

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
(formerly Eaton)

Brand: LUMARK

Report Number: P855613

Luminaire Tested: **NHRS100U33BZ750-50%**

Issue Date: 07/17/2024

Test Information

Test Method: LM-79-2019
Report Number: P855613
Test Lab: INNOVATION CENTER(G2)
Issue Date: 07/17/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: LUMARK
Catalog Number: NHRS100U33BZ750-50%
Description: LUMARK NIGHT HARRIER 4 PANEL FLOOD SELECTABLE CCT NEMA3 @5000K 50%
Output
Light Source: (128) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

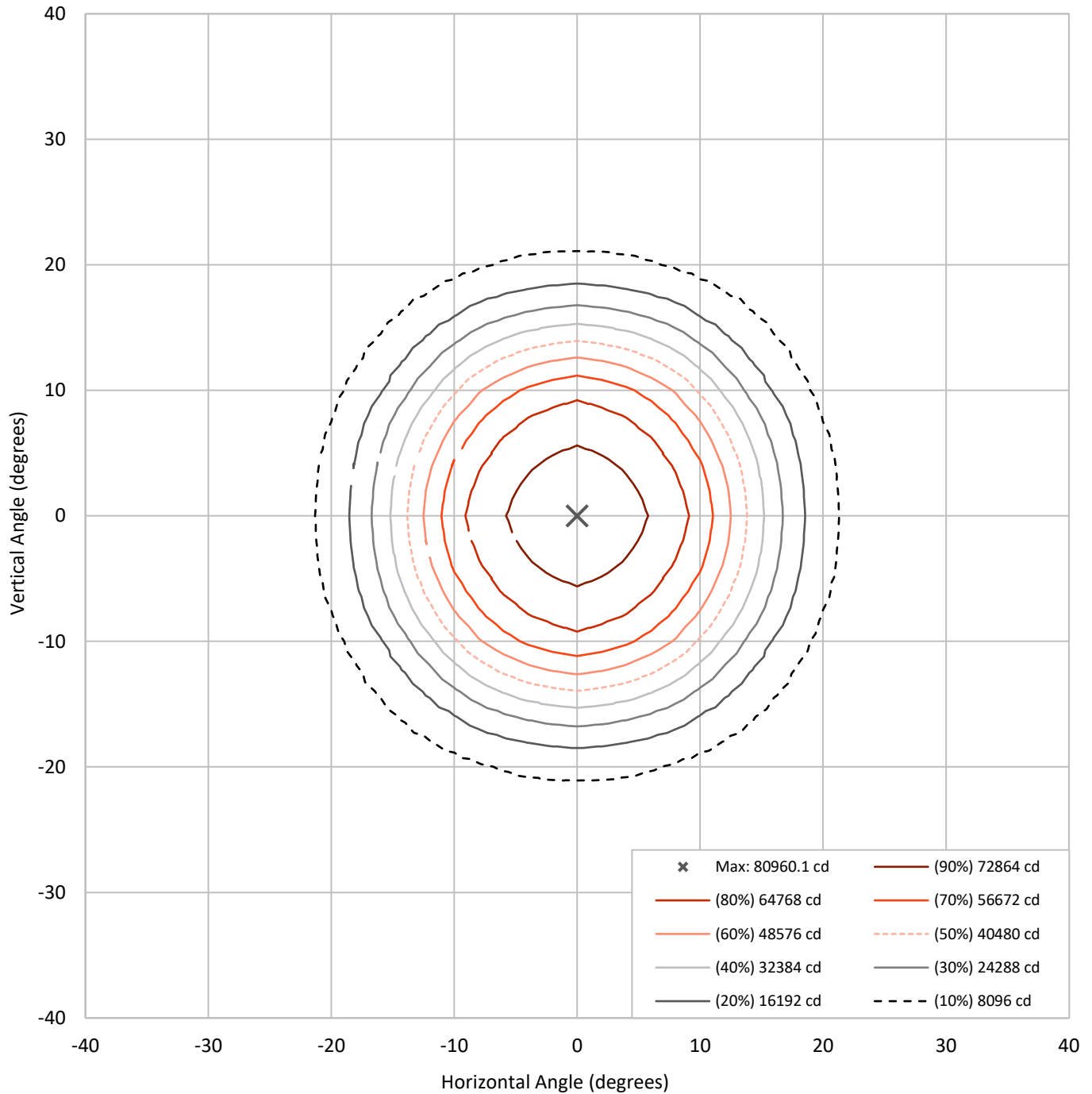
| | | | |
|-------------------|--|----------------------|-----------------|
| Lumens per Lamp: | N/A | NEMA Type: | 3H x 3V |
| Luminaire Lumens: | 21546.2 lumens | Max Intensity: | 80960.1 candela |
| Efficiency: | N/A | Max Intensity Angle: | 0°H x 0°V |
| Efficacy: | 146.0 lumens/watt | | |
| Luminous Opening: | Rectangular (W 1.29' x L: 1.12' x H: 0') | | |

| | | | |
|-------------------|-----------------|--------------------|-----------------|
| Beam Angle (50%): | 27.7°H x 27.9°V | Field Angle (10%): | 42.6°H x 42.2°V |
| Beam Lumens: | 8015 lumens | Field Lumens: | 12105.6 lumens |
| Beam Efficiency: | 37.2% | Field Efficiency: | 56.2% |

Input Watts (W): 147.6
Input Voltage (V): 120
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-Candela Plot





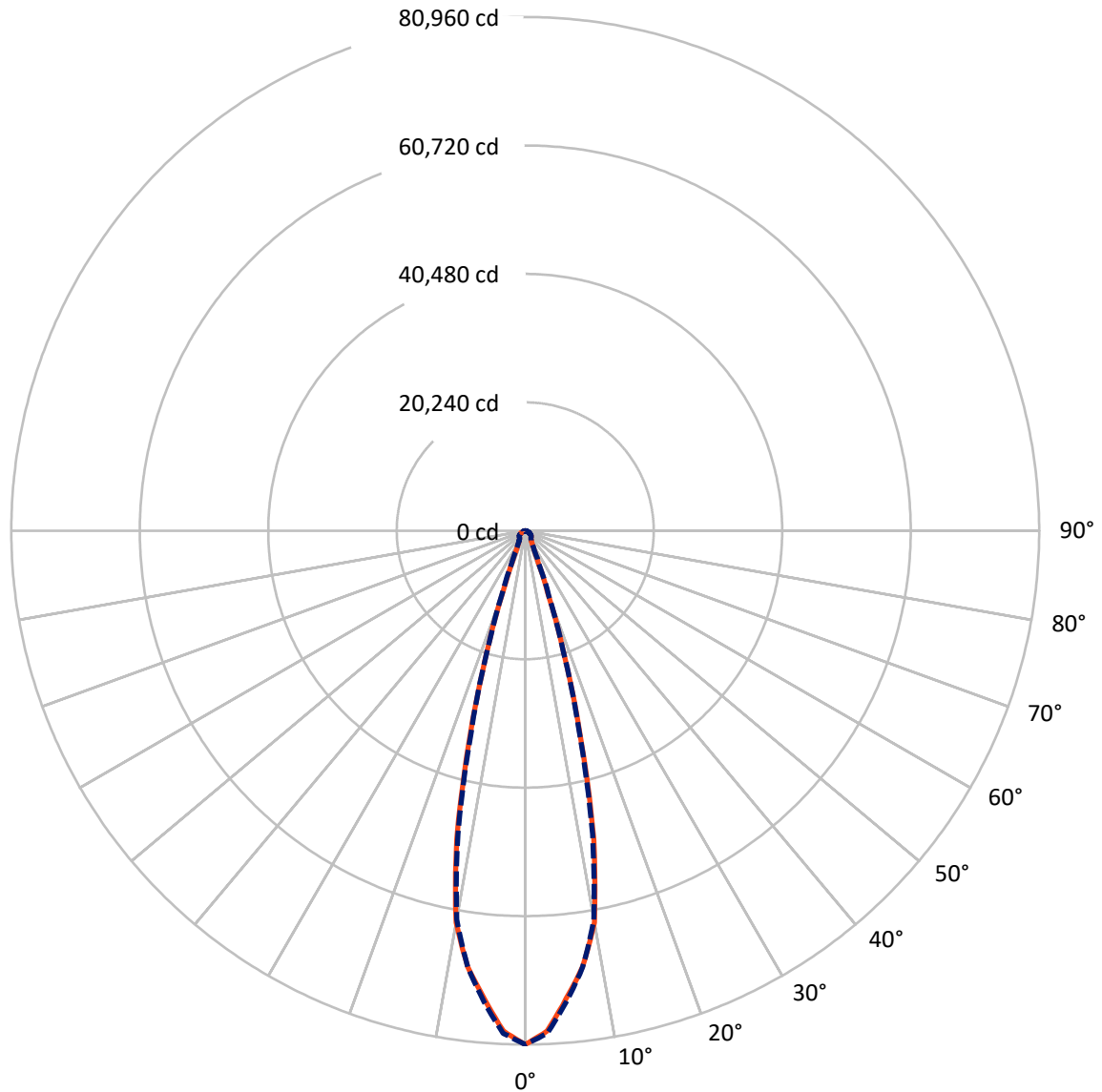
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 CATALOG NUMBER: NHRS100U33BZ750-50%

Lumen Table

| | | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|------|------|------|-------|-------|--------|--------|-------|-------|------|------|------|-----|-----|----|----|----|
| 90 | 0.1 | 2.2 | | 7.7 | | 12.8 | | 14.5 | | 12.8 | | 7.7 | | 2.2 | | 0.1 | | | |
| 80 | 0.1 | 2.2 | | 7.7 | | 12.8 | | 14.5 | | 12.8 | | 7.7 | | 2.2 | | 0.1 | | | |
| 70 | 1.3 | 1.9 | 4.5 | 7.8 | 11.2 | 14.4 | 16.2 | 17.2 | 17.2 | 16.2 | 14.4 | 11.2 | 7.8 | 4.5 | 1.9 | 1.3 | | | |
| 60 | | 3.6 | 8.0 | 13.3 | 19.0 | 24.3 | 28.0 | 30.0 | 30.0 | 28.0 | 24.3 | 19.0 | 13.3 | 8.0 | 3.6 | | | | |
| 50 | 3.3 | 5.2 | 11.1 | 18.3 | 26.5 | 32.9 | 37.0 | 39.3 | 39.3 | 37.0 | 32.9 | 26.5 | 18.3 | 11.1 | 5.2 | 3.3 | | | |
| 40 | | 6.5 | 13.4 | 22.6 | 31.3 | 37.3 | 43.1 | 48.0 | 48.0 | 43.1 | 37.3 | 31.3 | 22.6 | 13.4 | 6.5 | | | | |
| 30 | 4.8 | 7.4 | 15.4 | 25.6 | 33.7 | 44.7 | 70.3 | 117.2 | 117.2 | 70.3 | 44.7 | 33.7 | 25.6 | 15.4 | 7.4 | 4.8 | | | |
| 20 | | 8.1 | 17.0 | 27.3 | 36.6 | 66.6 | 311.2 | 897.9 | 897.9 | 311.2 | 66.6 | 36.6 | 27.3 | 17.0 | 8.1 | | | | |
| 10 | 5.3 | 8.4 | 17.9 | 28.2 | 39.7 | 111.5 | 871.6 | 2016.2 | 2016.2 | 871.6 | 111.5 | 39.7 | 28.2 | 17.9 | 8.4 | 5.3 | | | |
| 0 | | 8.4 | 17.9 | 28.2 | 39.7 | 111.5 | 871.6 | 2016.2 | 2016.2 | 871.6 | 111.5 | 39.7 | 28.2 | 17.9 | 8.4 | | | | |
| -10 | 4.8 | 8.1 | 17.0 | 27.3 | 36.6 | 66.6 | 311.2 | 897.9 | 897.9 | 311.2 | 66.6 | 36.6 | 27.3 | 17.0 | 8.1 | 4.8 | | | |
| -20 | | 7.4 | 15.4 | 25.6 | 33.7 | 44.7 | 70.3 | 117.2 | 117.2 | 70.3 | 44.7 | 33.7 | 25.6 | 15.4 | 7.4 | | | | |
| -30 | 3.3 | 6.5 | 13.4 | 22.6 | 31.3 | 37.3 | 43.1 | 48.0 | 48.0 | 43.1 | 37.3 | 31.3 | 22.6 | 13.4 | 6.5 | 3.3 | | | |
| -40 | | 5.2 | 11.1 | 18.3 | 26.5 | 32.9 | 37.0 | 39.3 | 39.3 | 37.0 | 32.9 | 26.5 | 18.3 | 11.1 | 5.2 | | | | |
| -50 | 1.3 | 3.6 | 8.0 | 13.3 | 19.0 | 24.3 | 28.0 | 30.0 | 30.0 | 28.0 | 24.3 | 19.0 | 13.3 | 8.0 | 3.6 | 1.3 | | | |
| -60 | | 1.9 | 4.5 | 7.8 | 11.2 | 14.4 | 16.2 | 17.2 | 17.2 | 16.2 | 14.4 | 11.2 | 7.8 | 4.5 | 1.9 | | | | |
| -70 | 0.1 | 2.2 | | 7.7 | | 12.8 | | 14.5 | | 12.8 | | 7.7 | | 2.2 | | 0.1 | | | |
| -80 | | 2.2 | | 7.7 | | 12.8 | | 14.5 | | 12.8 | | 7.7 | | 2.2 | | | | | |
| -90 | 0.1 | 2.2 | | 7.7 | | 12.8 | | 14.5 | | 12.8 | | 7.7 | | 2.2 | | 0.1 | | | |
| | -90 | -80 | -70 | -60 | -50 | -40 | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |

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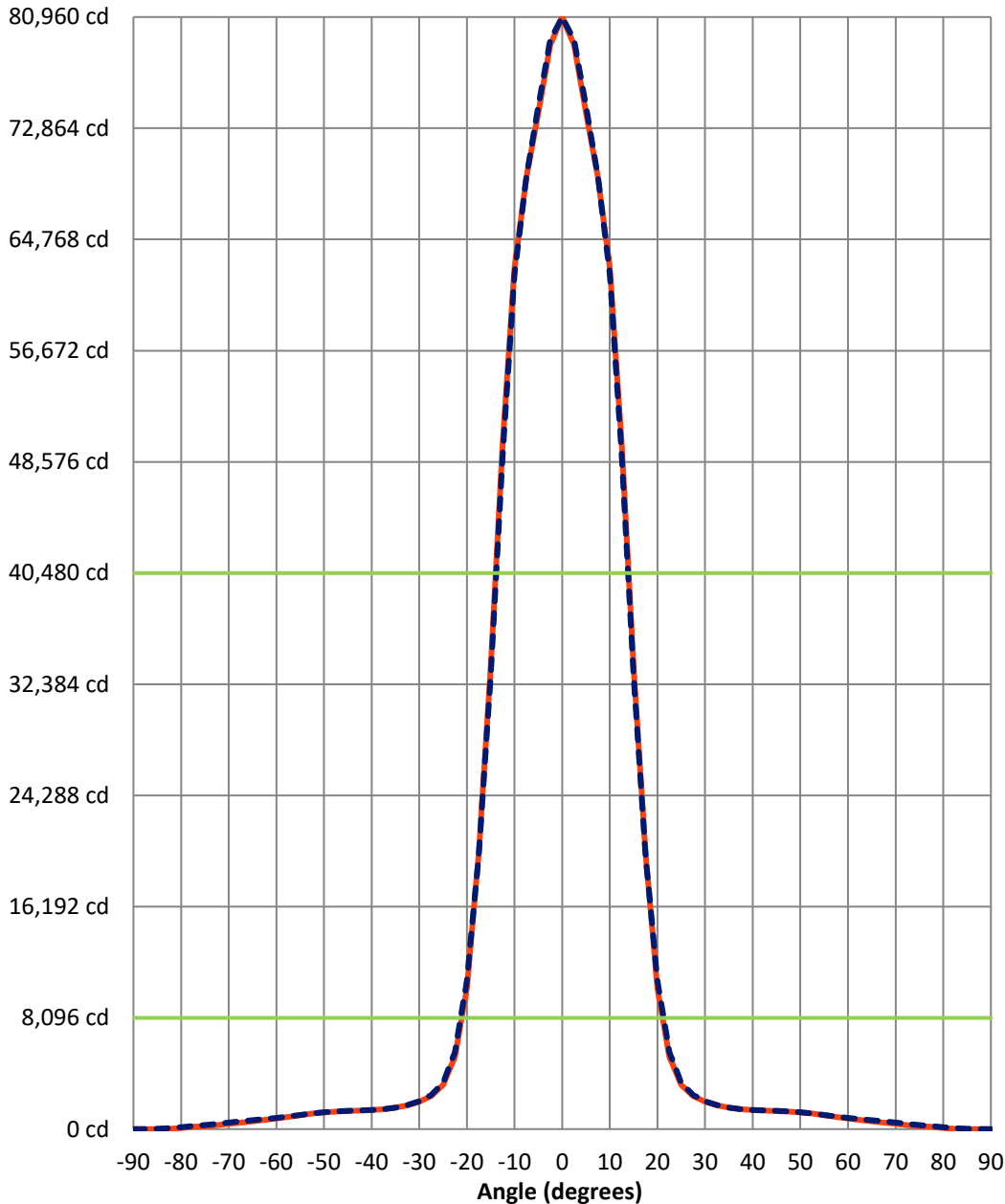
Luminous Intensity Polar Plot



— Vertical Distribution Through 0-Deg - - - Horizontal Distribution Through 0-Deg

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Luminous Intensity Plot



Beam:
 H Angle: 27.7°
 V Angle: 27.9°
 Lumens: 8015
 Efficiency: 37.2%

Field:
 H Angle: 42.6°
 V Angle: 42.2°
 Lumens: 12105.6
 Efficiency: 56.2%

Spill:
 Lumens: 9440.5
 Efficiency: 43.8%

— Vertical Distribution through 0-Deg
 - - Horizontal Distribution through 0-Deg



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FIELD
 BEAM

CANDELA DISTRIBUTION:

| | 0° | 2.5° | 5° | 7.5° | 10° | 12.5° | 15° | 17.5° | 20° | 22.5° | 25° |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| 90° | 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 |
| 85° | 0.6 | 0.6 | 0.6 | 0.6 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| 82.5° | 18.6 | 18.0 | 17.4 | 18.0 | 18.0 | 18.6 | 18.6 | 19.2 | 19.8 | 20.5 | 20.5 |
| 80° | 78.1 | 77.5 | 76.9 | 77.5 | 75.0 | 73.8 | 71.9 | 73.8 | 74.4 | 73.8 | 72.6 |
| 77.5° | 169.3 | 169.3 | 169.3 | 165.6 | 162.5 | 158.8 | 154.4 | 151.3 | 148.2 | 144.5 | 140.8 |
| 75° | 217.1 | 216.4 | 215.8 | 215.2 | 214.6 | 214.0 | 212.1 | 210.9 | 209.6 | 206.5 | 202.8 |
| 72.5° | 287.8 | 286.5 | 285.9 | 283.4 | 282.2 | 279.7 | 277.8 | 277.2 | 274.7 | 271.0 | 264.8 |
| 70° | 385.1 | 383.9 | 383.3 | 378.9 | 375.8 | 371.5 | 367.1 | 364.0 | 359.7 | 353.5 | 343.6 |
| 67.5° | 472.0 | 470.7 | 470.7 | 467.0 | 465.1 | 460.8 | 458.3 | 455.8 | 451.5 | 445.3 | 432.9 |
| 65° | 564.4 | 563.7 | 560.0 | 560.0 | 557.5 | 553.2 | 550.7 | 548.2 | 543.9 | 537.1 | 523.4 |
| 62.5° | 669.2 | 665.5 | 659.3 | 658.6 | 655.5 | 650.6 | 646.2 | 642.5 | 636.9 | 629.5 | 612.7 |
| 60° | 774.0 | 769.0 | 761.6 | 759.7 | 755.4 | 748.6 | 743.0 | 736.2 | 728.1 | 716.9 | 698.3 |
| 57.5° | 887.5 | 880.7 | 871.4 | 867.6 | 861.4 | 852.1 | 844.7 | 834.1 | 819.9 | 803.8 | 785.1 |
| 55° | 1009.0 | 1002.8 | 992.9 | 987.9 | 979.3 | 967.5 | 955.7 | 942.1 | 926.5 | 905.5 | 880.0 |
| 52.5° | 1134.9 | 1129.3 | 1116.9 | 1105.8 | 1092.1 | 1077.3 | 1063.0 | 1047.5 | 1030.1 | 1005.3 | 977.4 |
| 50° | 1212.5 | 1207.5 | 1198.2 | 1188.9 | 1177.1 | 1164.1 | 1151.1 | 1136.2 | 1116.9 | 1093.4 | 1067.3 |
| 47.5° | 1274.5 | 1268.3 | 1259.0 | 1249.7 | 1238.5 | 1228.0 | 1216.8 | 1203.8 | 1186.4 | 1166.6 | 1145.5 |
| 45° | 1317.9 | 1312.9 | 1304.2 | 1295.6 | 1285.6 | 1276.3 | 1267.0 | 1258.3 | 1241.6 | 1225.5 | 1206.9 |
| 42.5° | 1350.1 | 1345.8 | 1339.0 | 1330.9 | 1321.6 | 1314.2 | 1306.1 | 1294.9 | 1284.4 | 1271.4 | 1254.0 |
| 40° | 1388.0 | 1381.8 | 1373.7 | 1366.3 | 1356.3 | 1347.7 | 1337.7 | 1327.8 | 1317.9 | 1308.0 | 1291.8 |
| 37.5° | 1449.4 | 1442.5 | 1432.0 | 1421.5 | 1407.2 | 1391.7 | 1371.8 | 1360.1 | 1348.3 | 1335.2 | 1321.6 |
| 35° | 1565.3 | 1557.3 | 1541.1 | 1521.9 | 1496.5 | 1465.5 | 1432.0 | 1409.0 | 1383.6 | 1364.4 | 1347.7 |
| 32.5° | 1729.7 | 1740.2 | 1716.0 | 1685.0 | 1642.2 | 1588.3 | 1536.2 | 1490.3 | 1441.3 | 1407.8 | 1374.9 |
| 30° | 1993.3 | 2010.0 | 1969.1 | 1919.5 | 1851.9 | 1768.1 | 1692.5 | 1613.1 | 1537.4 | 1472.9 | 1422.1 |
| 27.5° | 2406.3 | 2393.3 | 2351.7 | 2272.3 | 2153.9 | 2009.4 | 1903.3 | 1780.5 | 1672.0 | 1561.0 | 1488.4 |
| 25° | 3220.6 | 3202.6 | 3100.9 | 2906.8 | 2638.9 | 2384.6 | 2202.9 | 1996.4 | 1843.2 | 1700.5 | 1574.6 |
| 22.5° | 5281.5 | 5244.2 | 4942.8 | 4344.4 | 3565.4 | 3062.4 | 2685.4 | 2315.8 | 2047.2 | 1862.4 | 1699.9 |
| 20° | 10281.3 | 10114.5 | 9212.8 | 7720.0 | 5755.3 | 4664.4 | 3477.3 | 2831.7 | 2347.4 | 2053.4 | 1843.8 |
| 17.5° | 20127.3 | 19182.2 | 17531.2 | 14601.5 | 10880.4 | 8072.3 | 5176.0 | 3690.1 | 2850.3 | 2325.1 | 1994.5 |
| 15° | 33622.4 | 32103.6 | 29366.1 | 24855.6 | 19089.8 | 13284.9 | 8514.4 | 5220.7 | 3518.9 | 2686.6 | 2198.5 |
| 12.5° | 49843.8 | 47723.5 | 43713.4 | 36911.2 | 28994.0 | 20592.4 | 13060.4 | 7947.6 | 4729.5 | 3106.5 | 2383.4 |
| 10° | 62694.6 | 60499.8 | 56435.1 | 49923.8 | 39216.4 | 28520.8 | 18622.8 | 10967.3 | 6032.5 | 3734.7 | 2675.5 |
| 7.5° | 69300.7 | 67622.5 | 64870.2 | 58790.6 | 49144.9 | 36387.8 | 24605.0 | 14875.6 | 8183.9 | 4534.1 | 2959.5 |
| 5° | 74011.0 | 72336.5 | 69407.4 | 64406.3 | 56007.8 | 43335.1 | 29216.0 | 17945.5 | 9734.3 | 5117.7 | 3169.7 |
| 2.5° | 78922.2 | 76281.5 | 72552.3 | 67689.5 | 60241.2 | 47650.3 | 31882.8 | 19434.0 | 10489.1 | 5455.1 | 3292.5 |
| 0° | 80960.1 | 79280.7 | 74489.2 | 69352.8 | 62225.1 | 48973.7 | 33004.7 | 19989.0 | 10832.7 | 5642.4 | 3364.5 |



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CANDELA DISTRIBUTION (continued):

| | 27.5° | 30° | 32.5° | 35° | 37.5° | 40° | 42.5° | 45° | 47.5° | 50° | 52.5° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 90° | 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 |
| 85° | 1.9 | 1.9 | 2.5 | 2.5 | 2.5 | 3.1 | 3.1 | 3.1 | 2.5 | 2.5 | 1.9 |
| 82.5° | 19.8 | 19.8 | 19.2 | 18.0 | 17.4 | 16.1 | 14.3 | 11.8 | 8.7 | 8.1 | 7.4 |
| 80° | 70.1 | 65.7 | 61.4 | 56.4 | 50.9 | 45.3 | 42.2 | 39.7 | 36.6 | 32.9 | 28.5 |
| 77.5° | 135.8 | 130.9 | 125.3 | 119.1 | 110.4 | 101.7 | 92.4 | 83.7 | 74.4 | 65.7 | 57.1 |
| 75° | 197.2 | 191.0 | 184.8 | 176.1 | 167.4 | 156.9 | 145.7 | 133.3 | 120.3 | 108.5 | 96.1 |
| 72.5° | 254.9 | 244.4 | 235.0 | 228.2 | 221.4 | 211.5 | 199.7 | 185.4 | 169.9 | 153.8 | 137.1 |
| 70° | 331.2 | 318.2 | 305.1 | 292.7 | 280.9 | 267.3 | 254.9 | 239.4 | 221.4 | 200.9 | 181.1 |
| 67.5° | 416.8 | 400.0 | 382.7 | 367.8 | 351.6 | 335.5 | 318.2 | 297.1 | 274.7 | 252.4 | 228.8 |
| 65° | 506.7 | 487.5 | 465.8 | 447.1 | 429.2 | 409.3 | 386.4 | 360.3 | 334.9 | 307.6 | 282.2 |
| 62.5° | 594.1 | 573.7 | 552.0 | 529.6 | 506.7 | 483.7 | 463.3 | 429.8 | 398.2 | 365.9 | 334.3 |
| 60° | 677.9 | 656.2 | 635.1 | 607.2 | 581.1 | 553.8 | 525.9 | 496.8 | 464.5 | 427.9 | 390.1 |
| 57.5° | 762.8 | 736.2 | 710.7 | 683.4 | 653.7 | 622.7 | 591.7 | 560.0 | 525.9 | 489.3 | 447.8 |
| 55° | 852.7 | 823.6 | 793.2 | 761.0 | 728.1 | 692.7 | 655.5 | 620.2 | 584.8 | 545.8 | 503.0 |
| 52.5° | 947.6 | 914.1 | 878.2 | 845.3 | 803.8 | 762.2 | 719.4 | 679.1 | 639.4 | 599.1 | 555.1 |
| 50° | 1036.9 | 1001.6 | 962.5 | 921.6 | 879.4 | 830.4 | 782.0 | 735.5 | 692.1 | 647.5 | 602.8 |
| 47.5° | 1115.7 | 1082.2 | 1045.0 | 1000.3 | 954.5 | 897.4 | 843.4 | 792.0 | 741.1 | 692.7 | 645.6 |
| 45° | 1181.4 | 1152.9 | 1115.7 | 1075.4 | 1021.4 | 963.8 | 905.5 | 845.9 | 790.1 | 736.2 | 685.9 |
| 42.5° | 1233.5 | 1209.4 | 1176.5 | 1137.4 | 1085.9 | 1028.3 | 966.2 | 902.4 | 837.9 | 779.6 | 723.7 |
| 40° | 1275.1 | 1253.4 | 1228.6 | 1187.6 | 1146.1 | 1085.9 | 1023.3 | 956.3 | 887.5 | 821.1 | 760.3 |
| 37.5° | 1306.1 | 1287.5 | 1263.9 | 1230.4 | 1187.6 | 1142.4 | 1076.6 | 1007.8 | 938.3 | 862.7 | 796.9 |
| 35° | 1331.5 | 1313.5 | 1291.2 | 1263.9 | 1225.5 | 1179.6 | 1126.2 | 1056.2 | 981.1 | 904.2 | 832.9 |
| 32.5° | 1356.3 | 1335.9 | 1314.8 | 1289.4 | 1257.1 | 1216.8 | 1165.9 | 1102.1 | 1025.2 | 944.5 | 865.8 |
| 30° | 1382.4 | 1357.6 | 1334.6 | 1312.9 | 1282.5 | 1245.9 | 1200.7 | 1143.0 | 1066.7 | 984.2 | 899.9 |
| 27.5° | 1425.8 | 1381.1 | 1353.9 | 1329.7 | 1304.2 | 1271.4 | 1228.6 | 1174.6 | 1105.8 | 1022.1 | 933.4 |
| 25° | 1488.4 | 1419.6 | 1373.7 | 1347.0 | 1321.0 | 1290.0 | 1252.8 | 1204.4 | 1139.9 | 1056.2 | 965.6 |
| 22.5° | 1562.2 | 1469.8 | 1405.3 | 1363.8 | 1335.9 | 1307.3 | 1273.2 | 1226.7 | 1165.3 | 1087.2 | 996.0 |
| 20° | 1668.9 | 1531.8 | 1437.0 | 1383.0 | 1350.8 | 1321.6 | 1289.4 | 1247.2 | 1188.3 | 1115.7 | 1023.3 |
| 17.5° | 1773.7 | 1606.3 | 1485.3 | 1407.8 | 1363.8 | 1334.0 | 1303.6 | 1269.5 | 1208.1 | 1138.7 | 1047.5 |
| 15° | 1896.5 | 1685.6 | 1531.2 | 1429.5 | 1375.6 | 1345.2 | 1314.8 | 1280.1 | 1226.7 | 1157.9 | 1069.2 |
| 12.5° | 2004.4 | 1760.7 | 1581.5 | 1461.8 | 1392.9 | 1355.1 | 1325.3 | 1291.8 | 1243.5 | 1175.9 | 1087.8 |
| 10° | 2152.0 | 1842.6 | 1632.9 | 1492.8 | 1409.0 | 1364.4 | 1334.0 | 1301.8 | 1257.7 | 1191.4 | 1103.3 |
| 7.5° | 2277.3 | 1912.6 | 1678.2 | 1518.8 | 1423.3 | 1372.5 | 1341.4 | 1310.4 | 1268.9 | 1205.0 | 1116.3 |
| 5° | 2391.4 | 1969.1 | 1712.3 | 1538.7 | 1435.1 | 1378.7 | 1347.7 | 1317.3 | 1278.2 | 1216.2 | 1126.2 |
| 2.5° | 2475.1 | 2017.4 | 1742.1 | 1556.0 | 1444.4 | 1386.1 | 1354.5 | 1325.3 | 1286.9 | 1225.5 | 1136.2 |
| 0° | 2486.9 | 2029.2 | 1749.5 | 1562.2 | 1447.5 | 1391.1 | 1359.4 | 1330.3 | 1291.2 | 1228.6 | 1138.0 |



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CANDELA DISTRIBUTION (continued):

| | 55° | 57.5° | 60° | 62.5° | 65° | 67.5° | 70° | 72.5° | 75° | 77.5° | 80° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 90° | 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 | 0.6 | 0.6 | 0.6 | 0.0 | 0.0 |
| 85° | 1.2 | 1.2 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 |
| 82.5° | 7.4 | 6.8 | 6.2 | 5.6 | 4.3 | 3.1 | 1.2 | 1.2 | 1.2 | 0.6 | 0.6 |
| 80° | 23.6 | 18.0 | 12.4 | 11.8 | 10.5 | 8.7 | 6.2 | 4.3 | 1.9 | 1.2 | 1.2 |
| 77.5° | 50.9 | 43.4 | 36.0 | 28.5 | 19.8 | 14.3 | 11.8 | 8.7 | 5.6 | 2.5 | 1.2 |
| 75° | 85.0 | 72.6 | 61.4 | 50.9 | 40.3 | 29.1 | 18.0 | 13.6 | 9.9 | 6.2 | 1.9 |
| 72.5° | 123.4 | 107.9 | 93.0 | 76.9 | 60.8 | 47.8 | 34.7 | 20.5 | 14.3 | 9.9 | 5.0 |
| 70° | 163.7 | 145.1 | 126.5 | 107.9 | 88.1 | 66.4 | 50.9 | 35.4 | 19.2 | 13.6 | 8.1 |
| 67.5° | 206.5 | 185.4 | 163.7 | 140.2 | 117.2 | 93.0 | 67.6 | 49.6 | 31.6 | 16.7 | 11.2 |
| 65° | 253.7 | 227.6 | 201.6 | 175.5 | 147.0 | 119.7 | 91.8 | 63.9 | 43.4 | 23.6 | 13.6 |
| 62.5° | 302.0 | 271.6 | 241.2 | 210.2 | 178.6 | 146.4 | 115.4 | 83.1 | 55.2 | 33.5 | 16.7 |
| 60° | 354.1 | 317.5 | 281.6 | 246.2 | 209.6 | 174.3 | 138.9 | 104.2 | 68.2 | 42.8 | 19.8 |
| 57.5° | 405.6 | 364.7 | 323.7 | 281.6 | 241.2 | 202.2 | 163.1 | 124.0 | 83.1 | 51.5 | 26.7 |
| 55° | 457.7 | 411.2 | 366.5 | 316.9 | 271.6 | 228.8 | 186.7 | 145.7 | 99.2 | 60.8 | 33.5 |
| 52.5° | 507.3 | 458.3 | 407.5 | 353.5 | 303.9 | 254.9 | 210.2 | 163.1 | 115.4 | 69.5 | 40.3 |
| 50° | 555.1 | 503.0 | 447.1 | 388.9 | 332.4 | 280.3 | 232.6 | 182.3 | 130.2 | 82.5 | 46.5 |
| 47.5° | 599.1 | 545.8 | 486.2 | 424.2 | 363.4 | 304.5 | 253.7 | 200.9 | 145.1 | 94.3 | 52.7 |
| 45° | 636.3 | 585.4 | 522.2 | 458.3 | 392.6 | 330.6 | 273.5 | 218.9 | 160.6 | 105.4 | 58.9 |
| 42.5° | 671.7 | 617.1 | 556.3 | 494.9 | 421.7 | 355.4 | 291.5 | 235.0 | 174.9 | 116.6 | 64.5 |
| 40° | 703.3 | 646.2 | 588.6 | 520.3 | 450.3 | 379.6 | 310.1 | 250.6 | 189.2 | 126.5 | 71.3 |
| 37.5° | 733.7 | 673.5 | 614.0 | 548.2 | 477.5 | 401.3 | 329.3 | 264.8 | 202.8 | 136.4 | 78.8 |
| 35° | 762.8 | 699.6 | 637.5 | 573.7 | 502.3 | 423.6 | 347.3 | 277.8 | 215.8 | 146.4 | 86.2 |
| 32.5° | 791.3 | 723.7 | 661.7 | 595.4 | 522.8 | 444.0 | 364.0 | 290.2 | 227.0 | 156.3 | 93.0 |
| 30° | 818.0 | 747.3 | 681.0 | 614.6 | 542.7 | 463.3 | 380.2 | 302.6 | 236.9 | 165.6 | 99.2 |
| 27.5° | 846.5 | 769.6 | 699.6 | 632.0 | 560.6 | 480.6 | 395.1 | 315.1 | 246.2 | 174.3 | 105.4 |
| 25° | 874.5 | 789.5 | 717.5 | 648.1 | 577.4 | 496.1 | 408.7 | 326.8 | 254.3 | 182.3 | 111.0 |
| 22.5° | 899.9 | 809.3 | 733.7 | 663.0 | 590.4 | 509.2 | 421.7 | 336.8 | 261.7 | 189.8 | 116.0 |
| 20° | 924.1 | 829.8 | 749.8 | 676.0 | 602.2 | 521.6 | 433.5 | 346.1 | 268.5 | 197.2 | 120.9 |
| 17.5° | 947.0 | 849.0 | 764.1 | 687.8 | 612.7 | 532.1 | 443.4 | 354.1 | 274.7 | 203.4 | 124.7 |
| 15° | 966.9 | 865.8 | 776.5 | 697.7 | 622.0 | 540.8 | 451.5 | 360.9 | 280.3 | 209.6 | 128.4 |
| 12.5° | 984.2 | 880.0 | 787.0 | 705.8 | 629.5 | 548.2 | 459.6 | 367.8 | 284.7 | 214.6 | 131.5 |
| 10° | 998.5 | 891.2 | 795.7 | 712.6 | 635.7 | 555.7 | 465.8 | 373.3 | 288.4 | 218.9 | 134.0 |
| 7.5° | 1009.7 | 899.9 | 803.1 | 718.8 | 641.3 | 561.3 | 471.3 | 377.1 | 291.5 | 222.0 | 137.7 |
| 5° | 1019.0 | 907.9 | 808.7 | 723.1 | 645.6 | 568.7 | 477.5 | 382.7 | 295.2 | 226.4 | 138.3 |
| 2.5° | 1027.0 | 914.1 | 813.7 | 726.9 | 649.3 | 568.7 | 477.5 | 382.7 | 295.2 | 227.0 | 138.3 |
| 0° | 1027.6 | 915.4 | 814.3 | 727.5 | 649.3 | 568.7 | 477.5 | 382.7 | 295.2 | 227.6 | 138.3 |



REPORT NUMBER: P855613
 CATALOG NUMBER: NHRS100U33BZ750-50%

CANDELA DISTRIBUTION (continued):

| | 82.5° | 85° | 87.5° | 90° |
|-------|-------|------|-------|-----|
| 90° | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 0.6 | 0.6 | 0.0 | 0.0 |
| 82.5° | 0.6 | 0.6 | 0.0 | 0.0 |
| 80° | 0.6 | 0.6 | 0.6 | 0.0 |
| 77.5° | 1.2 | 0.6 | 0.6 | 0.0 |
| 75° | 1.2 | 1.2 | 0.6 | 0.0 |
| 72.5° | 1.9 | 1.2 | 0.6 | 0.0 |
| 70° | 1.9 | 1.2 | 0.6 | 0.0 |
| 67.5° | 4.3 | 1.2 | 0.6 | 0.0 |
| 65° | 6.8 | 1.9 | 0.6 | 0.0 |
| 62.5° | 8.7 | 1.9 | 1.2 | 0.0 |
| 60° | 11.2 | 1.9 | 1.2 | 0.0 |
| 57.5° | 13.0 | 3.1 | 1.2 | 0.0 |
| 55° | 15.5 | 5.0 | 1.2 | 0.0 |
| 52.5° | 17.4 | 6.2 | 1.2 | 0.0 |
| 50° | 19.2 | 7.4 | 1.2 | 0.0 |
| 47.5° | 21.7 | 8.7 | 1.2 | 0.0 |
| 45° | 26.7 | 9.9 | 1.9 | 0.0 |
| 42.5° | 30.4 | 11.2 | 1.9 | 0.0 |
| 40° | 34.7 | 12.4 | 1.9 | 0.0 |
| 37.5° | 38.5 | 13.6 | 1.9 | 0.0 |
| 35° | 42.2 | 14.9 | 1.9 | 0.0 |
| 32.5° | 45.9 | 15.5 | 1.9 | 0.0 |
| 30° | 49.6 | 16.7 | 1.9 | 0.0 |
| 27.5° | 52.7 | 17.4 | 1.9 | 0.0 |
| 25° | 55.2 | 18.6 | 1.9 | 0.0 |
| 22.5° | 58.3 | 19.2 | 2.5 | 0.0 |
| 20° | 60.8 | 19.8 | 2.5 | 0.0 |
| 17.5° | 63.3 | 20.5 | 2.5 | 0.0 |
| 15° | 65.1 | 21.1 | 2.5 | 0.0 |
| 12.5° | 67.0 | 21.7 | 2.5 | 0.0 |
| 10° | 68.2 | 22.3 | 2.5 | 0.0 |
| 7.5° | 70.7 | 22.9 | 2.5 | 0.0 |
| 5° | 71.3 | 22.9 | 2.5 | 0.0 |
| 2.5° | 71.3 | 22.9 | 2.5 | 0.0 |
| 0° | 71.9 | 22.9 | 2.5 | 0.0 |

Signify Classified - Internal
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

LUMARK

Report Number: SP1-2401-297-2

Test Date: 02/27/2024

Luminaire Tested: NHRS100U33BZ750

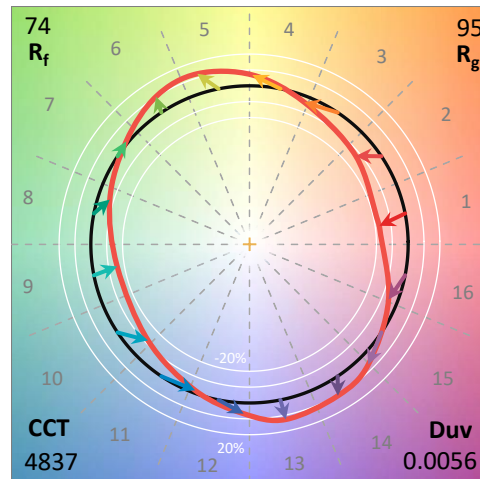
Data in this report applies to families of products NHRS100U33BZ750.

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2401-297-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 02/29/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: LUMARK
 Catalog Number: **NHRS100U33BZ750**
 Description: LUMARK NIGHT HARRIER 4 PANEL FLOOD SELECTABLE CCT NEMA 3 AT 5000K.

Spectral Parameters

| | | | | | |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K): | 4837 | CRI (Ra): | 71.3 | R9: | -35.9 |
| CIE u': | 0.2093 | R1: | 67.6 | R10: | 43.7 |
| CIE v': | 0.4933 | R2: | 75.8 | R11: | 68.8 |
| Duv: | 0.0056 | R3: | 83.2 | R12: | 44.0 |
| CIE x: | 0.3512 | R4: | 71.9 | R13: | 68.5 |
| CIE y: | 0.3678 | R5: | 68.7 | R14: | 90.6 |
| CIE z: | 0.2809 | R6: | 67.6 | | |
| Peak Wavelength (nm): | 445 | R7: | 80.9 | | |
| Dominant Wavelength (nm): | 570 | R8: | 54.6 | | |
| Purity: | 15.9 | | | | |
| Rf: | 73.6 | | | | |
| Rg: | 94.7 | | | | |



Test Conditions

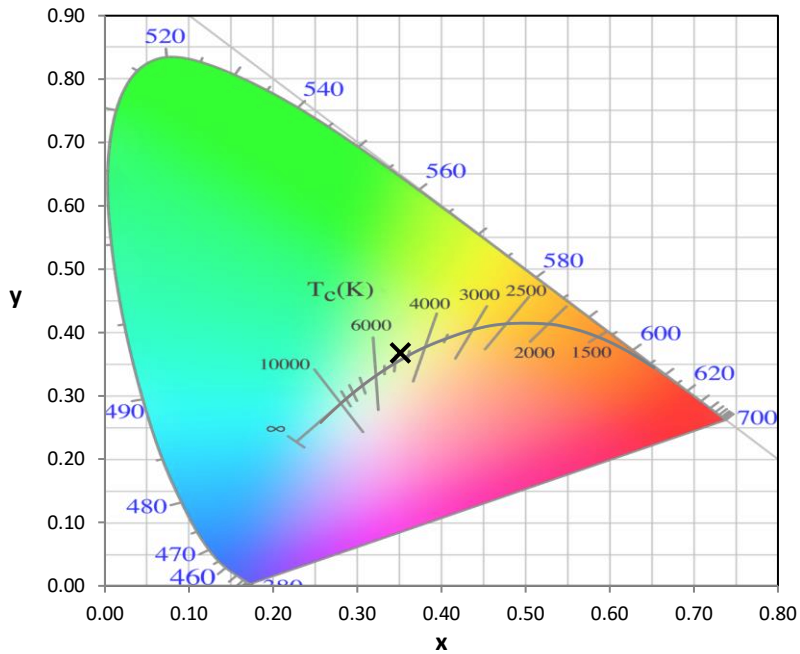
Stabilization Time: 22M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.9/30%
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP1-2401-297-2

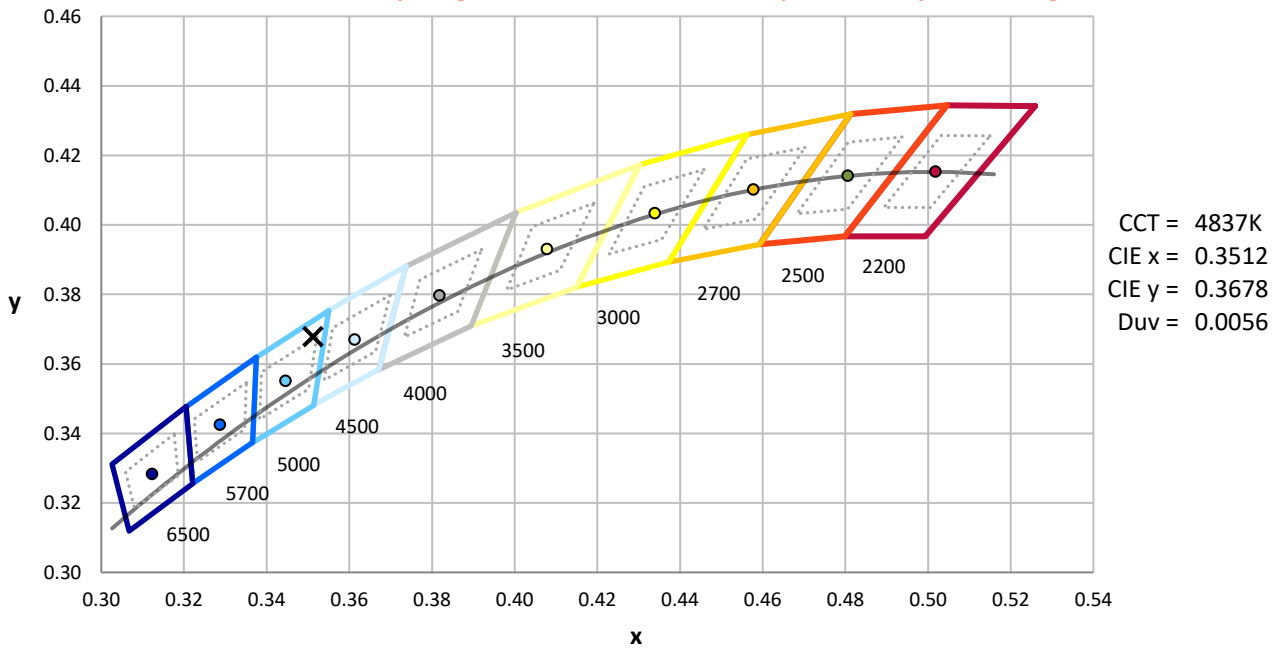
| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 2/12/2024 | 8/12/2024 |
| Power Meter | XITRON 2801 IN0071 | 10/23/2023 | 10/23/2024 |
| AC Power Source | CHROMA 61603 IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | AGILENT E3634A IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | ONSET IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | ONSET IN0046 | 10/24/2023 | 10/24/2024 |

REPORT NUMBER: SP1-2401-297-2

CIE 1931 Chromaticity Diagram



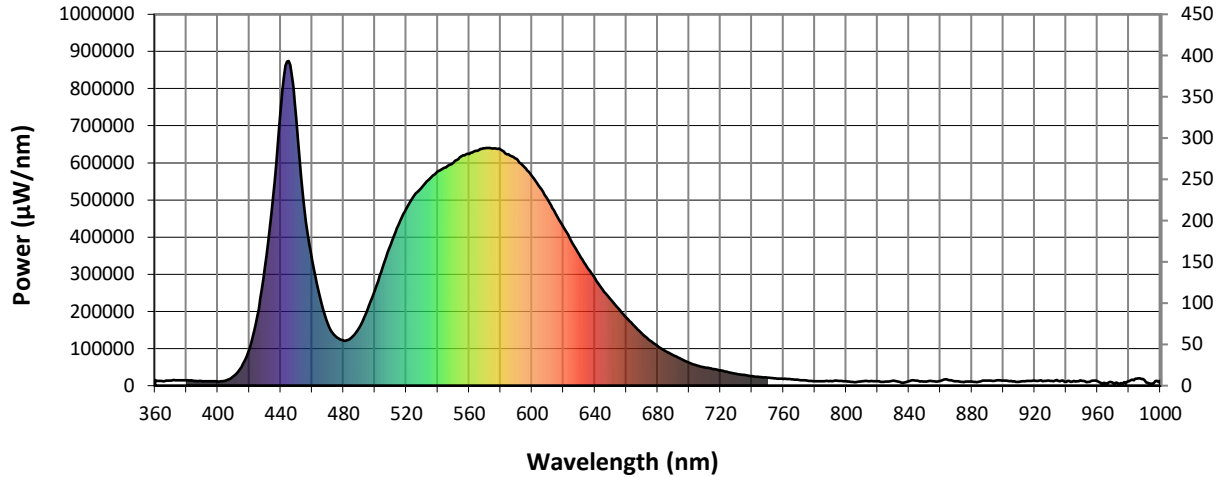
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2401-297-2

Photopic Flux vs. Wavelength

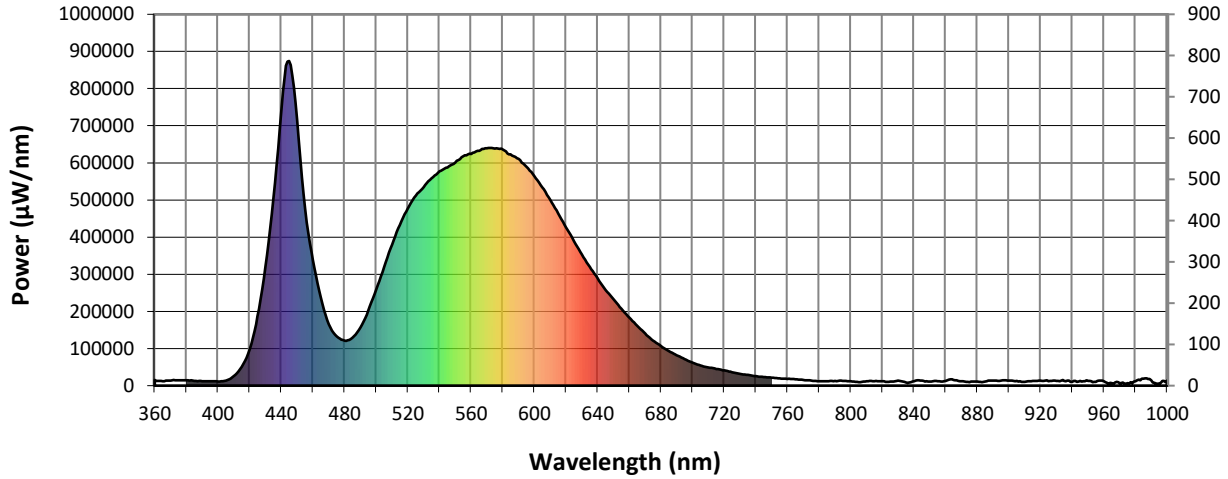


#####

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 14929 | NR | 490 | 156872 | NR | 620 | 426646 | NR | 750 | 21636 | NR | 880 | 10635 | NR |
| 365 | 11663 | NR | 495 | 201588 | NR | 625 | 389645 | NR | 755 | 19294 | NR | 885 | 11054 | NR |
| 370 | 13676 | NR | 500 | 258301 | NR | 630 | 353066 | NR | 760 | 18310 | NR | 890 | 13653 | NR |
| 375 | 14812 | NR | 505 | 319162 | NR | 635 | 319718 | NR | 765 | 17431 | NR | 895 | 13616 | NR |
| 380 | 14674 | NR | 510 | 380062 | NR | 640 | 288986 | NR | 770 | 15164 | NR | 900 | 13982 | NR |
| 385 | 12382 | NR | 515 | 432656 | NR | 645 | 257900 | NR | 775 | 13513 | NR | 905 | 12342 | NR |
| 390 | 11999 | NR | 520 | 476960 | NR | 650 | 232099 | NR | 780 | 11469 | NR | 910 | 10200 | NR |
| 395 | 11880 | NR | 525 | 512061 | NR | 655 | 207197 | NR | 785 | 12052 | NR | 915 | 12678 | NR |
| 400 | 11127 | NR | 530 | 535142 | NR | 660 | 183199 | NR | 790 | 12754 | NR | 920 | 13836 | NR |
| 405 | 13930 | NR | 535 | 558328 | NR | 665 | 161040 | NR | 795 | 12821 | NR | 925 | 11713 | NR |
| 410 | 25393 | NR | 540 | 576885 | NR | 670 | 140120 | NR | 800 | 11812 | NR | 930 | 12572 | NR |
| 415 | 50349 | NR | 545 | 587950 | NR | 675 | 121728 | NR | 805 | 9356 | NR | 935 | 12749 | NR |
| 420 | 98098 | NR | 550 | 600643 | NR | 680 | 106806 | NR | 810 | 11676 | NR | 940 | 10259 | NR |
| 425 | 186895 | NR | 555 | 617484 | NR | 685 | 92775 | NR | 815 | 12164 | NR | 945 | 12514 | NR |
| 430 | 320236 | NR | 560 | 624145 | NR | 690 | 81733 | NR | 820 | 11604 | NR | 950 | 12788 | NR |
| 435 | 504450 | NR | 565 | 632478 | NR | 695 | 71387 | NR | 825 | 10706 | NR | 955 | 10484 | NR |
| 440 | 743682 | NR | 570 | 639368 | NR | 700 | 61789 | NR | 830 | 13474 | NR | 960 | 11973 | NR |
| 445 | 874242 | NR | 575 | 638303 | NR | 705 | 54194 | NR | 835 | 8702 | NR | 965 | 6759 | NR |
| 450 | 715574 | NR | 580 | 635962 | NR | 710 | 49021 | NR | 840 | 11970 | NR | 970 | 6888 | NR |
| 455 | 475983 | NR | 585 | 623054 | NR | 715 | 45016 | NR | 845 | 13590 | NR | 975 | 6755 | NR |
| 460 | 339018 | NR | 590 | 610770 | NR | 720 | 40860 | NR | 850 | 11012 | NR | 980 | 11558 | NR |
| 465 | 237270 | NR | 595 | 588838 | NR | 725 | 36452 | NR | 855 | 12312 | NR | 985 | 18361 | NR |
| 470 | 165263 | NR | 600 | 563194 | NR | 730 | 31730 | NR | 860 | 12946 | NR | 990 | 14502 | NR |
| 475 | 132708 | NR | 605 | 534124 | NR | 735 | 28876 | NR | 865 | 15199 | NR | 995 | 5688 | NR |
| 480 | 121456 | NR | 610 | 500589 | NR | 740 | 25374 | NR | 870 | 12096 | NR | 1000 | 13729 | NR |
| 485 | 128811 | NR | 615 | 463468 | NR | 745 | 23293 | NR | 875 | 9636 | NR | | | |

REPORT NUMBER: SP1-2401-297-2

Scotopic Flux vs. Wavelength

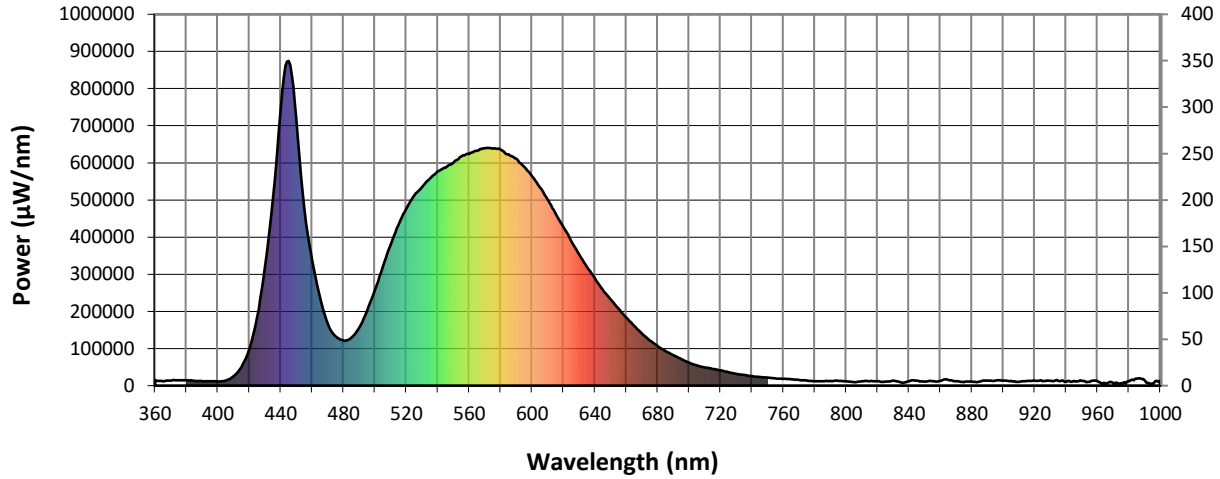


Scotopic Lumens: 65505.2 S/P: 1.73

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 14929 | NR | 490 | 156872 | NR | 620 | 426646 | NR | 750 | 21636 | NR | 880 | 10635 | NR |
| 365 | 11663 | NR | 495 | 201588 | NR | 625 | 389645 | NR | 755 | 19294 | NR | 885 | 11054 | NR |
| 370 | 13676 | NR | 500 | 258301 | NR | 630 | 353066 | NR | 760 | 18310 | NR | 890 | 13653 | NR |
| 375 | 14812 | NR | 505 | 319162 | NR | 635 | 319718 | NR | 765 | 17431 | NR | 895 | 13616 | NR |
| 380 | 14674 | NR | 510 | 380062 | NR | 640 | 288986 | NR | 770 | 15164 | NR | 900 | 13982 | NR |
| 385 | 12382 | NR | 515 | 432656 | NR | 645 | 257900 | NR | 775 | 13513 | NR | 905 | 12342 | NR |
| 390 | 11999 | NR | 520 | 476960 | NR | 650 | 232099 | NR | 780 | 11469 | NR | 910 | 10200 | NR |
| 395 | 11880 | NR | 525 | 512061 | NR | 655 | 207197 | NR | 785 | 12052 | NR | 915 | 12678 | NR |
| 400 | 11127 | NR | 530 | 535142 | NR | 660 | 183199 | NR | 790 | 12754 | NR | 920 | 13836 | NR |
| 405 | 13930 | NR | 535 | 558328 | NR | 665 | 161040 | NR | 795 | 12821 | NR | 925 | 11713 | NR |
| 410 | 25393 | NR | 540 | 576885 | NR | 670 | 140120 | NR | 800 | 11812 | NR | 930 | 12572 | NR |
| 415 | 50349 | NR | 545 | 587950 | NR | 675 | 121728 | NR | 805 | 9356 | NR | 935 | 12749 | NR |
| 420 | 98098 | NR | 550 | 600643 | NR | 680 | 106806 | NR | 810 | 11676 | NR | 940 | 10259 | NR |
| 425 | 186895 | NR | 555 | 617484 | NR | 685 | 92775 | NR | 815 | 12164 | NR | 945 | 12514 | NR |
| 430 | 320236 | NR | 560 | 624145 | NR | 690 | 81733 | NR | 820 | 11604 | NR | 950 | 12788 | NR |
| 435 | 504450 | NR | 565 | 632478 | NR | 695 | 71387 | NR | 825 | 10706 | NR | 955 | 10484 | NR |
| 440 | 743682 | NR | 570 | 639368 | NR | 700 | 61789 | NR | 830 | 13474 | NR | 960 | 11973 | NR |
| 445 | 874242 | NR | 575 | 638303 | NR | 705 | 54194 | NR | 835 | 8702 | NR | 965 | 6759 | NR |
| 450 | 715574 | NR | 580 | 635962 | NR | 710 | 49021 | NR | 840 | 11970 | NR | 970 | 6888 | NR |
| 455 | 475983 | NR | 585 | 623054 | NR | 715 | 45016 | NR | 845 | 13590 | NR | 975 | 6755 | NR |
| 460 | 339018 | NR | 590 | 610770 | NR | 720 | 40860 | NR | 850 | 11012 | NR | 980 | 11558 | NR |
| 465 | 237270 | NR | 595 | 588838 | NR | 725 | 36452 | NR | 855 | 12312 | NR | 985 | 18361 | NR |
| 470 | 165263 | NR | 600 | 563194 | NR | 730 | 31730 | NR | 860 | 12946 | NR | 990 | 14502 | NR |
| 475 | 132708 | NR | 605 | 534124 | NR | 735 | 28876 | NR | 865 | 15199 | NR | 995 | 5688 | NR |
| 480 | 121456 | NR | 610 | 500589 | NR | 740 | 25374 | NR | 870 | 12096 | NR | 1000 | 13729 | NR |
| 485 | 128811 | NR | 615 | 463468 | NR | 745 | 23293 | NR | 875 | 9636 | NR | | | |

REPORT NUMBER: SP1-2401-297-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: 25839.2 M/P: 0.68

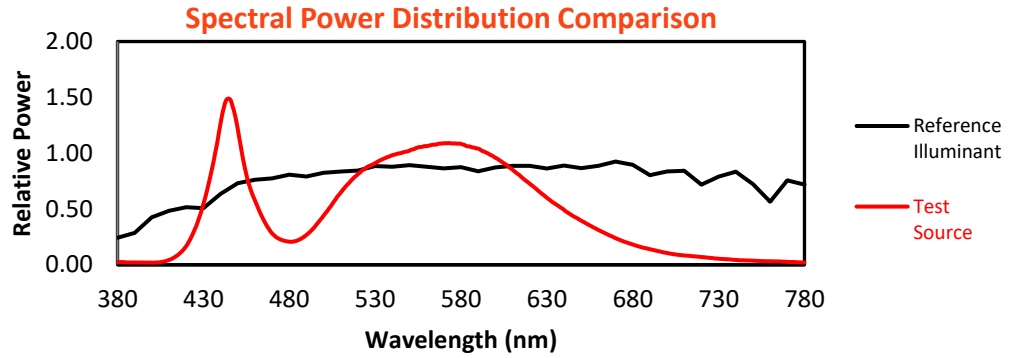
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 14929 | NR | 490 | 156872 | NR | 620 | 426646 | NR | 750 | 21636 | NR | 880 | 10635 | NR |
| 365 | 11663 | NR | 495 | 201588 | NR | 625 | 389645 | NR | 755 | 19294 | NR | 885 | 11054 | NR |
| 370 | 13676 | NR | 500 | 258301 | NR | 630 | 353066 | NR | 760 | 18310 | NR | 890 | 13653 | NR |
| 375 | 14812 | NR | 505 | 319162 | NR | 635 | 319718 | NR | 765 | 17431 | NR | 895 | 13616 | NR |
| 380 | 14674 | NR | 510 | 380062 | NR | 640 | 288986 | NR | 770 | 15164 | NR | 900 | 13982 | NR |
| 385 | 12382 | NR | 515 | 432656 | NR | 645 | 257900 | NR | 775 | 13513 | NR | 905 | 12342 | NR |
| 390 | 11999 | NR | 520 | 476960 | NR | 650 | 232099 | NR | 780 | 11469 | NR | 910 | 10200 | NR |
| 395 | 11880 | NR | 525 | 512061 | NR | 655 | 207197 | NR | 785 | 12052 | NR | 915 | 12678 | NR |
| 400 | 11127 | NR | 530 | 535142 | NR | 660 | 183199 | NR | 790 | 12754 | NR | 920 | 13836 | NR |
| 405 | 13930 | NR | 535 | 558328 | NR | 665 | 161040 | NR | 795 | 12821 | NR | 925 | 11713 | NR |
| 410 | 25393 | NR | 540 | 576885 | NR | 670 | 140120 | NR | 800 | 11812 | NR | 930 | 12572 | NR |
| 415 | 50349 | NR | 545 | 587950 | NR | 675 | 121728 | NR | 805 | 9356 | NR | 935 | 12749 | NR |
| 420 | 98098 | NR | 550 | 600643 | NR | 680 | 106806 | NR | 810 | 11676 | NR | 940 | 10259 | NR |
| 425 | 186895 | NR | 555 | 617484 | NR | 685 | 92775 | NR | 815 | 12164 | NR | 945 | 12514 | NR |
| 430 | 320236 | NR | 560 | 624145 | NR | 690 | 81733 | NR | 820 | 11604 | NR | 950 | 12788 | NR |
| 435 | 504450 | NR | 565 | 632478 | NR | 695 | 71387 | NR | 825 | 10706 | NR | 955 | 10484 | NR |
| 440 | 743682 | NR | 570 | 639368 | NR | 700 | 61789 | NR | 830 | 13474 | NR | 960 | 11973 | NR |
| 445 | 874242 | NR | 575 | 638303 | NR | 705 | 54194 | NR | 835 | 8702 | NR | 965 | 6759 | NR |
| 450 | 715574 | NR | 580 | 635962 | NR | 710 | 49021 | NR | 840 | 11970 | NR | 970 | 6888 | NR |
| 455 | 475983 | NR | 585 | 623054 | NR | 715 | 45016 | NR | 845 | 13590 | NR | 975 | 6755 | NR |
| 460 | 339018 | NR | 590 | 610770 | NR | 720 | 40860 | NR | 850 | 11012 | NR | 980 | 11558 | NR |
| 465 | 237270 | NR | 595 | 588838 | NR | 725 | 36452 | NR | 855 | 12312 | NR | 985 | 18361 | NR |
| 470 | 165263 | NR | 600 | 563194 | NR | 730 | 31730 | NR | 860 | 12946 | NR | 990 | 14502 | NR |
| 475 | 132708 | NR | 605 | 534124 | NR | 735 | 28876 | NR | 865 | 15199 | NR | 995 | 5688 | NR |
| 480 | 121456 | NR | 610 | 500589 | NR | 740 | 25374 | NR | 870 | 12096 | NR | 1000 | 13729 | NR |
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REPORT NUMBER: SP1-2401-297-2

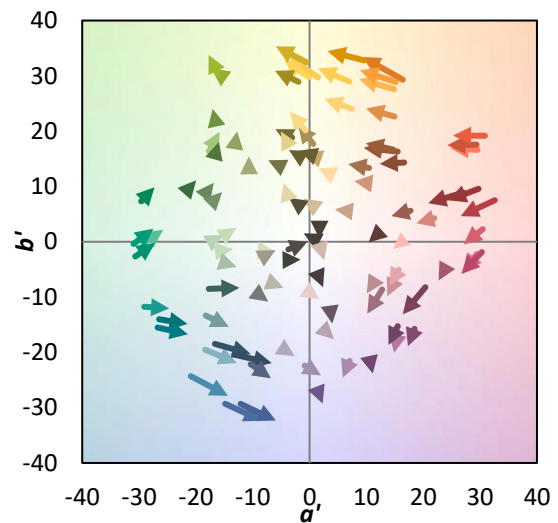
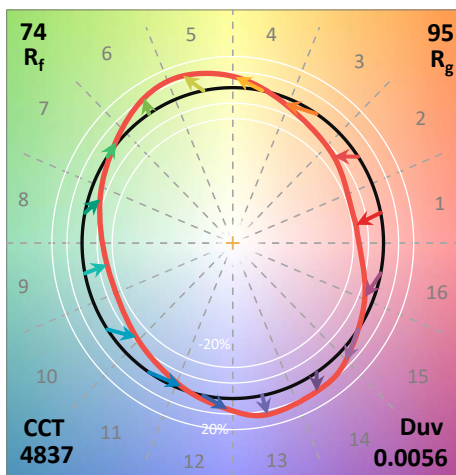
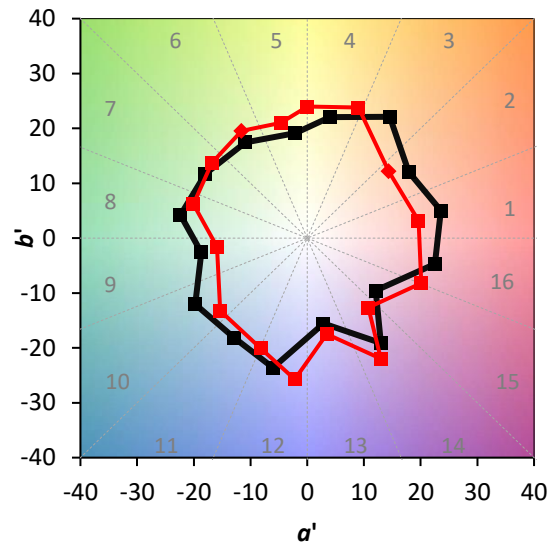
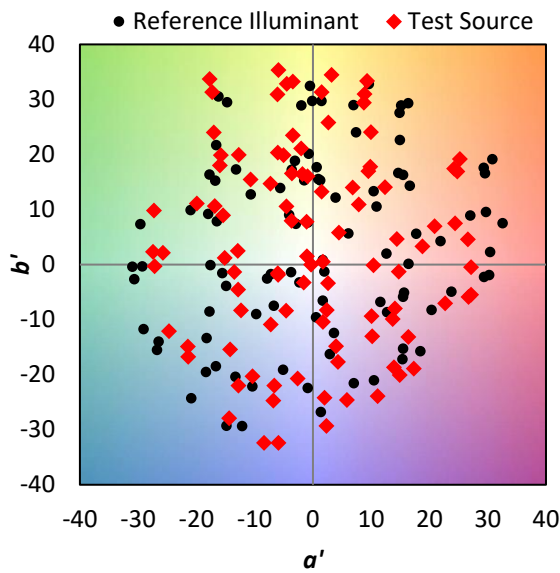
TM-30-18

Summary

$R_f = 73.6$
 $R_g = 94.7$
 CIE $R_a = 71.3$
 $R_g = -35.9$



Color Vector Graphics

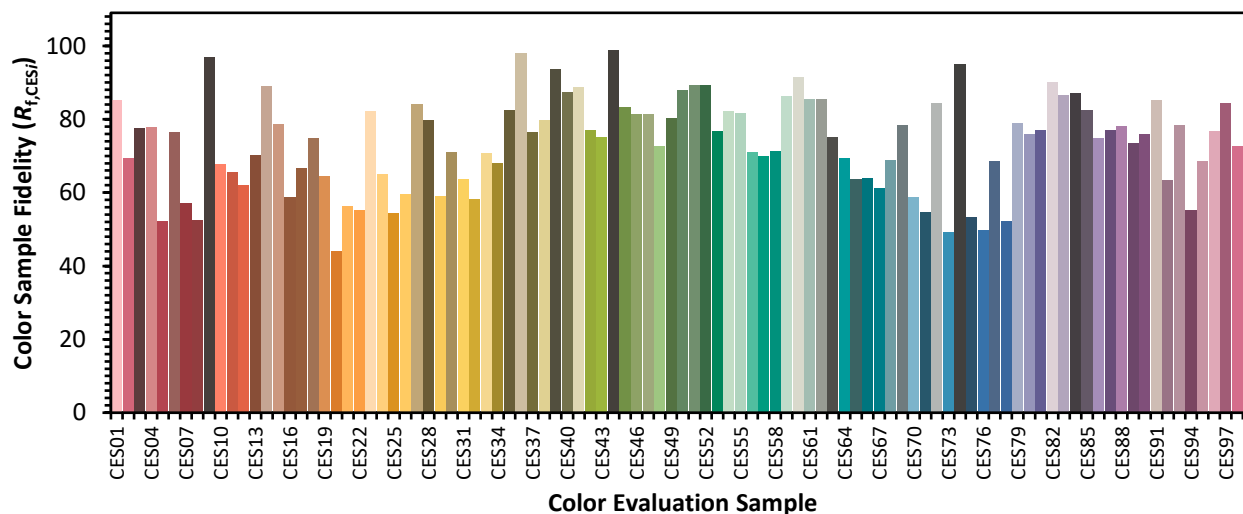


REPORT NUMBER: SP1-2401-297-2

TM-30-18

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

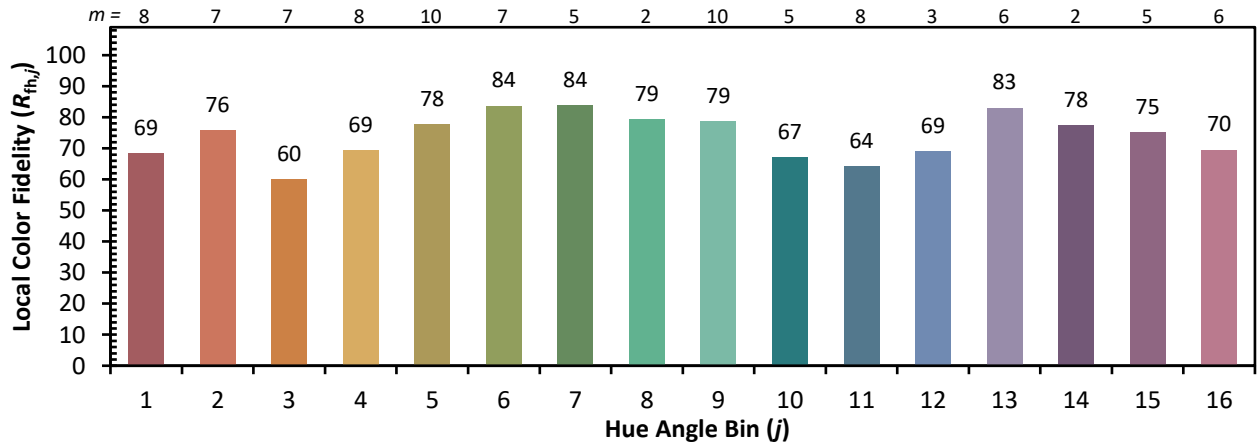
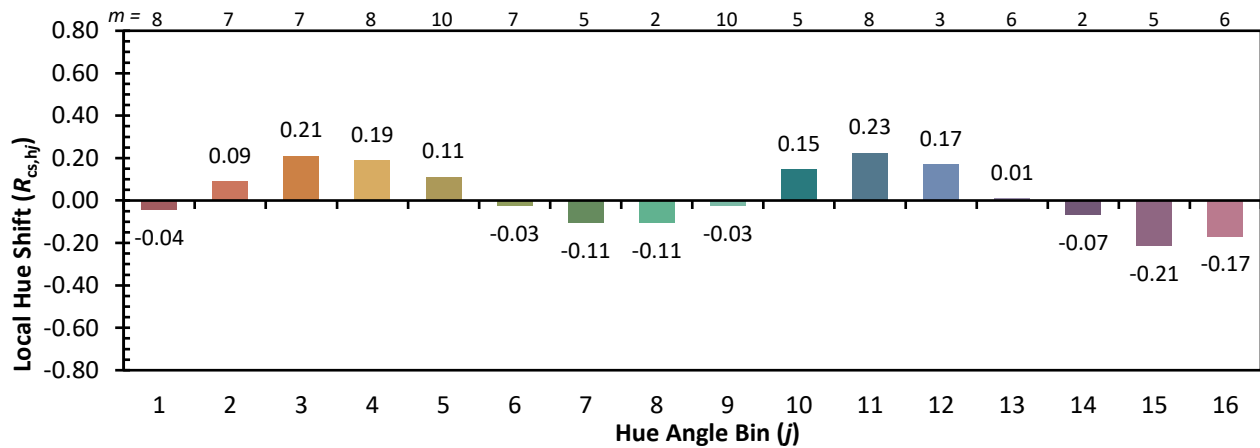
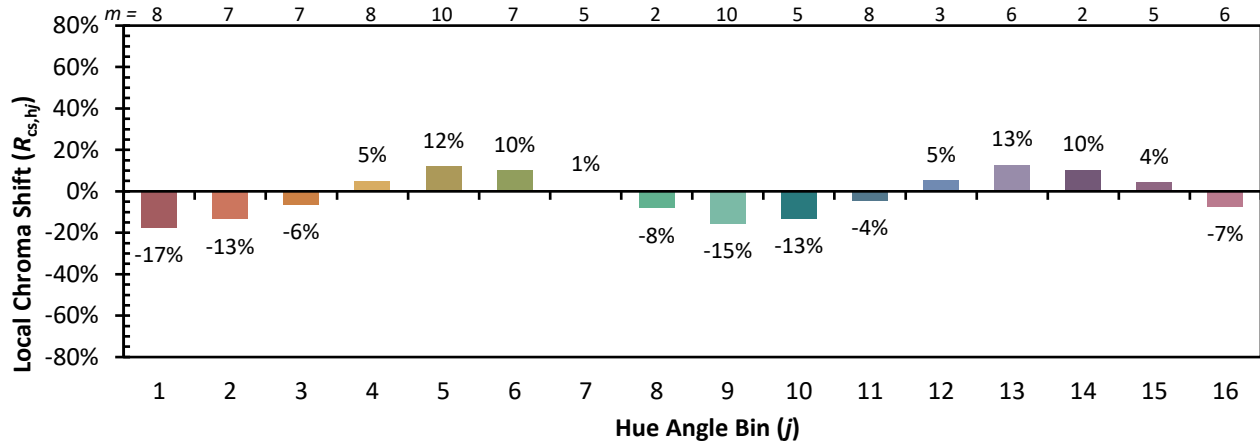
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|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 60 | CES51 = 89 | CES76 = 50 |
| CES02 = 59 | CES27 = 84 | CES52 = 89 | CES77 = 69 |
| CES03 = 30 | CES28 = 80 | CES53 = 77 | CES78 = 52 |
| CES04 = 69 | CES29 = 59 | CES54 = 82 | CES79 = 79 |
| CES05 = 46 | CES30 = 71 | CES55 = 82 | CES80 = 76 |
| CES06 = 50 | CES31 = 64 | CES56 = 71 | CES81 = 77 |
| CES07 = 39 | CES32 = 58 | CES57 = 70 | CES82 = 90 |
| CES08 = 38 | CES33 = 71 | CES58 = 71 | CES83 = 87 |
| CES09 = 29 | CES34 = 68 | CES59 = 86 | CES84 = 87 |
| CES10 = 72 | CES35 = 82 | CES60 = 91 | CES85 = 83 |
| CES11 = 56 | CES36 = 98 | CES61 = 86 | CES86 = 75 |
| CES12 = 61 | CES37 = 77 | CES62 = 86 | CES87 = 77 |
| CES13 = 41 | CES38 = 80 | CES63 = 75 | CES88 = 78 |
| CES14 = 74 | CES39 = 94 | CES64 = 69 | CES89 = 73 |
| CES15 = 70 | CES40 = 87 | CES65 = 64 | CES90 = 76 |
| CES16 = 46 | CES41 = 89 | CES66 = 64 | CES91 = 85 |
| CES17 = 49 | CES42 = 77 | CES67 = 61 | CES92 = 63 |
| CES18 = 55 | CES43 = 75 | CES68 = 69 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 78 | CES94 = 55 |
| CES20 = 64 | CES45 = 83 | CES70 = 59 | CES95 = 68 |
| CES21 = 85 | CES46 = 81 | CES71 = 55 | CES96 = 77 |
| CES22 = 77 | CES47 = 81 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 73 | CES73 = 49 | CES98 = 73 |
| CES24 = 90 | CES49 = 80 | CES74 = 95 | CES99 = 60 |
| CES25 = 71 | CES50 = 88 | CES75 = 53 | |



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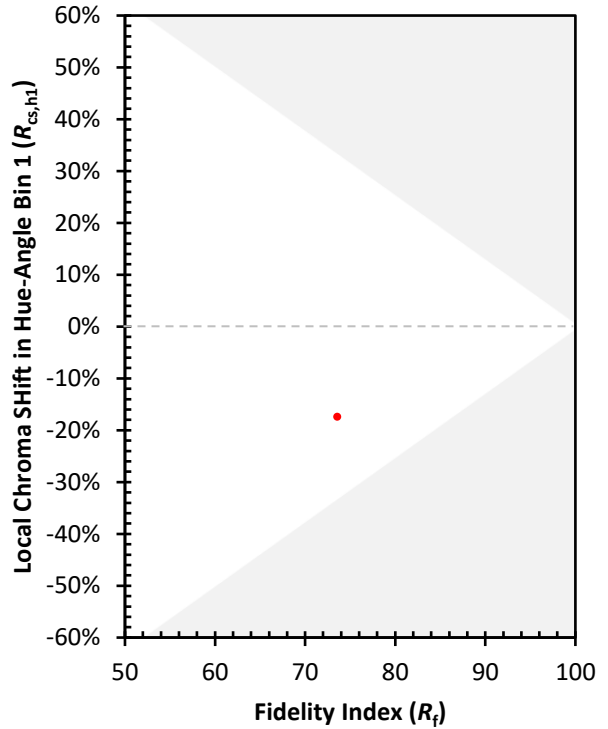
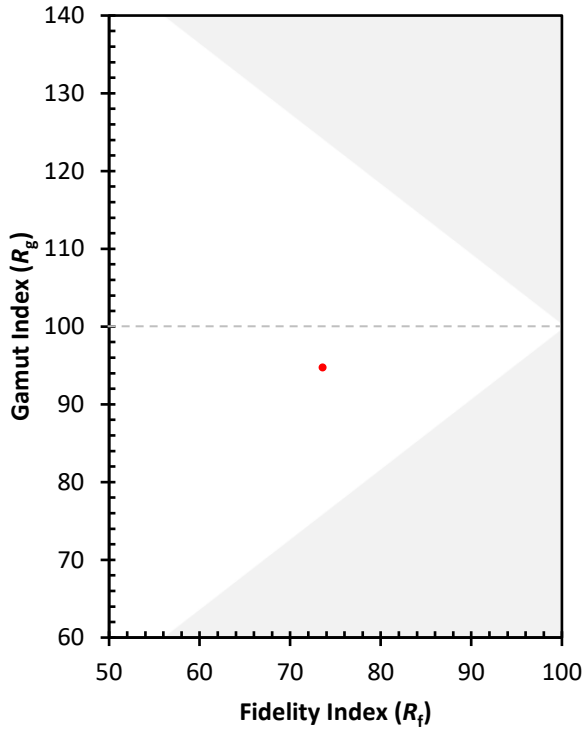
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)