

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: IRiS

Report Number: P1259807

Luminaire Tested: P3A09R709050DE010 E3LSWW1H

Issue Date: 1/29/2026

**Test Information**

Test Method: LM-79-2019  
Report Number: P1259807  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-2509-551-15)  
Test Lab: INNOVATION CENTER  
Issue Date: 1/29/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: IRiS  
Catalog Number: P3A09R709050DE010 E3LSWW1H  
Description: 3in Adjustable LED luminaire with, R70 optic, 5000K CCT AND, 90CRI , E3LSWW1H TRIM  
Light Source: -  
Ballast/Driver: -

**Summary**

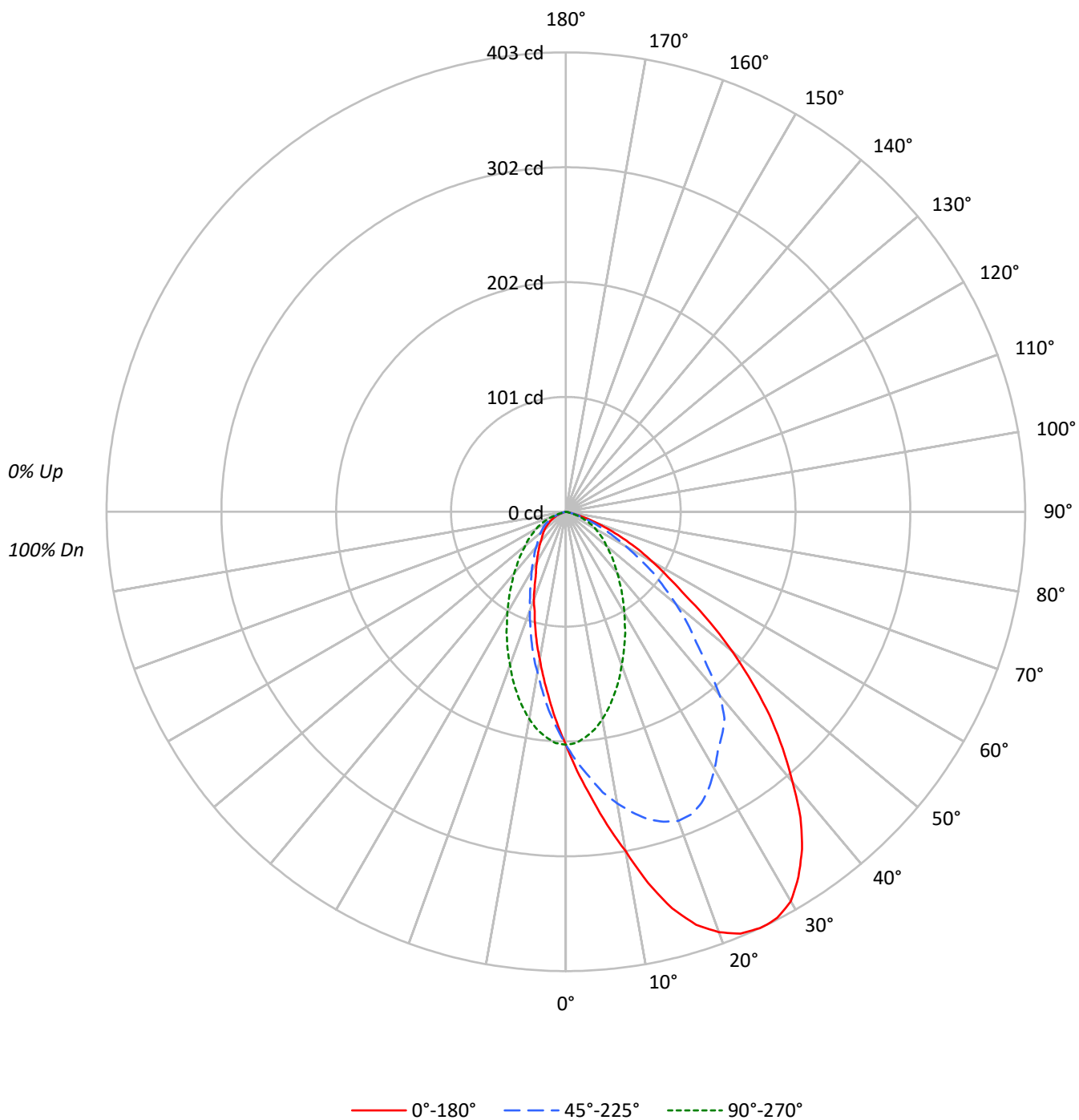
Lumens per Lamp: N/A  
Luminaire Lumens: 407.0 lumens  
Efficiency: N/A  
Efficacy: 36.7 lumens/watt  
Spacing Criteria (0/90/45): 1.47 / 0.85 / 1.23  
Luminous Opening: Circular (Dia: 0.25' x H: 0')  
CIE Type: Direct

Input Watts (W): 11.1  
Input Voltage (V): NR  
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: 24 FT

TEST NUMBER: P1259807

CATALOG NUMBER: P3A09R709050DE010 E3LSWW1H

### Luminous Intensity Polar Plot



TEST NUMBER: P1259807

CATALOG NUMBER: P3A09R709050DE010 E3LSWW1H

**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  | 50  | 30 | 10 |
| RCR |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |
| 0   | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |    |    |
| 1   | 111 | 108 | 104 | 101 | 109 | 105 | 102 | 100 | 101 | 99  | 96  | 97  | 95  | 94  | 94  | 92  | 91  | 89  |    |    |
| 2   | 103 | 96  | 91  | 86  | 101 | 95  | 89  | 85  | 91  | 87  | 83  | 88  | 85  | 81  | 85  | 82  | 80  | 78  |    |    |
| 3   | 95  | 87  | 80  | 74  | 93  | 85  | 79  | 74  | 82  | 77  | 72  | 80  | 75  | 71  | 77  | 73  | 70  | 68  |    |    |
| 4   | 88  | 78  | 70  | 65  | 86  | 77  | 70  | 64  | 74  | 68  | 63  | 72  | 67  | 63  | 70  | 66  | 62  | 60  |    |    |
| 5   | 82  | 71  | 63  | 57  | 80  | 70  | 62  | 57  | 68  | 61  | 56  | 66  | 60  | 56  | 64  | 59  | 55  | 53  |    |    |
| 6   | 76  | 64  | 56  | 51  | 74  | 63  | 56  | 51  | 62  | 55  | 50  | 60  | 54  | 50  | 59  | 53  | 49  | 47  |    |    |
| 7   | 71  | 59  | 51  | 45  | 69  | 58  | 51  | 45  | 57  | 50  | 45  | 55  | 49  | 45  | 54  | 49  | 44  | 43  |    |    |
| 8   | 66  | 54  | 46  | 41  | 65  | 53  | 46  | 41  | 52  | 46  | 41  | 51  | 45  | 41  | 50  | 44  | 40  | 39  |    |    |
| 9   | 62  | 50  | 42  | 37  | 61  | 49  | 42  | 37  | 48  | 42  | 37  | 47  | 41  | 37  | 46  | 41  | 37  | 35  |    |    |
| 10  | 59  | 46  | 39  | 34  | 57  | 46  | 39  | 34  | 45  | 38  | 34  | 44  | 38  | 34  | 43  | 38  | 34  | 32  |    |    |

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

|     | 0°    | 45°   | 90°   | 135°  | 180°  |
|-----|-------|-------|-------|-------|-------|
| 0°  | 44799 | 44799 | 44799 | 44799 | 44799 |
| 5°  | 55140 | 51332 | 43693 | 38367 | 36342 |
| 10° | 67333 | 57826 | 41126 | 31863 | 29303 |
| 15° | 81771 | 63428 | 37480 | 26470 | 23587 |
| 20° | 91591 | 67346 | 33393 | 21539 | 19135 |
| 25° | 97481 | 68157 | 29615 | 17880 | 15073 |
| 30° | 99965 | 66061 | 26004 | 15192 | 12863 |
| 35° | 96717 | 63978 | 22861 | 12983 | 11136 |
| 40° | 88566 | 60141 | 20152 | 11565 | 9904  |
| 45° | 78396 | 50114 | 17893 | 10730 | 8962  |
| 50° | 64987 | 42915 | 15761 | 9859  | 8256  |
| 55° | 48973 | 35745 | 14566 | 9252  | 7493  |
| 60° | 38462 | 26840 | 13157 | 8596  | 6578  |
| 65° | 28745 | 19769 | 11363 | 7212  | 5396  |
| 70° | 18529 | 12566 | 8142  | 5193  | 2949  |
| 75° | 7795  | 6863  | 3897  | 1949  | 1017  |
| 80° | 1515  | 1515  | 0     | 0     | 0     |
| 85° | 0     | 0     | 0     | 0     | 0     |

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 78396 cd/sqm

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**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 19.4   | 4.8       |
| 10°-20°   | 55.8   | 13.7      |
| 20°-30°   | 81.6   | 20.0      |
| 30°-40°   | 88.9   | 21.8      |
| 40°-50°   | 76.9   | 18.9      |
| 50°-60°   | 51.5   | 12.7      |
| 60°-70°   | 26.6   | 6.5       |
| 70°-80°   | 6.3    | 1.5       |
| 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°    | 156.7  | 38.5      |
| 0°-40°    | 245.6  | 60.3      |
| 0°-60°    | 374.0  | 91.9      |
| 0°-90°    | 407.0  | 100.0     |
| 90°-120°  | 0.0    | 0.0       |
| 90°-150°  | 0.0    | 0.0       |
| 90°-180°  | 0.0    | 0.0       |
| 0°-180°   | 407.0  | 100.0     |

**CANDELA DISTRIBUTION:**

|     | 0°  | 45° | 90° | 135° | 180° | Flux |
|-----|-----|-----|-----|------|------|------|
| 0°  | 204 | 204 | 204 | 204  | 204  |      |
| 5°  | 250 | 233 | 198 | 174  | 165  | 26   |
| 15° | 360 | 279 | 165 | 117  | 104  | 102  |
| 25° | 403 | 282 | 122 | 74   | 62   | 185  |
| 35° | 361 | 239 | 85  | 48   | 42   | 224  |
| 45° | 253 | 162 | 58  | 35   | 29   | 194  |
| 55° | 128 | 94  | 38  | 24   | 20   | 119  |
| 65° | 55  | 38  | 22  | 14   | 10   | 56   |
| 75° | 9   | 8   | 5   | 2    | 1    | 12   |
| 85° | 0   | 0   | 0   | 0    | 0    | 0    |
| 90° | 0   | 0   | 0   | 0    | 0    |      |

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°   | 75°   | 85°   | 90°   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 |
| 2.5°  | 227.4 | 226.3 | 226.3 | 223.9 | 221.6 | 219.3 | 215.9 | 212.4 | 208.9 | 205.5 | 203.2 |
| 5°    | 250.5 | 251.7 | 250.5 | 245.9 | 240.1 | 233.2 | 226.3 | 218.2 | 210.1 | 203.2 | 198.5 |
| 7.5°  | 277.0 | 277.0 | 273.6 | 267.8 | 259.7 | 248.2 | 236.6 | 222.8 | 210.1 | 198.5 | 192.8 |
| 10°   | 302.4 | 302.4 | 296.7 | 287.4 | 274.7 | 259.7 | 243.6 | 225.1 | 207.8 | 191.6 | 184.7 |
| 12.5° | 333.6 | 332.5 | 325.5 | 310.5 | 292.1 | 270.1 | 248.2 | 225.1 | 204.3 | 184.7 | 175.5 |
| 15°   | 360.2 | 359.0 | 349.8 | 331.3 | 307.1 | 279.4 | 249.3 | 222.8 | 197.4 | 175.5 | 165.1 |
| 17.5° | 379.8 | 377.5 | 367.1 | 347.5 | 319.8 | 285.1 | 250.5 | 218.2 | 189.3 | 165.1 | 154.7 |
| 20°   | 392.5 | 391.3 | 379.8 | 356.7 | 326.7 | 288.6 | 249.3 | 212.4 | 181.2 | 154.7 | 143.1 |
| 22.5° | 400.6 | 398.3 | 386.7 | 361.3 | 326.7 | 287.4 | 244.7 | 204.3 | 170.8 | 144.3 | 132.8 |
| 25°   | 402.9 | 401.7 | 387.9 | 360.2 | 323.2 | 281.7 | 237.8 | 196.2 | 160.5 | 133.9 | 122.4 |
| 26°   | 402.9 | 401.7 | 387.9 | 359.0 | 320.9 | 278.2 | 234.3 | 192.8 | 157.0 | 129.3 | 118.9 |
| 27.5° | 401.7 | 400.6 | 385.6 | 355.5 | 316.3 | 272.4 | 227.4 | 185.9 | 150.1 | 123.5 | 112.0 |
| 30°   | 394.8 | 392.5 | 377.5 | 347.5 | 305.9 | 260.9 | 215.9 | 175.5 | 139.7 | 113.1 | 102.7 |
| 32.5° | 379.8 | 377.5 | 361.3 | 333.6 | 294.4 | 248.2 | 203.2 | 163.9 | 129.3 | 102.7 | 93.5  |
| 35°   | 361.3 | 359.0 | 342.8 | 316.3 | 278.2 | 239.0 | 189.3 | 151.2 | 117.7 | 94.7  | 85.4  |
| 37.5° | 338.2 | 334.8 | 320.9 | 293.2 | 258.6 | 228.6 | 177.8 | 138.5 | 107.4 | 85.4  | 77.3  |
| 40°   | 309.4 | 308.2 | 295.5 | 270.1 | 235.5 | 210.1 | 170.8 | 138.5 | 98.1  | 77.3  | 70.4  |
| 42.5° | 281.7 | 279.4 | 267.8 | 245.9 | 214.7 | 183.5 | 150.1 | 132.8 | 91.2  | 69.3  | 63.5  |
| 45°   | 252.8 | 250.5 | 240.1 | 221.6 | 192.8 | 161.6 | 161.6 | 114.3 | 78.5  | 63.5  | 57.7  |
| 47.5° | 221.6 | 219.3 | 211.2 | 197.4 | 172.0 | 144.3 | 117.7 | 93.5  | 71.6  | 56.6  | 51.9  |
| 50°   | 190.5 | 191.6 | 184.7 | 170.8 | 151.2 | 125.8 | 101.6 | 78.5  | 61.2  | 50.8  | 46.2  |
| 52.5° | 159.3 | 158.1 | 153.5 | 144.3 | 130.4 | 108.5 | 86.6  | 67.0  | 53.1  | 45.0  | 42.7  |
| 55°   | 128.1 | 129.3 | 127.0 | 121.2 | 109.7 | 93.5  | 72.7  | 57.7  | 47.3  | 40.4  | 38.1  |
| 57.5° | 106.2 | 107.4 | 102.7 | 99.3  | 90.0  | 76.2  | 60.0  | 48.5  | 40.4  | 35.8  | 33.5  |
| 60°   | 87.7  | 88.9  | 85.4  | 80.8  | 73.9  | 61.2  | 48.5  | 40.4  | 35.8  | 32.3  | 30.0  |
| 62.5° | 71.6  | 70.4  | 68.1  | 63.5  | 57.7  | 48.5  | 39.2  | 33.5  | 30.0  | 27.7  | 26.6  |
| 65°   | 55.4  | 55.4  | 53.1  | 49.6  | 45.0  | 38.1  | 31.2  | 27.7  | 25.4  | 23.1  | 21.9  |
| 67.5° | 41.6  | 41.6  | 39.2  | 36.9  | 32.3  | 27.7  | 24.2  | 21.9  | 20.8  | 18.5  | 17.3  |
| 70°   | 28.9  | 28.9  | 27.7  | 26.6  | 23.1  | 19.6  | 18.5  | 16.2  | 15.0  | 13.9  | 12.7  |
| 72.5° | 18.5  | 18.5  | 18.5  | 16.2  | 15.0  | 12.7  | 12.7  | 11.5  | 10.4  | 9.2   | 9.2   |
| 75°   | 9.2   | 10.4  | 9.2   | 9.2   | 8.1   | 8.1   | 6.9   | 6.9   | 5.8   | 5.8   | 4.6   |
| 77.5° | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 2.3   | 2.3   | 2.3   | 2.3   | 2.3   |
| 80°   | 1.2   | 1.2   | 1.2   | 1.2   | 1.2   | 1.2   | 1.2   | 1.2   | 0.0   | 0.0   | 0.0   |
| 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   |

TEST NUMBER: P1259807

CATALOG NUMBER: P3A09R709050DE010 E3LSWW1H

**CANDELA DISTRIBUTION (continued):**

|       | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 | 204.3 |
| 2.5°  | 200.9 | 197.4 | 195.1 | 191.6 | 189.3 | 187.0 | 185.9 | 184.7 | 184.7 | 184.7 |
| 5°    | 195.1 | 189.3 | 183.5 | 177.8 | 174.3 | 170.8 | 167.4 | 166.2 | 165.1 | 165.1 |
| 7.5°  | 188.2 | 178.9 | 170.8 | 163.9 | 158.1 | 154.7 | 151.2 | 148.9 | 147.8 | 147.8 |
| 10°   | 178.9 | 167.4 | 158.1 | 148.9 | 143.1 | 138.5 | 136.2 | 132.8 | 132.8 | 131.6 |
| 12.5° | 168.5 | 154.7 | 144.3 | 136.2 | 130.4 | 124.7 | 121.2 | 118.9 | 117.7 | 117.7 |
| 15°   | 157.0 | 143.1 | 131.6 | 122.4 | 116.6 | 110.8 | 107.4 | 105.0 | 103.9 | 103.9 |
| 17.5° | 145.4 | 130.4 | 118.9 | 109.7 | 103.9 | 98.1  | 94.7  | 92.3  | 92.3  | 91.2  |
| 20°   | 133.9 | 118.9 | 107.4 | 98.1  | 92.3  | 87.7  | 84.3  | 82.0  | 80.8  | 82.0  |
| 22.5° | 123.5 | 108.5 | 97.0  | 88.9  | 82.0  | 77.3  | 73.9  | 72.7  | 71.6  | 71.6  |
| 25°   | 112.0 | 98.1  | 87.7  | 79.7  | 73.9  | 69.3  | 65.8  | 64.6  | 63.5  | 62.3  |
| 26°   | 108.5 | 94.7  | 84.3  | 76.2  | 70.4  | 65.8  | 63.5  | 61.2  | 60.0  | 60.0  |
| 27.5° | 103.9 | 88.9  | 79.7  | 71.6  | 65.8  | 62.3  | 58.9  | 57.7  | 56.6  | 56.6  |
| 30°   | 93.5  | 80.8  | 71.6  | 64.6  | 60.0  | 55.4  | 53.1  | 51.9  | 50.8  | 50.8  |
| 32.5° | 85.4  | 72.7  | 64.6  | 58.9  | 54.3  | 50.8  | 48.5  | 46.2  | 46.2  | 46.2  |
| 35°   | 77.3  | 65.8  | 58.9  | 53.1  | 48.5  | 45.0  | 43.9  | 42.7  | 41.6  | 41.6  |
| 37.5° | 70.4  | 60.0  | 53.1  | 48.5  | 45.0  | 41.6  | 39.2  | 38.1  | 38.1  | 38.1  |
| 40°   | 63.5  | 55.4  | 48.5  | 43.9  | 40.4  | 38.1  | 35.8  | 34.6  | 34.6  | 34.6  |
| 42.5° | 57.7  | 49.6  | 45.0  | 40.4  | 36.9  | 34.6  | 33.5  | 32.3  | 31.2  | 31.2  |
| 45°   | 53.1  | 46.2  | 40.4  | 36.9  | 34.6  | 32.3  | 30.0  | 28.9  | 28.9  | 28.9  |
| 47.5° | 47.3  | 42.7  | 36.9  | 33.5  | 31.2  | 28.9  | 27.7  | 26.6  | 26.6  | 26.6  |
| 50°   | 43.9  | 39.2  | 34.6  | 31.2  | 28.9  | 26.6  | 25.4  | 24.2  | 24.2  | 24.2  |
| 52.5° | 39.2  | 35.8  | 32.3  | 28.9  | 26.6  | 24.2  | 23.1  | 21.9  | 21.9  | 21.9  |
| 55°   | 35.8  | 32.3  | 28.9  | 26.6  | 24.2  | 21.9  | 20.8  | 19.6  | 19.6  | 19.6  |
| 57.5° | 32.3  | 28.9  | 26.6  | 24.2  | 21.9  | 20.8  | 18.5  | 18.5  | 17.3  | 17.3  |
| 60°   | 28.9  | 25.4  | 23.1  | 21.9  | 19.6  | 18.5  | 16.2  | 15.0  | 15.0  | 15.0  |
| 62.5° | 24.2  | 23.1  | 20.8  | 18.5  | 16.2  | 15.0  | 13.9  | 12.7  | 12.7  | 12.7  |
| 65°   | 20.8  | 19.6  | 17.3  | 15.0  | 13.9  | 12.7  | 11.5  | 10.4  | 10.4  | 10.4  |
| 67.5° | 17.3  | 15.0  | 13.9  | 12.7  | 11.5  | 10.4  | 9.2   | 8.1   | 6.9   | 8.1   |
| 70°   | 12.7  | 11.5  | 10.4  | 9.2   | 8.1   | 6.9   | 5.8   | 5.8   | 4.6   | 4.6   |
| 72.5° | 8.1   | 6.9   | 6.9   | 5.8   | 4.6   | 4.6   | 3.5   | 3.5   | 2.3   | 2.3   |
| 75°   | 4.6   | 4.6   | 3.5   | 3.5   | 2.3   | 2.3   | 1.2   | 1.2   | 1.2   | 1.2   |
| 77.5° | 2.3   | 1.2   | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 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   |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

IRiS

Report Number: SP1-2504-409-15

Test Date: 05/14/2025

Luminaire Tested: LD3A10R129050D010 E3D1H

Data in this report applies to families of products including LD3A

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2504-409-15  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 05/18/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: IRiS  
 Catalog Number: **LD3A10R129050D010 E3D1H**  
 Description: 3in Adjustable LED luminaire with, R12 optic, 5000K CCT AND, 90CRI LEDS, E3D1H TRIM

### Spectral Parameters

CCT (K): 5046  
 CIE  $u'$ : 0.2088  
 CIE  $v'$ : 0.4872  
 Duv: 0.0031  
 CIE x: 0.3444  
 CIE y: 0.3571  
 CIE z: 0.2985  
 Peak Wavelength (nm): 451  
 Dominant Wavelength (nm): 569  
 Purity: 10.48811  
 R<sub>f</sub>: 91.5  
 R<sub>g</sub>: 100.4

CRI (Ra): 92.6  
 R1: 93.5  
 R2: 94.3  
 R3: 95.0  
 R4: 94.2  
 R5: 93.6  
 R6: 92.5  
 R7: 93.4  
 R8: 84.3  
 R9: 54.8  
 R10: 86.7  
 R11: 94.1  
 R12: 76.8  
 R13: 93.9  
 R14: 97.2  
 R15: 89.2



### Test Conditions

Stabilization Time: 48M  
 Operation Time: 1H 48M  
 Sphere Temperature (°C): 25.3

REPORT NUMBER: SP1-2504-409-15

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 12/16/2024       | 6/16/2025            |
| Power Meter                    | INXT2011004           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0063                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0208                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN0085                | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

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**CIE 1931 Chromaticity Diagram**



**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 379                      | NR            | 620    | 592                      | NR            | 750    | 25                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 445                      | NR            | 625    | 568                      | NR            | 755    | 21                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 509                      | NR            | 630    | 540                      | NR            | 760    | 18                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 557                      | NR            | 635    | 509                      | NR            | 765    | 16                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 589                      | NR            | 640    | 476                      | NR            | 770    | 13                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 608                      | NR            | 645    | 439                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 616                      | NR            | 650    | 400                      | NR            | 780    | 10                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 614                      | NR            | 655    | 362                      | NR            | 785    | 8                        | NR            | 915    | 0                        | NR            |
| 400    | 7                        | NR            | 530    | 611                      | NR            | 660    | 325                      | NR            | 790    | 7                        | NR            | 920    | 0                        | NR            |
| 405    | 9                        | NR            | 535    | 604                      | NR            | 665    | 290                      | NR            | 795    | 6                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 598                      | NR            | 670    | 257                      | NR            | 800    | 5                        | NR            | 930    | 0                        | NR            |
| 415    | 27                       | NR            | 545    | 591                      | NR            | 675    | 227                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 51                       | NR            | 550    | 580                      | NR            | 680    | 199                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 97                       | NR            | 555    | 575                      | NR            | 685    | 174                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 177                      | NR            | 560    | 570                      | NR            | 690    | 152                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 312                      | NR            | 565    | 569                      | NR            | 695    | 131                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 507                      | NR            | 570    | 570                      | NR            | 700    | 113                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 772                      | NR            | 575    | 573                      | NR            | 705    | 98                       | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 998                      | NR            | 580    | 581                      | NR            | 710    | 84                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 871                      | NR            | 585    | 590                      | NR            | 715    | 73                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 586                      | NR            | 590    | 602                      | NR            | 720    | 63                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 443                      | NR            | 595    | 612                      | NR            | 725    | 54                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 350                      | NR            | 600    | 618                      | NR            | 730    | 46                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 288                      | NR            | 605    | 620                      | NR            | 735    | 39                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 286                      | NR            | 610    | 616                      | NR            | 740    | 33                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 325                      | NR            | 615    | 608                      | NR            | 745    | 28                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 2.07

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 379                         | NR               | 620       | 592                         | NR               | 750       | 25                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 445                         | NR               | 625       | 568                         | NR               | 755       | 21                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 509                         | NR               | 630       | 540                         | NR               | 760       | 18                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 557                         | NR               | 635       | 509                         | NR               | 765       | 16                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 589                         | NR               | 640       | 476                         | NR               | 770       | 13                          | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 608                         | NR               | 645       | 439                         | NR               | 775       | 12                          | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 616                         | NR               | 650       | 400                         | NR               | 780       | 10                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 614                         | NR               | 655       | 362                         | NR               | 785       | 8                           | NR               | 915       | 0                           | NR               |
| 400       | 7                           | NR               | 530       | 611                         | NR               | 660       | 325                         | NR               | 790       | 7                           | NR               | 920       | 0                           | NR               |
| 405       | 9                           | NR               | 535       | 604                         | NR               | 665       | 290                         | NR               | 795       | 6                           | NR               | 925       | 0                           | NR               |
| 410       | 16                          | NR               | 540       | 598                         | NR               | 670       | 257                         | NR               | 800       | 5                           | NR               | 930       | 0                           | NR               |
| 415       | 27                          | NR               | 545       | 591                         | NR               | 675       | 227                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 51                          | NR               | 550       | 580                         | NR               | 680       | 199                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 97                          | NR               | 555       | 575                         | NR               | 685       | 174                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 177                         | NR               | 560       | 570                         | NR               | 690       | 152                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 312                         | NR               | 565       | 569                         | NR               | 695       | 131                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 507                         | NR               | 570       | 570                         | NR               | 700       | 113                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 772                         | NR               | 575       | 573                         | NR               | 705       | 98                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 998                         | NR               | 580       | 581                         | NR               | 710       | 84                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 871                         | NR               | 585       | 590                         | NR               | 715       | 73                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 586                         | NR               | 590       | 602                         | NR               | 720       | 63                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 443                         | NR               | 595       | 612                         | NR               | 725       | 54                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 350                         | NR               | 600       | 618                         | NR               | 730       | 46                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 288                         | NR               | 605       | 620                         | NR               | 735       | 39                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 286                         | NR               | 610       | 616                         | NR               | 740       | 33                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 325                         | NR               | 615       | 608                         | NR               | 745       | 28                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 4.43

| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 379                                    | NR                             | 620               | 592                                    | NR                             | 750               | 25                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 445                                    | NR                             | 625               | 568                                    | NR                             | 755               | 21                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 509                                    | NR                             | 630               | 540                                    | NR                             | 760               | 18                                     | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 557                                    | NR                             | 635               | 509                                    | NR                             | 765               | 16                                     | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 589                                    | NR                             | 640               | 476                                    | NR                             | 770               | 13                                     | NR                             | 900               | 0                                      | NR                             |
| 385               | 1                                      | NR                             | 515               | 608                                    | NR                             | 645               | 439                                    | NR                             | 775               | 12                                     | NR                             | 905               | 0                                      | NR                             |
| 390               | 2                                      | NR                             | 520               | 616                                    | NR                             | 650               | 400                                    | NR                             | 780               | 10                                     | NR                             | 910               | 0                                      | NR                             |
| 395               | 4                                      | NR                             | 525               | 614                                    | NR                             | 655               | 362                                    | NR                             | 785               | 8                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 7                                      | NR                             | 530               | 611                                    | NR                             | 660               | 325                                    | NR                             | 790               | 7                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 9                                      | NR                             | 535               | 604                                    | NR                             | 665               | 290                                    | NR                             | 795               | 6                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 16                                     | NR                             | 540               | 598                                    | NR                             | 670               | 257                                    | NR                             | 800               | 5                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 27                                     | NR                             | 545               | 591                                    | NR                             | 675               | 227                                    | NR                             | 805               | 5                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 51                                     | NR                             | 550               | 580                                    | NR                             | 680               | 199                                    | NR                             | 810               | 4                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 97                                     | NR                             | 555               | 575                                    | NR                             | 685               | 174                                    | NR                             | 815               | 4                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 177                                    | NR                             | 560               | 570                                    | NR                             | 690               | 152                                    | NR                             | 820               | 3                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 312                                    | NR                             | 565               | 569                                    | NR                             | 695               | 131                                    | NR                             | 825               | 3                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 507                                    | NR                             | 570               | 570                                    | NR                             | 700               | 113                                    | NR                             | 830               | 2                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 772                                    | NR                             | 575               | 573                                    | NR                             | 705               | 98                                     | NR                             | 835               | 2                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 998                                    | NR                             | 580               | 581                                    | NR                             | 710               | 84                                     | NR                             | 840               | 2                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 871                                    | NR                             | 585               | 590                                    | NR                             | 715               | 73                                     | NR                             | 845               | 2                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 586                                    | NR                             | 590               | 602                                    | NR                             | 720               | 63                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 443                                    | NR                             | 595               | 612                                    | NR                             | 725               | 54                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 350                                    | NR                             | 600               | 618                                    | NR                             | 730               | 46                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 288                                    | NR                             | 605               | 620                                    | NR                             | 735               | 39                                     | NR                             | 865               | 1                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 286                                    | NR                             | 610               | 616                                    | NR                             | 740               | 33                                     | NR                             | 870               | 1                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 325                                    | NR                             | 615               | 608                                    | NR                             | 745               | 28                                     | NR                             | 875               | 1                                      | NR                             |                   |                                        |                                |

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TM-30-18

### Summary

$R_f = 91.5$   
 $R_g = 100.4$   
 $\text{CIE } R_a = 92.6$   
 $R_9 = 54.8$



### Color Vector Graphics



**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 91 | CES51 = 99 | CES76 = 84 |
| CES02 = 60 | CES27 = 94 | CES52 = 96 | CES77 = 88 |
| CES03 = 31 | CES28 = 95 | CES53 = 95 | CES78 = 80 |
| CES04 = 68 | CES29 = 92 | CES54 = 96 | CES79 = 96 |
| CES05 = 47 | CES30 = 99 | CES55 = 95 | CES80 = 92 |
| CES06 = 50 | CES31 = 93 | CES56 = 95 | CES81 = 89 |
| CES07 = 40 | CES32 = 88 | CES57 = 95 | CES82 = 96 |
| CES08 = 40 | CES33 = 95 | CES58 = 95 | CES83 = 97 |
| CES09 = 29 | CES34 = 92 | CES59 = 98 | CES84 = 94 |
| CES10 = 73 | CES35 = 95 | CES60 = 94 | CES85 = 85 |
| CES11 = 56 | CES36 = 85 | CES61 = 94 | CES86 = 87 |
| CES12 = 62 | CES37 = 95 | CES62 = 91 | CES87 = 91 |
| CES13 = 42 | CES38 = 94 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 97 | CES64 = 93 | CES89 = 87 |
| CES15 = 71 | CES40 = 94 | CES65 = 88 | CES90 = 97 |
| CES16 = 46 | CES41 = 99 | CES66 = 90 | CES91 = 76 |
| CES17 = 48 | CES42 = 91 | CES67 = 89 | CES92 = 79 |
| CES18 = 56 | CES43 = 90 | CES68 = 90 | CES93 = 88 |
| CES19 = 70 | CES44 = 99 | CES69 = 91 | CES94 = 79 |
| CES20 = 65 | CES45 = 94 | CES70 = 86 | CES95 = 83 |
| CES21 = 84 | CES46 = 95 | CES71 = 81 | CES96 = 91 |
| CES22 = 77 | CES47 = 95 | CES72 = 94 | CES97 = 95 |
| CES23 = 91 | CES48 = 95 | CES73 = 80 | CES98 = 94 |
| CES24 = 89 | CES49 = 94 | CES74 = 94 | CES99 = 90 |
| CES25 = 70 | CES50 = 98 | CES75 = 81 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)