 10.7  | 11.5  | 11.9  |
| 75°   | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   | 1.3   | 1.3   | 2.6   | 3.4   | 4.3   | 4.7   |
| 77.5° | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.9   | 0.9   |
| 80°   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   |
| 82.5° | 0.0   | 0.0   | 0.0   | 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   | 0.0   | 0.0   | 0.0   |
| 87.5° | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

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**CANDELA DISTRIBUTION (continued):**

|       | 50°   | 55°   | 60°   | 65°   | 67.5° | 70°   | 75°   | 80°   | 85°   | 90°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 | 300.5 |
| 2.5°  | 300.5 | 299.7 | 299.3 | 299.7 | 299.7 | 299.3 | 300.5 | 302.2 | 304.4 | 298.8 |
| 5°    | 300.1 | 299.3 | 300.1 | 297.5 | 298.8 | 298.0 | 299.7 | 299.3 | 301.0 | 299.3 |
| 7.5°  | 298.8 | 297.1 | 297.5 | 296.3 | 298.0 | 295.8 | 297.1 | 299.7 | 298.0 | 295.4 |
| 10°   | 294.6 | 293.7 | 296.7 | 292.4 | 291.6 | 293.3 | 296.7 | 294.1 | 293.3 | 294.1 |
| 12.5° | 290.3 | 290.3 | 291.6 | 288.2 | 288.6 | 289.4 | 291.1 | 289.4 | 290.3 | 292.4 |
| 15°   | 285.6 | 284.7 | 286.9 | 284.3 | 283.9 | 283.0 | 284.7 | 284.7 | 285.6 | 284.3 |
| 17.5° | 280.0 | 278.8 | 278.8 | 277.9 | 277.5 | 279.6 | 280.5 | 280.9 | 281.3 | 279.6 |
| 20°   | 273.2 | 272.8 | 274.1 | 272.8 | 273.2 | 273.6 | 273.6 | 272.8 | 276.6 | 271.9 |
| 22.5° | 265.9 | 267.2 | 265.5 | 264.7 | 265.5 | 266.4 | 266.4 | 266.8 | 265.9 | 265.1 |
| 25°   | 258.7 | 259.6 | 260.0 | 257.4 | 258.7 | 257.4 | 260.4 | 260.8 | 259.1 | 260.0 |
| 27.5° | 252.3 | 251.0 | 250.6 | 248.9 | 249.7 | 249.3 | 249.7 | 249.7 | 252.3 | 248.9 |
| 30°   | 242.5 | 241.2 | 241.6 | 240.3 | 240.8 | 240.3 | 240.8 | 240.8 | 242.5 | 242.1 |
| 32.5° | 233.1 | 231.8 | 232.2 | 231.0 | 231.0 | 231.4 | 230.5 | 230.5 | 231.8 | 231.0 |
| 35°   | 224.1 | 221.1 | 221.6 | 221.1 | 221.6 | 219.8 | 219.8 | 219.4 | 220.3 | 218.1 |
| 37.5° | 211.3 | 210.0 | 209.6 | 209.2 | 209.6 | 208.7 | 209.6 | 208.3 | 209.6 | 207.9 |
| 40°   | 199.8 | 198.9 | 199.4 | 196.8 | 196.8 | 197.2 | 196.4 | 195.9 | 196.4 | 198.1 |
| 42.5° | 188.3 | 186.6 | 185.7 | 184.9 | 185.3 | 184.0 | 183.6 | 182.7 | 183.6 | 181.9 |
| 45°   | 174.6 | 174.6 | 174.2 | 172.0 | 172.5 | 172.5 | 170.8 | 169.1 | 169.5 | 169.5 |
| 47.5° | 162.2 | 161.4 | 160.9 | 158.8 | 158.4 | 158.0 | 156.2 | 155.0 | 155.0 | 153.7 |
| 50°   | 148.6 | 147.7 | 146.4 | 144.3 | 143.4 | 140.9 | 139.6 | 137.9 | 136.2 | 136.2 |
| 52.5° | 135.8 | 132.8 | 131.1 | 127.6 | 126.4 | 125.1 | 121.7 | 120.4 | 119.1 | 117.8 |
| 55°   | 120.4 | 117.8 | 114.4 | 110.6 | 108.9 | 106.7 | 103.3 | 100.7 | 99.0  | 99.5  |
| 57.5° | 105.4 | 101.2 | 97.8  | 92.6  | 90.5  | 89.2  | 85.8  | 82.4  | 80.7  | 80.7  |
| 60°   | 87.1  | 83.7  | 79.4  | 74.7  | 73.0  | 70.9  | 66.6  | 64.5  | 63.2  | 61.9  |
| 62.5° | 69.6  | 67.0  | 63.2  | 57.2  | 55.9  | 53.8  | 50.8  | 48.2  | 47.0  | 47.0  |
| 65°   | 52.1  | 49.5  | 46.1  | 41.8  | 40.1  | 38.4  | 35.9  | 33.3  | 32.0  | 31.6  |
| 67.5° | 36.7  | 33.7  | 30.7  | 27.3  | 26.0  | 25.2  | 22.6  | 20.9  | 20.1  | 19.6  |
| 70°   | 22.2  | 20.5  | 18.4  | 15.8  | 14.5  | 13.7  | 11.9  | 10.7  | 10.2  | 9.8   |
| 72.5° | 11.5  | 10.2  | 8.5   | 6.8   | 6.0   | 5.1   | 4.3   | 3.4   | 3.0   | 3.0   |
| 75°   | 4.3   | 3.4   | 2.1   | 1.3   | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   | 0.9   |
| 77.5° | 0.9   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   |
| 80°   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   | 0.4   |
| 82.5° | 0.0   | 0.0   | 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   | 0.0   | 0.0   |
| 87.5° | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

(END OF REPORT)