

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P437262

Luminaire Tested: **ISS-SA1B-830-U-T4FT-HSS**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437262
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-11)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: ISS-SA1B-830-U-T4FT-HSS
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 80 CRI, 3000K, 450mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV FORWARD
THROW OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1960 lumens
Efficiency: N/A
Efficacy: 77.2 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B0 - U0 - G1

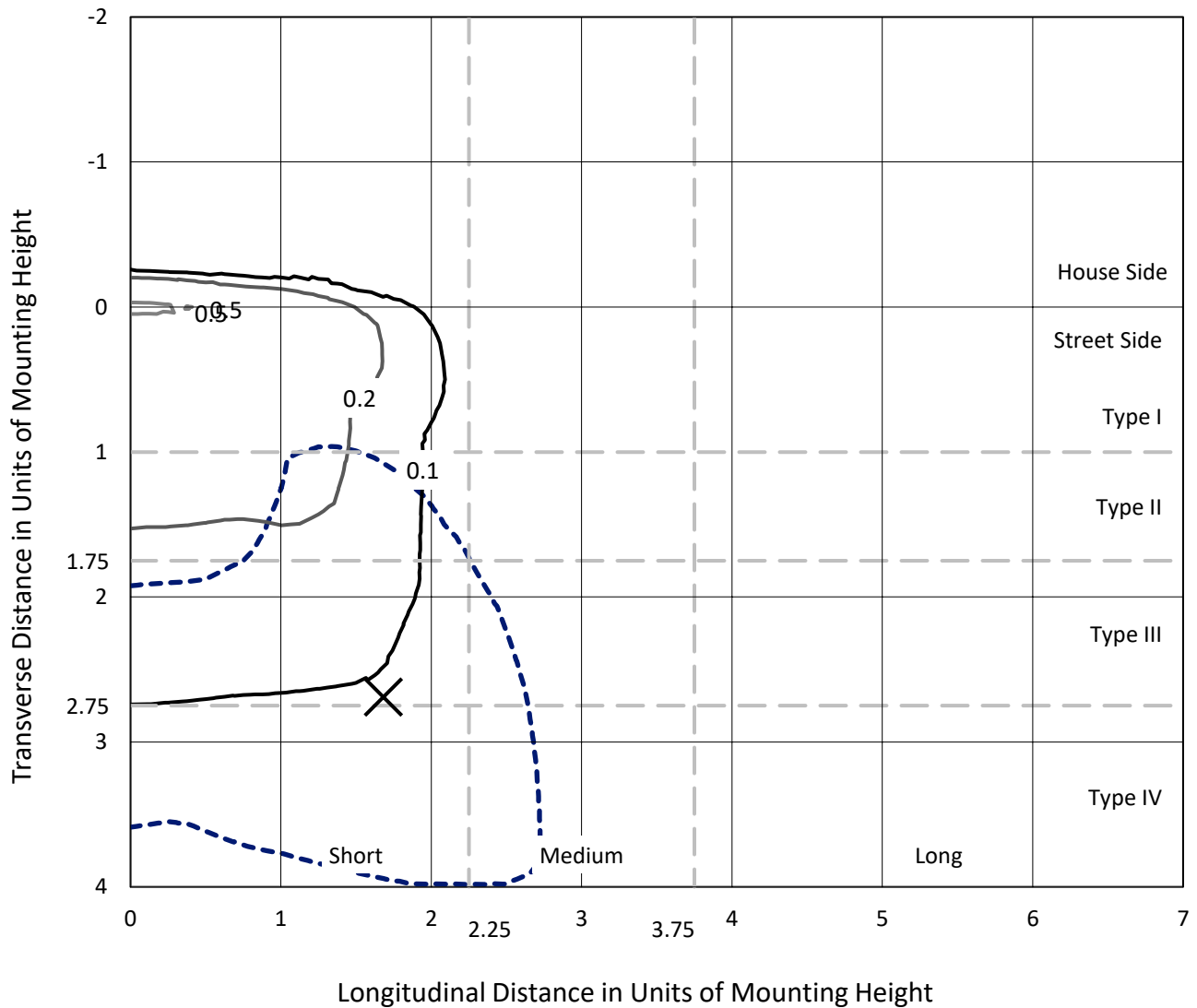
Input Watts (W): 25.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

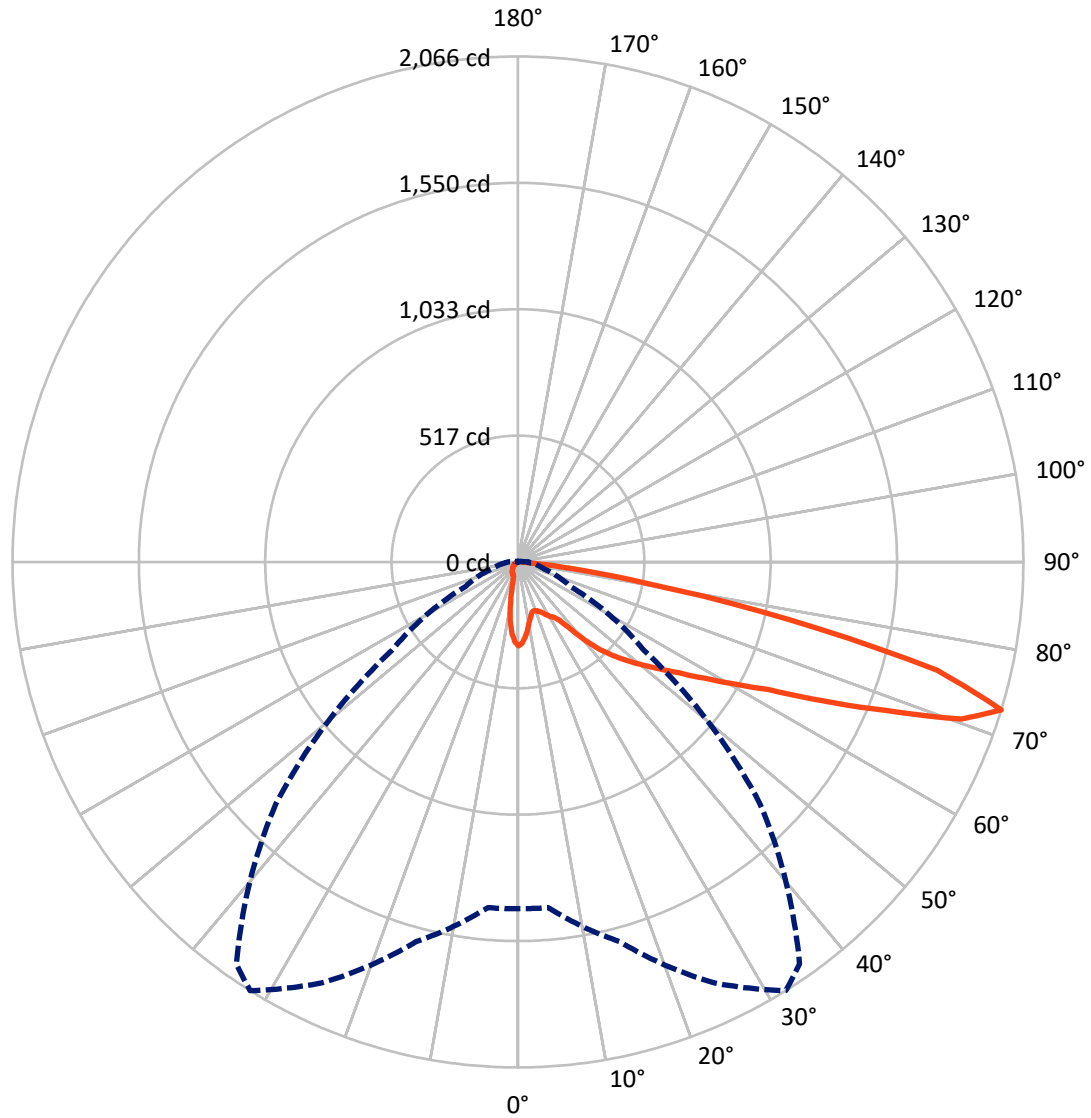
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.5 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 32-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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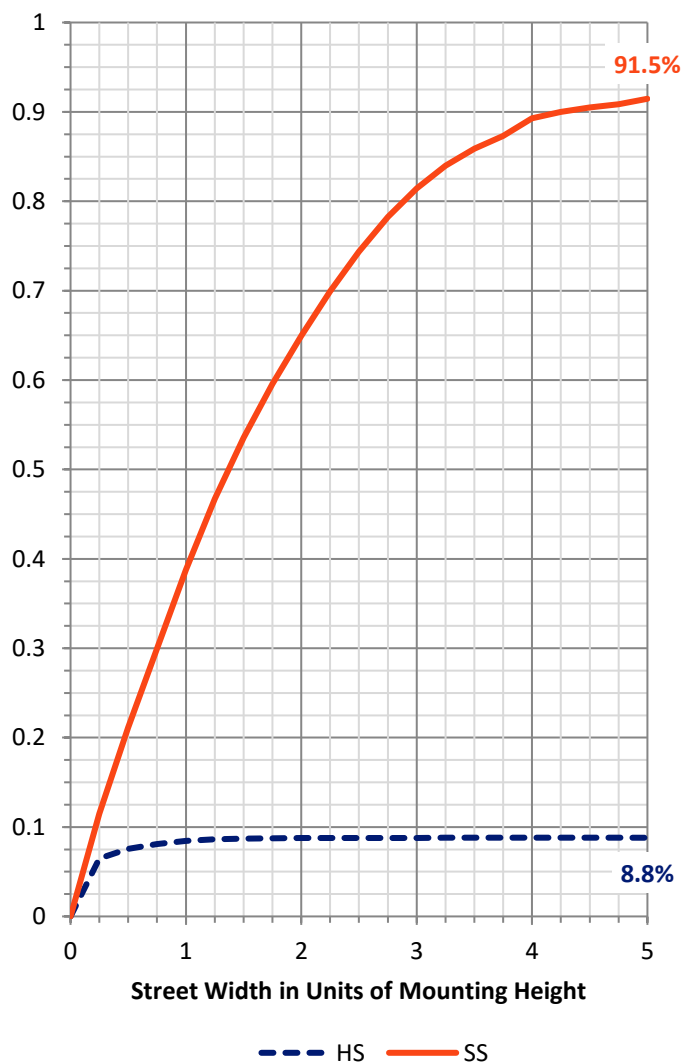
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 173.5 | 0.0 | 173.5 |
| | % Fixture | 8.9 | 0.0 | 8.9 |
| Street Side | Lumens | 1786.5 | 0.0 | 1786.5 |
| | % Fixture | 91.1 | 0.0 | 91.1 |
| Total | Lumens | 1960.0 | 0.0 | 1960.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 28.5 | 1.5 |
| 10°-20° | 61.9 | 3.2 |
| 20°-30° | 93.7 | 4.8 |
| 30°-40° | 151.1 | 7.7 |
| 40°-50° | 267.6 | 13.7 |
| 50°-60° | 409.8 | 20.9 |
| 60°-70° | 548.3 | 28.0 |
| 70°-80° | 378.5 | 19.3 |
| 80°-90° | 20.5 | 1.0 |
| 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°-90° | 1960.0 | 100.0 |
| 0°-180° | 1960.0 | 100.0 |

Coefficient of Utilization



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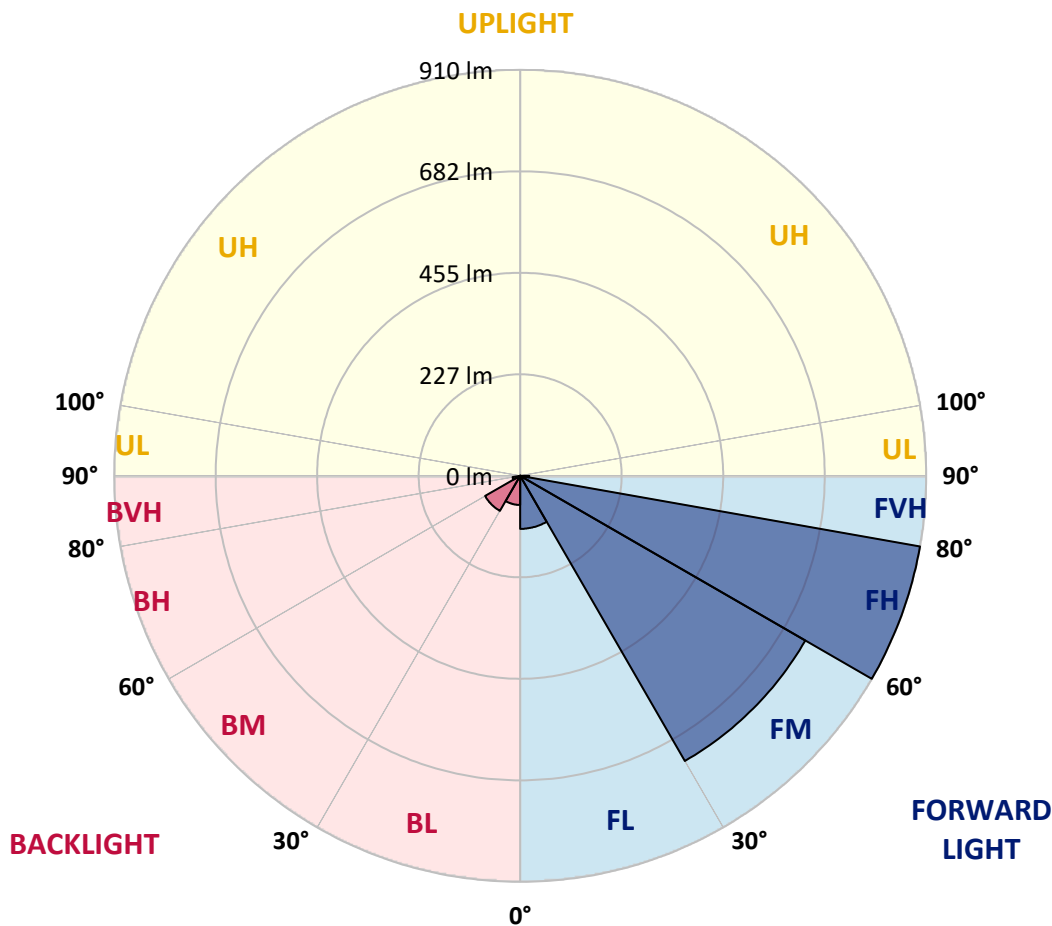
CATALOG NUMBER: ISS-SA1B-830-U-T4FT-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 118.8 | 6.1 | | | |
| FM (30°-60°) | 737.8 | 37.6 | | | |
| FH (60°-80°) | 909.6 | 46.4 | | | G1/1800 |
| FVH (80°-90°) | 20.2 | 1.0 | | | G1/100 |
| BL (0°-30°) | 65.3 | 3.3 | B0/110 | | |
| BM (30°-60°) | 90.7 | 4.6 | B0/220 | | |
| BH (60°-80°) | 17.2 | 0.9 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.3 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G1

Type IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 32° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|-------|
| 0° | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 |
| 2.5° | 330.5 | 330.5 | 331.5 | 332.5 | 332.5 | 335.5 | 339.4 | 340.4 | 343.4 | 345.4 | 346.4 |
| 5° | 295.8 | 299.7 | 299.7 | 304.7 | 308.7 | 312.6 | 322.6 | 328.5 | 338.4 | 345.4 | 347.4 |
| 7.5° | 264.0 | 265.0 | 268.0 | 273.9 | 281.9 | 284.8 | 297.7 | 314.6 | 333.5 | 345.4 | 350.3 |
| 10° | 232.2 | 233.2 | 235.2 | 244.1 | 252.1 | 259.0 | 276.9 | 297.7 | 324.5 | 345.4 | 354.3 |
| 12.5° | 209.4 | 209.4 | 211.4 | 221.3 | 230.3 | 237.2 | 257.0 | 283.8 | 315.6 | 346.4 | 360.3 |
| 15° | 201.5 | 201.5 | 200.5 | 205.4 | 213.4 | 219.3 | 242.2 | 271.9 | 307.7 | 348.4 | 366.2 |
| 17.5° | 205.4 | 205.4 | 201.5 | 202.5 | 209.4 | 213.4 | 233.2 | 263.0 | 303.7 | 352.3 | 376.1 |
| 20° | 213.4 | 213.4 | 205.4 | 205.4 | 212.4 | 215.4 | 232.2 | 258.0 | 301.7 | 359.3 | 390.0 |
| 22.5° | 222.3 | 223.3 | 212.4 | 212.4 | 219.3 | 222.3 | 238.2 | 261.0 | 304.7 | 368.2 | 403.9 |
| 25° | 237.2 | 237.2 | 223.3 | 223.3 | 229.3 | 234.2 | 249.1 | 270.0 | 308.7 | 379.1 | 425.8 |
| 27.5° | 258.0 | 257.0 | 239.2 | 234.2 | 243.2 | 247.1 | 264.0 | 280.9 | 312.6 | 392.0 | 445.6 |
| 30° | 282.9 | 277.9 | 260.0 | 250.1 | 258.0 | 261.0 | 277.9 | 295.8 | 324.5 | 410.9 | 476.4 |
| 32.5° | 309.7 | 311.6 | 282.9 | 265.0 | 269.0 | 272.9 | 294.8 | 318.6 | 344.4 | 435.7 | 518.1 |
| 35° | 362.3 | 362.3 | 332.5 | 298.7 | 291.8 | 293.8 | 317.6 | 348.4 | 369.2 | 477.4 | 565.7 |
| 37.5° | 427.8 | 429.7 | 402.0 | 366.2 | 344.4 | 335.5 | 352.3 | 384.1 | 404.9 | 530.0 | 618.3 |
| 40° | 499.2 | 496.2 | 467.5 | 434.7 | 416.8 | 405.9 | 397.0 | 434.7 | 453.6 | 586.5 | 670.9 |
| 42.5° | 558.8 | 552.8 | 514.1 | 497.2 | 486.3 | 472.4 | 454.6 | 498.2 | 516.1 | 658.0 | 731.4 |
| 45° | 597.5 | 592.5 | 553.8 | 548.8 | 544.9 | 536.9 | 540.9 | 574.6 | 591.5 | 740.4 | 795.0 |
| 47.5° | 627.2 | 620.3 | 587.5 | 594.5 | 602.4 | 610.4 | 645.1 | 669.9 | 665.9 | 815.8 | 846.6 |
| 50° | 667.9 | 658.0 | 627.2 | 641.1 | 662.0 | 677.9 | 757.3 | 764.2 | 733.4 | 880.3 | 893.2 |
| 52.5° | 692.7 | 680.8 | 672.9 | 695.7 | 726.5 | 746.3 | 880.3 | 853.5 | 787.0 | 927.0 | 929.9 |
| 55° | 713.6 | 712.6 | 726.5 | 756.3 | 800.9 | 825.7 | 981.6 | 929.9 | 821.8 | 974.6 | 949.8 |
| 57.5° | 777.1 | 773.1 | 797.0 | 820.8 | 895.2 | 936.9 | 1090.7 | 985.5 | 846.6 | 1000.4 | 938.9 |
| 60° | 867.4 | 869.4 | 870.4 | 914.1 | 1009.3 | 1066.9 | 1177.1 | 1032.2 | 865.4 | 1004.4 | 907.1 |
| 62.5° | 1008.3 | 1022.2 | 998.4 | 1032.2 | 1147.3 | 1219.7 | 1260.4 | 1065.9 | 859.5 | 975.6 | 826.7 |
| 65° | 1212.8 | 1207.8 | 1174.1 | 1211.8 | 1365.6 | 1410.3 | 1346.8 | 1075.8 | 824.7 | 876.4 | 675.9 |
| 67.5° | 1421.2 | 1423.2 | 1407.3 | 1466.9 | 1616.7 | 1608.8 | 1444.0 | 1042.1 | 735.4 | 662.0 | 423.8 |
| 70° | 1557.2 | 1560.2 | 1599.9 | 1760.6 | 1923.4 | 1868.8 | 1523.4 | 923.0 | 518.1 | 315.6 | 160.8 |
| 72.5° | 1417.2 | 1418.2 | 1606.8 | 1898.6 | 2066.3 | 2006.8 | 1400.4 | 627.2 | 236.2 | 112.1 | 56.6 |
| 75° | 897.2 | 852.5 | 1193.9 | 1609.8 | 1769.6 | 1711.0 | 998.4 | 292.8 | 104.2 | 56.6 | 23.8 |
| 77.5° | 312.6 | 317.6 | 486.3 | 927.0 | 1130.4 | 1154.2 | 513.1 | 96.3 | 57.6 | 38.7 | 12.9 |
| 80° | 62.5 | 70.5 | 143.9 | 341.4 | 535.9 | 556.8 | 185.6 | 46.6 | 37.7 | 29.8 | 6.9 |
| 82.5° | 4.0 | 5.0 | 42.7 | 141.9 | 219.3 | 208.4 | 36.7 | 23.8 | 25.8 | 20.8 | 4.0 |
| 85° | 0.0 | 0.0 | 3.0 | 23.8 | 39.7 | 29.8 | 4.0 | 6.0 | 10.9 | 11.9 | 2.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 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):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 | 343.4 |
| 2.5° | 346.4 | 346.4 | 341.4 | 339.4 | 336.4 | 332.5 | 328.5 | 326.5 | 322.6 | 323.5 | 323.5 |
| 5° | 347.4 | 345.4 | 339.4 | 330.5 | 320.6 | 310.6 | 298.7 | 290.8 | 281.9 | 283.8 | 282.9 |
| 7.5° | 349.3 | 348.4 | 334.5 | 318.6 | 300.7 | 278.9 | 258.0 | 240.2 | 224.3 | 220.3 | 217.4 |
| 10° | 353.3 | 350.3 | 330.5 | 304.7 | 269.0 | 233.2 | 197.5 | 166.7 | 153.8 | 139.9 | 137.0 |
| 12.5° | 357.3 | 352.3 | 323.5 | 284.8 | 230.3 | 177.7 | 131.0 | 103.2 | 86.3 | 81.4 | 79.4 |
| 15° | 363.2 | 355.3 | 314.6 | 257.0 | 184.6 | 120.1 | 82.4 | 67.5 | 64.5 | 63.5 | 63.5 |
| 17.5° | 371.2 | 357.3 | 305.7 | 225.3 | 136.0 | 77.4 | 60.5 | 60.5 | 61.5 | 62.5 | 62.5 |
| 20° | 383.1 | 362.3 | 292.8 | 186.6 | 91.3 | 58.6 | 57.6 | 58.6 | 59.5 | 60.5 | 60.5 |
| 22.5° | 396.0 | 370.2 | 277.9 | 145.9 | 64.5 | 54.6 | 54.6 | 55.6 | 56.6 | 57.6 | 57.6 |
| 25° | 410.9 | 376.1 | 258.0 | 104.2 | 53.6 | 51.6 | 51.6 | 52.6 | 53.6 | 54.6 | 54.6 |
| 27.5° | 426.8 | 383.1 | 231.2 | 71.5 | 48.6 | 48.6 | 49.6 | 50.6 | 51.6 | 51.6 | 52.6 |
| 30° | 450.6 | 394.0 | 203.5 | 52.6 | 44.7 | 44.7 | 46.6 | 48.6 | 49.6 | 49.6 | 50.6 |
| 32.5° | 481.3 | 402.9 | 165.7 | 44.7 | 41.7 | 40.7 | 42.7 | 45.7 | 47.6 | 48.6 | 48.6 |
| 35° | 515.1 | 415.8 | 124.1 | 40.7 | 38.7 | 37.7 | 38.7 | 41.7 | 45.7 | 47.6 | 47.6 |
| 37.5° | 549.8 | 427.8 | 92.3 | 38.7 | 35.7 | 34.7 | 35.7 | 37.7 | 41.7 | 45.7 | 46.6 |
| 40° | 584.6 | 429.7 | 66.5 | 35.7 | 33.7 | 32.8 | 32.8 | 34.7 | 38.7 | 42.7 | 43.7 |
| 42.5° | 620.3 | 437.7 | 50.6 | 33.7 | 30.8 | 30.8 | 30.8 | 31.8 | 34.7 | 37.7 | 38.7 |
| 45° | 661.0 | 442.6 | 40.7 | 30.8 | 28.8 | 28.8 | 28.8 | 28.8 | 30.8 | 31.8 | 31.8 |
| 47.5° | 695.7 | 435.7 | 32.8 | 27.8 | 26.8 | 26.8 | 26.8 | 25.8 | 25.8 | 24.8 | 24.8 |
| 50° | 720.5 | 419.8 | 26.8 | 24.8 | 24.8 | 25.8 | 23.8 | 21.8 | 21.8 | 19.8 | 19.8 |
| 52.5° | 735.4 | 396.0 | 22.8 | 21.8 | 23.8 | 23.8 | 20.8 | 19.8 | 17.9 | 15.9 | 14.9 |
| 55° | 734.4 | 356.3 | 19.8 | 18.9 | 20.8 | 20.8 | 17.9 | 15.9 | 13.9 | 11.9 | 11.9 |
| 57.5° | 705.6 | 312.6 | 17.9 | 15.9 | 17.9 | 16.9 | 14.9 | 11.9 | 9.9 | 7.9 | 7.9 |
| 60° | 661.0 | 266.0 | 15.9 | 12.9 | 13.9 | 12.9 | 11.9 | 8.9 | 6.9 | 5.0 | 5.0 |
| 62.5° | 600.4 | 222.3 | 12.9 | 10.9 | 9.9 | 9.9 | 8.9 | 6.9 | 4.0 | 3.0 | 3.0 |
| 65° | 485.3 | 164.7 | 9.9 | 7.9 | 6.9 | 7.9 | 6.0 | 4.0 | 2.0 | 1.0 | 1.0 |
| 67.5° | 299.7 | 94.3 | 7.9 | 6.0 | 5.0 | 6.0 | 4.0 | 3.0 | 1.0 | 0.0 | 0.0 |
| 70° | 118.1 | 40.7 | 6.0 | 4.0 | 4.0 | 4.0 | 3.0 | 2.0 | 0.0 | 0.0 | 0.0 |
| 72.5° | 40.7 | 17.9 | 5.0 | 3.0 | 3.0 | 2.0 | 2.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| 75° | 17.9 | 10.9 | 4.0 | 3.0 | 2.0 | 2.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| 77.5° | 9.9 | 6.9 | 3.0 | 2.0 | 2.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| 80° | 6.0 | 4.0 | 2.0 | 2.0 | 2.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 4.0 | 2.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| 85° | 2.0 | 1.0 | 0.0 | 1.0 | 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 |

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

MCGRAW EDISON

Report Number: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2408-195-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/07/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: MCGRAW EDISON
 Catalog Number: **GALN-SB1A-830-U-5WQ**
 Description: GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS

Spectral Parameters

CCT (K): 3050
 CIE u': 0.2476
 CIE v': 0.5251
 Duv: 0.0034
 CIE x: 0.4383
 CIE y: 0.4131
 CIE z: 0.1487
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 581
 Purity: 55.55201
 Rf: 81.5
 Rg: 99.2

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 81.0 | | |
| R1: | 79.6 | R9: | 7.1 |
| R2: | 85.6 | R10: | 67.0 |
| R3: | 92.0 | R11: | 82.7 |
| R4: | 82.6 | R12: | 63.2 |
| R5: | 78.9 | R13: | 80.3 |
| R6: | 81.7 | R14: | 95.0 |
| R7: | 85.2 | R15: | 71.7 |
| R8: | 62.0 | | |



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

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| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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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 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

| λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) | λ (nm) | Power W [^] /nm | Lumens (ϕ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.27

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2408-195-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.32

| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 168 | NR | 620 | 940 | NR | 750 | 35 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 233 | NR | 625 | 897 | NR | 755 | 30 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 300 | NR | 630 | 847 | NR | 760 | 26 | NR | 890 | 1 | NR |
| 375 | 0 | NR | 505 | 372 | NR | 635 | 790 | NR | 765 | 22 | NR | 895 | 1 | NR |
| 380 | 0 | NR | 510 | 430 | NR | 640 | 730 | NR | 770 | 19 | NR | 900 | 1 | NR |
| 385 | 0 | NR | 515 | 483 | NR | 645 | 668 | NR | 775 | 16 | NR | 905 | 1 | NR |
| 390 | 0 | NR | 520 | 524 | NR | 650 | 605 | NR | 780 | 14 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 555 | NR | 655 | 545 | NR | 785 | 12 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 581 | NR | 660 | 485 | NR | 790 | 10 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 604 | NR | 665 | 430 | NR | 795 | 9 | NR | 925 | 0 | NR |
| 410 | 17 | NR | 540 | 623 | NR | 670 | 378 | NR | 800 | 8 | NR | 930 | 0 | NR |
| 415 | 34 | NR | 545 | 645 | NR | 675 | 331 | NR | 805 | 7 | NR | 935 | 0 | NR |
| 420 | 68 | NR | 550 | 667 | NR | 680 | 290 | NR | 810 | 6 | NR | 940 | 0 | NR |
| 425 | 128 | NR | 555 | 693 | NR | 685 | 251 | NR | 815 | 5 | NR | 945 | 0 | NR |
| 430 | 214 | NR | 560 | 719 | NR | 690 | 218 | NR | 820 | 4 | NR | 950 | 0 | NR |
| 435 | 339 | NR | 565 | 754 | NR | 695 | 188 | NR | 825 | 4 | NR | 955 | 0 | NR |
| 440 | 507 | NR | 570 | 791 | NR | 700 | 162 | NR | 830 | 3 | NR | 960 | 0 | NR |
| 445 | 573 | NR | 575 | 830 | NR | 705 | 139 | NR | 835 | 3 | NR | 965 | 0 | NR |
| 450 | 356 | NR | 580 | 873 | NR | 710 | 119 | NR | 840 | 3 | NR | 970 | 0 | NR |
| 455 | 217 | NR | 585 | 913 | NR | 715 | 102 | NR | 845 | 2 | NR | 975 | 0 | NR |
| 460 | 168 | NR | 590 | 948 | NR | 720 | 88 | NR | 850 | 2 | NR | 980 | 0 | NR |
| 465 | 113 | NR | 595 | 974 | NR | 725 | 76 | NR | 855 | 2 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 994 | NR | 730 | 65 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 85 | NR | 605 | 998 | NR | 735 | 55 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 94 | NR | 610 | 994 | NR | 740 | 47 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 120 | NR | 615 | 973 | NR | 745 | 41 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 81.5$
 $R_g = 99.2$
 $CIE R_a = 81.0$
 $R_9 = 7.1$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)