

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: METALUX

Report Number: P830367

Luminaire Tested: **OHBL-36HE-W-UNV-L730-CD**

Issue Date: 5/3/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P830367  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2106-285-4)  
Test Lab: INNOVATION CENTER  
Issue Date: 5/3/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: OHBL-36HE-W-UNV-L730-CD  
Description: 36000 LUMEN OHBL HE LED LUMINAIRE WITH 70CRI, 3000K LEDS AND WIDE LENS  
Light Source: -  
Ballast/Driver: -

**Summary**

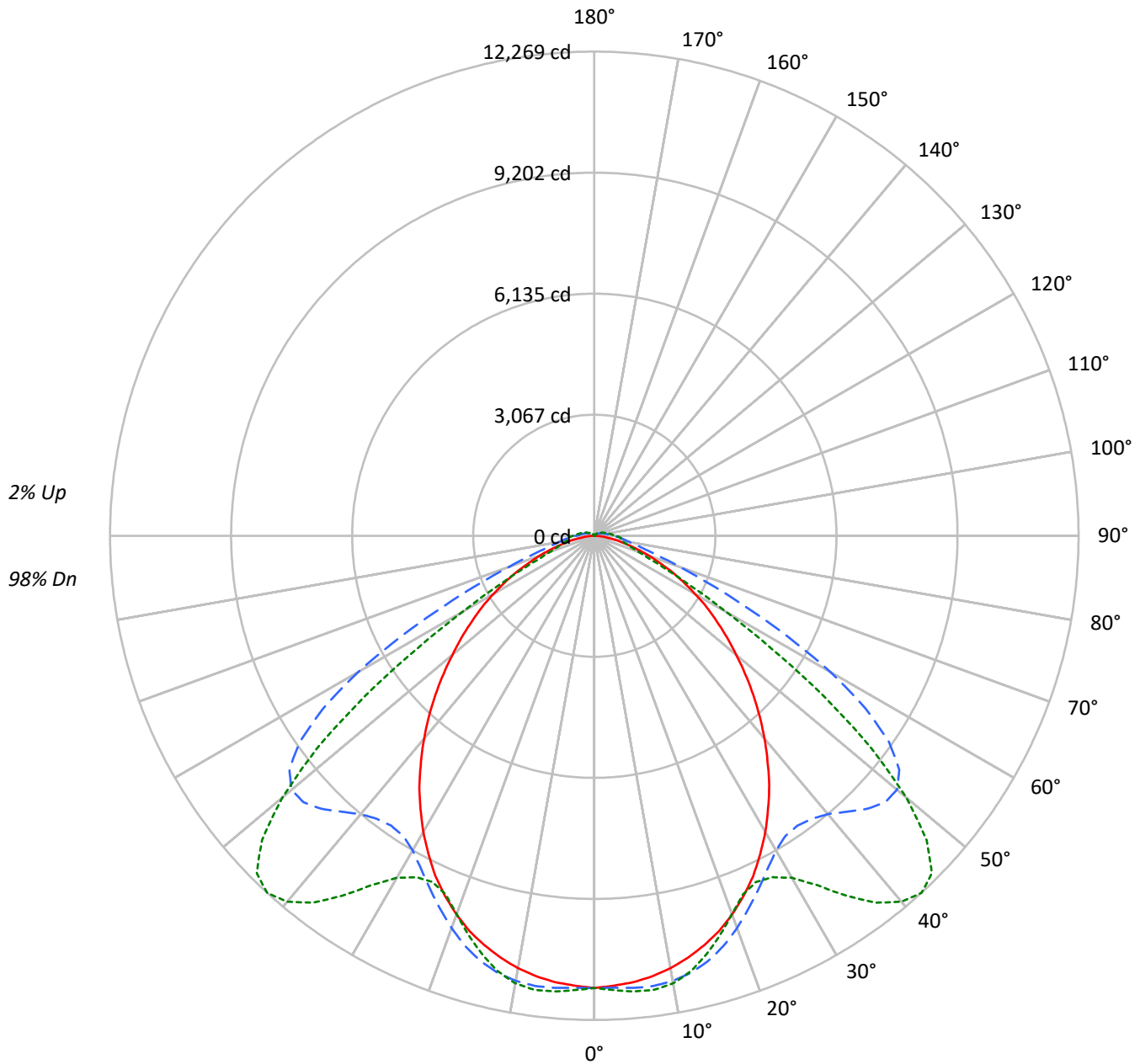
Lumens per Lamp: N/A  
Luminaire Lumens: 34314.0 lumens  
Efficiency: N/A  
Efficacy: 161.9 lumens/watt  
Spacing Criteria (0/90/45): 1.14 / 1.58 / 1.62  
Luminous Opening: Rectangular w/ Sides (W: 1.8' x L: 3.78' x H: 0.17')  
CIE Type: Direct

Input Watts (W): 212  
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: 25 FT

TEST NUMBER: P830367

CATALOG NUMBER: OHBL-36HE-W-UNV-L730-CD

### Luminous Intensity Polar Plot





TEST NUMBER: P830367

CATALOG NUMBER: OHBL-36HE-W-UNV-L730-CD

**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |    |    |    |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|----|
| RF  | 20  |     |     |     | 20  |     |     |     |     | 20  |     |     |     |     | 20  |     |     |    |    | 20 |
| RC  | 80  |     |     |     | 70  |     |     |     |     | 50  |     |     |     |     | 30  |     |     |    |    | 0  |
| 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 | 110 | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 98 |    |    |
| 1   | 109 | 104 | 100 | 96  | 106 | 102 | 98  | 95  | 97  | 94  | 91  | 93  | 90  | 88  | 89  | 87  | 85  | 83 |    |    |
| 2   | 99  | 91  | 85  | 79  | 96  | 89  | 83  | 78  | 85  | 80  | 76  | 82  | 77  | 74  | 78  | 75  | 72  | 70 |    |    |
| 3   | 90  | 80  | 72  | 66  | 88  | 78  | 71  | 65  | 75  | 69  | 64  | 72  | 67  | 62  | 69  | 65  | 61  | 59 |    |    |
| 4   | 83  | 71  | 62  | 56  | 80  | 69  | 61  | 55  | 67  | 60  | 54  | 64  | 58  | 53  | 62  | 57  | 52  | 50 |    |    |
| 5   | 76  | 63  | 54  | 48  | 74  | 62  | 54  | 47  | 60  | 52  | 47  | 57  | 51  | 46  | 55  | 50  | 45  | 43 |    |    |
| 6   | 70  | 57  | 48  | 41  | 68  | 56  | 47  | 41  | 54  | 46  | 41  | 52  | 45  | 40  | 50  | 44  | 40  | 38 |    |    |
| 7   | 65  | 51  | 43  | 36  | 63  | 50  | 42  | 36  | 49  | 41  | 36  | 47  | 40  | 35  | 45  | 40  | 35  | 33 |    |    |
| 8   | 60  | 47  | 38  | 32  | 58  | 46  | 38  | 32  | 44  | 37  | 32  | 43  | 36  | 31  | 42  | 36  | 31  | 29 |    |    |
| 9   | 56  | 43  | 34  | 29  | 55  | 42  | 34  | 29  | 41  | 34  | 28  | 39  | 33  | 28  | 38  | 32  | 28  | 26 |    |    |
| 10  | 52  | 39  | 31  | 26  | 51  | 39  | 31  | 26  | 38  | 31  | 26  | 36  | 30  | 26  | 35  | 30  | 25  | 24 |    |    |

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

|     | 0°    | 45°   | 90°   |
|-----|-------|-------|-------|
| 0°  | 18124 | 18124 | 18124 |
| 5°  | 17955 | 18107 | 18253 |
| 10° | 17730 | 18087 | 18198 |
| 15° | 17384 | 17797 | 17539 |
| 20° | 16910 | 17193 | 16605 |
| 25° | 16276 | 16460 | 16196 |
| 30° | 15433 | 15917 | 17341 |
| 35° | 14471 | 16221 | 20182 |
| 40° | 13354 | 17578 | 23190 |
| 45° | 12187 | 19953 | 24754 |
| 50° | 10970 | 22082 | 22851 |
| 55° | 9825  | 22075 | 17292 |
| 60° | 8661  | 18697 | 10446 |
| 65° | 7431  | 12929 | 6229  |
| 70° | 6037  | 8374  | 4402  |
| 75° | 4593  | 6018  | 3952  |
| 80° | 3297  | 5309  | 4222  |
| 85° | 2237  | 5883  | 5950  |



TEST NUMBER: P830367

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**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 1095.2  | 3.2       |
| 10°-20°   | 3101.2  | 9.0       |
| 20°-30°   | 4538.0  | 13.2      |
| 30°-40°   | 5893.5  | 17.2      |
| 40°-50°   | 7196.8  | 21.0      |
| 50°-60°   | 6337.9  | 18.5      |
| 60°-70°   | 3302.7  | 9.6       |
| 70°-80°   | 1416.3  | 4.1       |
| 80°-90°   | 680.2   | 2.0       |
| 90°-100°  | 319.5   | 0.9       |
| 100°-110° | 198.6   | 0.6       |
| 110°-120° | 117.4   | 0.3       |
| 120°-130° | 63.8    | 0.2       |
| 130°-140° | 32.0    | 0.1       |
| 140°-150° | 15.4    | 0.0       |
| 150°-160° | 5.4     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| <hr/>     |         |           |
| 0°-30°    | 8734.3  | 25.5      |
| 0°-40°    | 14627.9 | 42.6      |
| 0°-60°    | 28162.5 | 82.1      |
| 0°-90°    | 33561.7 | 97.8      |
| 90°-120°  | 635.6   | 1.9       |
| 90°-150°  | 746.9   | 2.2       |
| 90°-180°  | 752.0   | 2.2       |
| 0°-180°   | 34314.0 | 100.0     |

**CANDELA DISTRIBUTION:**

|      | 0°    | 22.5° | 45°   | 67.5° | 90°   | Flux |
|------|-------|-------|-------|-------|-------|------|
| 0°   | 11460 | 11460 | 11460 | 11460 | 11460 |      |
| 5°   | 11354 | 11440 | 11502 | 11604 | 11591 | ###  |
| 15°  | 10743 | 11045 | 11151 | 11067 | 10978 | 3025 |
| 25°  | 9519  | 10029 | 9858  | 9673  | 9682  | 4369 |
| 35°  | 7727  | 8543  | 8970  | 10461 | 11131 | 4816 |
| 45°  | 5689  | 7158  | 9784  | 11846 | 12093 | 4387 |
| 55°  | 3788  | 6270  | 9111  | 7989  | 7101  | 3400 |
| 65°  | 2173  | 4344  | 4171  | 2319  | 1995  | 2150 |
| 75°  | 875   | 2032  | 1340  | 917   | 870   | 954  |
| 85°  | 185   | 724   | 682   | 668   | 675   | 207  |
| 90°  | 2     | 262   | 450   | 514   | 527   | 13   |
| 95°  | 5     | 153   | 358   | 420   | 433   | 4    |
| 105° | 10    | 86    | 232   | 279   | 284   | 10   |
| 115° | 15    | 50    | 143   | 176   | 180   | 15   |
| 125° | 17    | 25    | 84    | 109   | 111   | 15   |
| 135° | 15    | 15    | 40    | 67    | 69    | 11   |
| 145° | 20    | 15    | 17    | 32    | 37    | 12   |
| 155° | 20    | 20    | 15    | 15    | 15    | 6    |
| 165° | 0     | 0     | 0     | 0     | 0     | 0    |
| 175° | 0     | 0     | 0     | 0     | 0     | 0    |
| 180° | 0     | 0     | 0     | 0     | 0     |      |



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**CANDELA DISTRIBUTION (FULL):**

|        | 0°      | 22.5°   | 45°     | 67.5°   | 90°     |
|--------|---------|---------|---------|---------|---------|
| 0°     | 11460.2 | 11460.2 | 11460.2 | 11460.2 | 11460.2 |
| 2.5°   | 11410.8 | 11460.2 | 11462.7 | 11532.0 | 11524.5 |
| 5°     | 11353.9 | 11440.5 | 11502.3 | 11603.7 | 11591.3 |
| 7.5°   | 11260.0 | 11396.0 | 11504.8 | 11616.0 | 11606.1 |
| 10°    | 11126.5 | 11311.9 | 11455.3 | 11546.8 | 11517.1 |
| 12.5°  | 10953.4 | 11198.2 | 11339.1 | 11358.9 | 11302.0 |
| 15°    | 10743.2 | 11044.9 | 11151.2 | 11067.1 | 10978.1 |
| 17.5°  | 10505.8 | 10859.4 | 10896.5 | 10713.5 | 10602.3 |
| 20°    | 10209.1 | 10612.2 | 10575.1 | 10322.9 | 10199.3 |
| 22.5°  | 9880.3  | 10340.2 | 10221.5 | 9956.9  | 9838.3  |
| 25°    | 9519.3  | 10028.6 | 9858.0  | 9672.6  | 9682.5  |
| 27.5°  | 9096.5  | 9675.1  | 9509.4  | 9593.5  | 9751.7  |
| 30°    | 8666.3  | 9304.2  | 9202.8  | 9692.4  | 10003.9 |
| 32.5°  | 8194.0  | 8923.4  | 9014.9  | 9981.7  | 10491.0 |
| 35°    | 7726.7  | 8542.6  | 8970.4  | 10461.3 | 11131.4 |
| 37.5°  | 7209.9  | 8156.9  | 9042.1  | 11015.2 | 11717.4 |
| 40°    | 6708.0  | 7781.1  | 9205.3  | 11512.2 | 12105.6 |
| 42.5°  | 6196.2  | 7444.8  | 9479.7  | 11806.4 | 12268.8 |
| 45°    | 5689.3  | 7158.0  | 9783.9  | 11846.0 | 12093.2 |
| 47.5°  | 5182.5  | 6915.7  | 9994.0  | 11532.0 | 11418.2 |
| 50°    | 4692.9  | 6700.6  | 10008.9 | 10777.8 | 10313.0 |
| 52.5°  | 4235.5  | 6502.8  | 9736.9  | 9576.2  | 8854.2  |
| 55°    | 3787.9  | 6270.4  | 9111.3  | 7988.8  | 7101.2  |
| 57.5°  | 3380.0  | 5948.9  | 8147.0  | 6282.7  | 5313.5  |
| 60°    | 2947.3  | 5513.8  | 6900.9  | 4596.5  | 3832.4  |
| 62.5°  | 2549.2  | 4972.3  | 5503.9  | 3199.5  | 2754.4  |
| 65°    | 2173.4  | 4344.3  | 4171.2  | 2319.2  | 1995.3  |
| 67.5°  | 1775.3  | 3694.0  | 3078.3  | 1691.2  | 1483.5  |
| 70°    | 1463.7  | 3090.7  | 2292.0  | 1315.4  | 1194.2  |
| 72.5°  | 1144.8  | 2517.1  | 1713.5  | 1068.1  | 1001.4  |
| 75°    | 875.3   | 2032.4  | 1340.1  | 917.3   | 870.3   |
| 77.5°  | 645.3   | 1607.2  | 1078.0  | 811.0   | 766.5   |
| 80°    | 452.5   | 1265.9  | 902.5   | 724.5   | 707.1   |
| 82.5°  | 304.1   | 979.1   | 769.0   | 689.8   | 692.3   |
| 85°    | 185.4   | 724.5   | 682.4   | 667.6   | 675.0   |
| 87.5°  | 89.0    | 514.3   | 586.0   | 608.2   | 615.7   |
| 90°    | 2.5     | 262.1   | 450.0   | 514.3   | 526.7   |
| 92.5°  | 0.0     | 200.3   | 395.6   | 459.9   | 472.3   |
| 95°    | 4.9     | 153.3   | 358.5   | 420.3   | 432.7   |
| 97.5°  | 4.9     | 126.1   | 321.4   | 385.7   | 393.1   |
| 100°   | 7.4     | 108.8   | 286.8   | 348.6   | 356.0   |
| 102.5° | 7.4     | 96.4    | 257.1   | 311.5   | 316.5   |
| 105°   | 9.9     | 86.5    | 232.4   | 279.4   | 284.3   |



TEST NUMBER: P830367

CATALOG NUMBER: OHBL-36HE-W-UNV-L730-CD

**CANDELA DISTRIBUTION (continued):**

|        | 0°   | 22.5° | 45°   | 67.5° | 90°   |
|--------|------|-------|-------|-------|-------|
| 112.5° | 14.8 | 59.3  | 163.2 | 197.8 | 202.7 |
| 115°   | 14.8 | 49.5  | 143.4 | 175.6 | 180.5 |
| 117.5° | 17.3 | 44.5  | 126.1 | 155.8 | 158.2 |
| 120°   | 17.3 | 37.1  | 108.8 | 138.5 | 140.9 |
| 122.5° | 17.3 | 29.7  | 96.4  | 123.6 | 126.1 |
| 125°   | 17.3 | 24.7  | 84.1  | 108.8 | 111.3 |
| 127.5° | 14.8 | 17.3  | 71.7  | 96.4  | 98.9  |
| 130°   | 14.8 | 14.8  | 59.3  | 84.1  | 89.0  |
| 132.5° | 14.8 | 14.8  | 49.5  | 74.2  | 79.1  |
| 135°   | 14.8 | 14.8  | 39.6  | 66.8  | 69.2  |
| 137.5° | 14.8 | 14.8  | 32.1  | 56.9  | 61.8  |
| 140°   | 14.8 | 14.8  | 24.7  | 49.5  | 51.9  |
| 142.5° | 17.3 | 14.8  | 22.3  | 42.0  | 44.5  |
| 145°   | 19.8 | 14.8  | 17.3  | 32.1  | 37.1  |
| 147.5° | 19.8 | 17.3  | 17.3  | 27.2  | 29.7  |
| 150°   | 19.8 | 19.8  | 14.8  | 19.8  | 24.7  |
| 152.5° | 19.8 | 19.8  | 14.8  | 14.8  | 19.8  |
| 155°   | 19.8 | 19.8  | 14.8  | 14.8  | 14.8  |
| 157.5° | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 160°   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 162.5° | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 165°   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 167.5° | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 170°   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 172.5° | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 175°   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 177.5° | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |
| 180°   | 0.0  | 0.0   | 0.0   | 0.0   | 0.0   |



Report Generated By 670246072 / DESKTOP-50001EG





— 0°-180°    - - 45°-225°    - - - 90°-270°







|        |      |      |       |       |       |
|--------|------|------|-------|-------|-------|
| 107.5° | 12.4 | 76.6 | 207.7 | 249.7 | 254.7 |
| 110°   | 12.4 | 66.8 | 183.0 | 222.5 | 227.5 |



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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2307-100-1

Test Date: 07/27/2023

Luminaire Tested: OHB-15SE-N-UNV-L730-CD

Data in this report applies to families of products including OHB-15SE-N-UNV-L730-CD.

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2307-100-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/04/2023  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: METALUX  
 Catalog Number: **OHB-15SE-N-UNV-L730-CD**  
 Description: 15000 LUMEN OHB SE LED LUMINAIRE WITH 70CRI, 3000K LEDS AND NARROW LENS

LENS

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3069    | CRI (Ra): | 71.3 |      |       |
| CIE u':                   | 0.2485  | R1:       | 67.4 | R9:  | -35.7 |
| CIE v':                   | 0.5185  | R2:       | 83.0 | R10: | 60.6  |
| Duv:                      | -0.0010 | R3:       | 94.0 | R11: | 58.9  |
| CIE x:                    | 0.4306  | R4:       | 65.2 | R12: | 49.5  |
| CIE y:                    | 0.3993  | R5:       | 66.6 | R13: | 70.5  |
| CIE z:                    | 0.1702  | R6:       | 76.0 | R14: | 97.0  |
| Peak Wavelength (nm):     | 596     | R7:       | 76.4 |      |       |
| Dominant Wavelength (nm): | 582     | R8:       | 41.9 |      |       |
| Purity:                   | 49.5    |           |      |      |       |
| Rf:                       | 74.9    |           |      |      |       |
| Rg:                       | 92.7    |           |      |      |       |



### Test Conditions

Stabilization Time: 23M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.7/57%  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2307-100-1

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | 76INCH SPHERE IN0058  | 2/9/2023         | 8/9/2023             |
| Power Meter                    | XITRON 2801 IN0071    | 11/29/2022       | 11/29/2023           |
| AC Power Source                | CHROMA 61603 IN0063   | 11/28/2022       | 11/28/2023           |
| DC Power Source                | AGILENT E3634A IN0208 | 11/28/2022       | 11/28/2023           |
| Sphere Thermometer             | ONSET IN0085          | 11/28/2022       | 11/28/2023           |
| Room Thermometer               | ONSET IN0046          | 11/28/2022       | 11/28/2023           |

REPORT NUMBER: SP1-2307-100-1

CIE 1931 Chromaticity Diagram



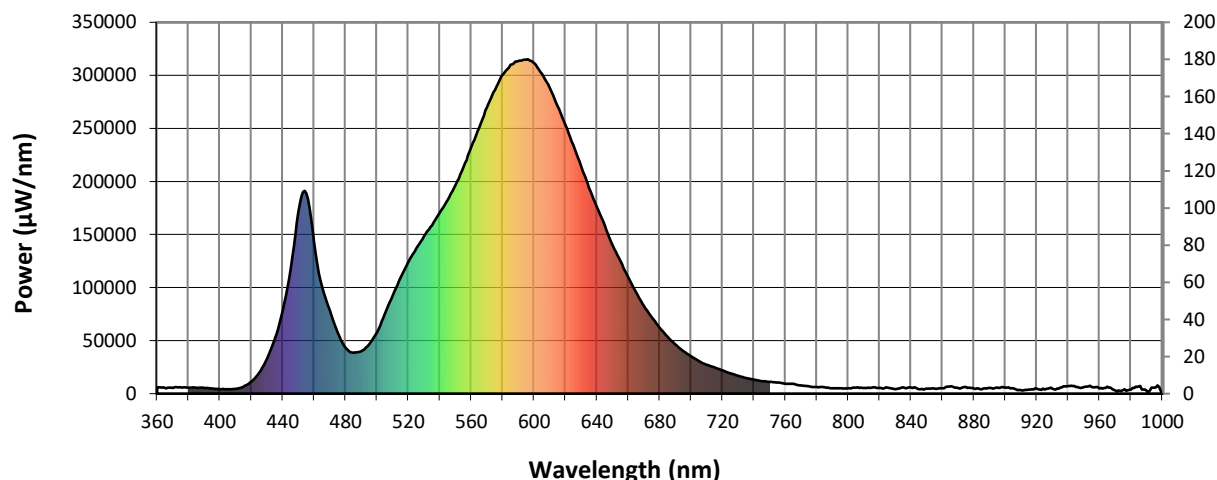
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2307-100-1

**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 6099             | NR               | 490       | 40168            | NR               | 620       | 253019           | NR               | 750       | 11053            | NR               | 880       | 4764             | NR               |
| 365       | 5425             | NR               | 495       | 46535            | NR               | 625       | 234501           | NR               | 755       | 10436            | NR               | 885       | 4069             | NR               |
| 370       | 5467             | NR               | 500       | 57902            | NR               | 630       | 214134           | NR               | 760       | 9340             | NR               | 890       | 5470             | NR               |
| 375       | 5866             | NR               | 505       | 75040            | NR               | 635       | 194074           | NR               | 765       | 9223             | NR               | 895       | 5625             | NR               |
| 380       | 5693             | NR               | 510       | 92426            | NR               | 640       | 175837           | NR               | 770       | 7875             | NR               | 900       | 5662             | NR               |
| 385       | 5528             | NR               | 515       | 109218           | NR               | 645       | 158182           | NR               | 775       | 6995             | NR               | 905       | 4976             | NR               |
| 390       | 5323             | NR               | 520       | 124301           | NR               | 650       | 139770           | NR               | 780       | 6291             | NR               | 910       | 3243             | NR               |
| 395       | 4691             | NR               | 525       | 136616           | NR               | 655       | 124825           | NR               | 785       | 5894             | NR               | 915       | 4005             | NR               |
| 400       | 4292             | NR               | 530       | 148525           | NR               | 660       | 109765           | NR               | 790       | 5176             | NR               | 920       | 4854             | NR               |
| 405       | 4106             | NR               | 535       | 158686           | NR               | 665       | 95251            | NR               | 795       | 5191             | NR               | 925       | 3999             | NR               |
| 410       | 4555             | NR               | 540       | 170513           | NR               | 670       | 82640            | NR               | 800       | 4961             | NR               | 930       | 4856             | NR               |
| 415       | 6579             | NR               | 545       | 182793           | NR               | 675       | 71832            | NR               | 805       | 5762             | NR               | 935       | 5652             | NR               |
| 420       | 11281            | NR               | 550       | 196628           | NR               | 680       | 62184            | NR               | 810       | 5247             | NR               | 940       | 7244             | NR               |
| 425       | 19782            | NR               | 555       | 213600           | NR               | 685       | 53604            | NR               | 815       | 5570             | NR               | 945       | 6266             | NR               |
| 430       | 32934            | NR               | 560       | 232241           | NR               | 690       | 46370            | NR               | 820       | 5470             | NR               | 950       | 6258             | NR               |
| 435       | 52004            | NR               | 565       | 250545           | NR               | 695       | 40048            | NR               | 825       | 5780             | NR               | 955       | 6166             | NR               |
| 440       | 77987            | NR               | 570       | 269608           | NR               | 700       | 35148            | NR               | 830       | 4151             | NR               | 960       | 4813             | NR               |
| 445       | 117241           | NR               | 575       | 286007           | NR               | 705       | 30717            | NR               | 835       | 5899             | NR               | 965       | 6539             | NR               |
| 450       | 171397           | NR               | 580       | 300402           | NR               | 710       | 27137            | NR               | 840       | 5774             | NR               | 970       | 2930             | NR               |
| 455       | 188676           | NR               | 585       | 310093           | NR               | 715       | 24655            | NR               | 845       | 4055             | NR               | 975       | 3170             | NR               |
| 460       | 142860           | NR               | 590       | 313605           | NR               | 720       | 21845            | NR               | 850       | 4767             | NR               | 980       | 3959             | NR               |
| 465       | 100906           | NR               | 595       | 314960           | NR               | 725       | 19116            | NR               | 855       | 4780             | NR               | 985       | 6920             | NR               |
| 470       | 78130            | NR               | 600       | 311387           | NR               | 730       | 16889            | NR               | 860       | 5148             | NR               | 990       | 2710             | NR               |
| 475       | 57660            | NR               | 605       | 301618           | NR               | 735       | 14825            | NR               | 865       | 6865             | NR               | 995       | 5566             | NR               |
| 480       | 43089            | NR               | 610       | 288042           | NR               | 740       | 13154            | NR               | 870       | 5392             | NR               | 1000      | 0                | NR               |
| 485       | 38569            | NR               | 615       | 270953           | NR               | 745       | 11725            | NR               | 875       | 6166             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-1

Scotopic Flux vs. Wavelength



Scotopic Lumens: 18956.8

S/P: 1.25

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 6099             | NR               | 490       | 40168            | NR               | 620       | 253019           | NR               | 750       | 11053            | NR               | 880       | 4764             | NR               |
| 365       | 5425             | NR               | 495       | 46535            | NR               | 625       | 234501           | NR               | 755       | 10436            | NR               | 885       | 4069             | NR               |
| 370       | 5467             | NR               | 500       | 57902            | NR               | 630       | 214134           | NR               | 760       | 9340             | NR               | 890       | 5470             | NR               |
| 375       | 5866             | NR               | 505       | 75040            | NR               | 635       | 194074           | NR               | 765       | 9223             | NR               | 895       | 5625             | NR               |
| 380       | 5693             | NR               | 510       | 92426            | NR               | 640       | 175837           | NR               | 770       | 7875             | NR               | 900       | 5662             | NR               |
| 385       | 5528             | NR               | 515       | 109218           | NR               | 645       | 158182           | NR               | 775       | 6995             | NR               | 905       | 4976             | NR               |
| 390       | 5323             | NR               | 520       | 124301           | NR               | 650       | 139770           | NR               | 780       | 6291             | NR               | 910       | 3243             | NR               |
| 395       | 4691             | NR               | 525       | 136616           | NR               | 655       | 124825           | NR               | 785       | 5894             | NR               | 915       | 4005             | NR               |
| 400       | 4292             | NR               | 530       | 148525           | NR               | 660       | 109765           | NR               | 790       | 5176             | NR               | 920       | 4854             | NR               |
| 405       | 4106             | NR               | 535       | 158686           | NR               | 665       | 95251            | NR               | 795       | 5191             | NR               | 925       | 3999             | NR               |
| 410       | 4555             | NR               | 540       | 170513           | NR               | 670       | 82640            | NR               | 800       | 4961             | NR               | 930       | 4856             | NR               |
| 415       | 6579             | NR               | 545       | 182793           | NR               | 675       | 71832            | NR               | 805       | 5762             | NR               | 935       | 5652             | NR               |
| 420       | 11281            | NR               | 550       | 196628           | NR               | 680       | 62184            | NR               | 810       | 5247             | NR               | 940       | 7244             | NR               |
| 425       | 19782            | NR               | 555       | 213600           | NR               | 685       | 53604            | NR               | 815       | 5570             | NR               | 945       | 6266             | NR               |
| 430       | 32934            | NR               | 560       | 232241           | NR               | 690       | 46370            | NR               | 820       | 5470             | NR               | 950       | 6258             | NR               |
| 435       | 52004            | NR               | 565       | 250545           | NR               | 695       | 40048            | NR               | 825       | 5780             | NR               | 955       | 6166             | NR               |
| 440       | 77987            | NR               | 570       | 269608           | NR               | 700       | 35148            | NR               | 830       | 4151             | NR               | 960       | 4813             | NR               |
| 445       | 117241           | NR               | 575       | 286007           | NR               | 705       | 30717            | NR               | 835       | 5899             | NR               | 965       | 6539             | NR               |
| 450       | 171397           | NR               | 580       | 300402           | NR               | 710       | 27137            | NR               | 840       | 5774             | NR               | 970       | 2930             | NR               |
| 455       | 188676           | NR               | 585       | 310093           | NR               | 715       | 24655            | NR               | 845       | 4055             | NR               | 975       | 3170             | NR               |
| 460       | 142860           | NR               | 590       | 313605           | NR               | 720       | 21845            | NR               | 850       | 4767             | NR               | 980       | 3959             | NR               |
| 465       | 100906           | NR               | 595       | 314960           | NR               | 725       | 19116            | NR               | 855       | 4780             | NR               | 985       | 6920             | NR               |
| 470       | 78130            | NR               | 600       | 311387           | NR               | 730       | 16889            | NR               | 860       | 5148             | NR               | 990       | 2710             | NR               |
| 475       | 57660            | NR               | 605       | 301618           | NR               | 735       | 14825            | NR               | 865       | 6865             | NR               | 995       | 5566             | NR               |
| 480       | 43089            | NR               | 610       | 288042           | NR               | 740       | 13154            | NR               | 870       | 5392             | NR               | 1000      | 0                | NR               |
| 485       | 38569            | NR               | 615       | 270953           | NR               | 745       | 11725            | NR               | 875       | 6166             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-1

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 7042.8**

**M/P: 0.47**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 6099             | NR               | 490       | 40168            | NR               | 620       | 253019           | NR               | 750       | 11053            | NR               | 880       | 4764             | NR               |
| 365       | 5425             | NR               | 495       | 46535            | NR               | 625       | 234501           | NR               | 755       | 10436            | NR               | 885       | 4069             | NR               |
| 370       | 5467             | NR               | 500       | 57902            | NR               | 630       | 214134           | NR               | 760       | 9340             | NR               | 890       | 5470             | NR               |
| 375       | 5866             | NR               | 505       | 75040            | NR               | 635       | 194074           | NR               | 765       | 9223             | NR               | 895       | 5625             | NR               |
| 380       | 5693             | NR               | 510       | 92426            | NR               | 640       | 175837           | NR               | 770       | 7875             | NR               | 900       | 5662             | NR               |
| 385       | 5528             | NR               | 515       | 109218           | NR               | 645       | 158182           | NR               | 775       | 6995             | NR               | 905       | 4976             | NR               |
| 390       | 5323             | NR               | 520       | 124301           | NR               | 650       | 139770           | NR               | 780       | 6291             | NR               | 910       | 3243             | NR               |
| 395       | 4691             | NR               | 525       | 136616           | NR               | 655       | 124825           | NR               | 785       | 5894             | NR               | 915       | 4005             | NR               |
| 400       | 4292             | NR               | 530       | 148525           | NR               | 660       | 109765           | NR               | 790       | 5176             | NR               | 920       | 4854             | NR               |
| 405       | 4106             | NR               | 535       | 158686           | NR               | 665       | 95251            | NR               | 795       | 5191             | NR               | 925       | 3999             | NR               |
| 410       | 4555             | NR               | 540       | 170513           | NR               | 670       | 82640            | NR               | 800       | 4961             | NR               | 930       | 4856             | NR               |
| 415       | 6579             | NR               | 545       | 182793           | NR               | 675       | 71832            | NR               | 805       | 5762             | NR               | 935       | 5652             | NR               |
| 420       | 11281            | NR               | 550       | 196628           | NR               | 680       | 62184            | NR               | 810       | 5247             | NR               | 940       | 7244             | NR               |
| 425       | 19782            | NR               | 555       | 213600           | NR               | 685       | 53604            | NR               | 815       | 5570             | NR               | 945       | 6266             | NR               |
| 430       | 32934            | NR               | 560       | 232241           | NR               | 690       | 46370            | NR               | 820       | 5470             | NR               | 950       | 6258             | NR               |
| 435       | 52004            | NR               | 565       | 250545           | NR               | 695       | 40048            | NR               | 825       | 5780             | NR               | 955       | 6166             | NR               |
| 440       | 77987            | NR               | 570       | 269608           | NR               | 700       | 35148            | NR               | 830       | 4151             | NR               | 960       | 4813             | NR               |
| 445       | 117241           | NR               | 575       | 286007           | NR               | 705       | 30717            | NR               | 835       | 5899             | NR               | 965       | 6539             | NR               |
| 450       | 171397           | NR               | 580       | 300402           | NR               | 710       | 27137            | NR               | 840       | 5774             | NR               | 970       | 2930             | NR               |
| 455       | 188676           | NR               | 585       | 310093           | NR               | 715       | 24655            | NR               | 845       | 4055             | NR               | 975       | 3170             | NR               |
| 460       | 142860           | NR               | 590       | 313605           | NR               | 720       | 21845            | NR               | 850       | 4767             | NR               | 980       | 3959             | NR               |
| 465       | 100906           | NR               | 595       | 314960           | NR               | 725       | 19116            | NR               | 855       | 4780             | NR               | 985       | 6920             | NR               |
| 470       | 78130            | NR               | 600       | 311387           | NR               | 730       | 16889            | NR               | 860       | 5148             | NR               | 990       | 2710             | NR               |
| 475       | 57660            | NR               | 605       | 301618           | NR               | 735       | 14825            | NR               | 865       | 6865             | NR               | 995       | 5566             | NR               |
| 480       | 43089            | NR               | 610       | 288042           | NR               | 740       | 13154            | NR               | 870       | 5392             | NR               | 1000      | 0                | NR               |
| 485       | 38569            | NR               | 615       | 270953           | NR               | 745       | 11725            | NR               | 875       | 6166             | NR               |           |                  |                  |

REPORT NUMBER: SP1-2307-100-1

**TM-30-18**

**Summary**

$R_f = 74.9$   
 $R_g = 92.7$   
 $CIE R_a = 71.3$   
 $R_g = -35.7$



**Color Vector Graphics**



REPORT NUMBER: SP1-2307-100-1

**TM-30-18**

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

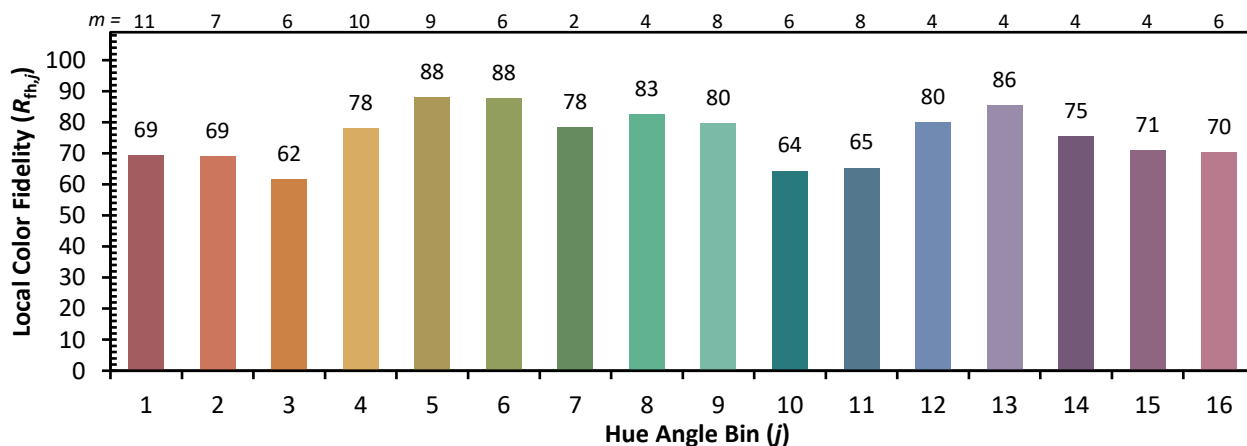
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 85 | CES76 = 60 |
| CES02 = 62 | CES27 = 90 | CES52 = 83 | CES77 = 76 |
| CES03 = 31 | CES28 = 85 | CES53 = 77 | CES78 = 64 |
| CES04 = 71 | CES29 = 73 | CES54 = 85 | CES79 = 86 |
| CES05 = 49 | CES30 = 90 | CES55 = 82 | CES80 = 85 |
| CES06 = 51 | CES31 = 76 | CES56 = 74 | CES81 = 72 |
| CES07 = 41 | CES32 = 67 | CES57 = 73 | CES82 = 93 |
| CES08 = 40 | CES33 = 84 | CES58 = 73 | CES83 = 92 |
| CES09 = 29 | CES34 = 77 | CES59 = 83 | CES84 = 87 |
| CES10 = 76 | CES35 = 88 | CES60 = 88 | CES85 = 74 |
| CES11 = 59 | CES36 = 89 | CES61 = 79 | CES86 = 64 |
| CES12 = 65 | CES37 = 85 | CES62 = 85 | CES87 = 77 |
| CES13 = 43 | CES38 = 98 | CES63 = 76 | CES88 = 80 |
| CES14 = 74 | CES39 = 98 | CES64 = 62 | CES89 = 67 |
| CES15 = 71 | CES40 = 94 | CES65 = 64 | CES90 = 81 |
| CES16 = 47 | CES41 = 97 | CES66 = 57 | CES91 = 76 |
| CES17 = 50 | CES42 = 88 | CES67 = 55 | CES92 = 55 |
| CES18 = 56 | CES43 = 80 | CES68 = 64 | CES93 = 72 |
| CES19 = 73 | CES44 = 99 | CES69 = 73 | CES94 = 49 |
| CES20 = 66 | CES45 = 86 | CES70 = 60 | CES95 = 66 |
| CES21 = 87 | CES46 = 83 | CES71 = 56 | CES96 = 76 |
| CES22 = 79 | CES47 = 91 | CES72 = 84 | CES97 = 81 |
| CES23 = 92 | CES48 = 76 | CES73 = 53 | CES98 = 76 |
| CES24 = 91 | CES49 = 80 | CES74 = 93 | CES99 = 64 |
| CES25 = 73 | CES50 = 85 | CES75 = 61 |            |



REPORT NUMBER: SP1-2307-100-1

**TM-30-18**

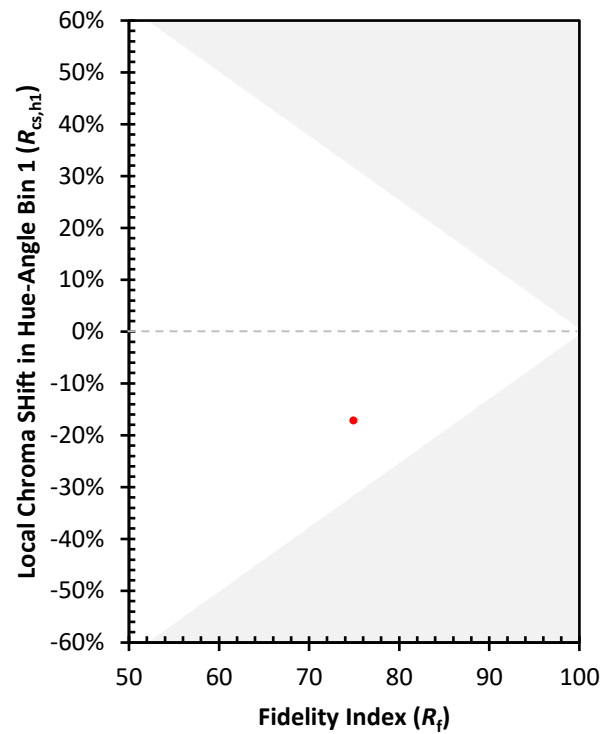
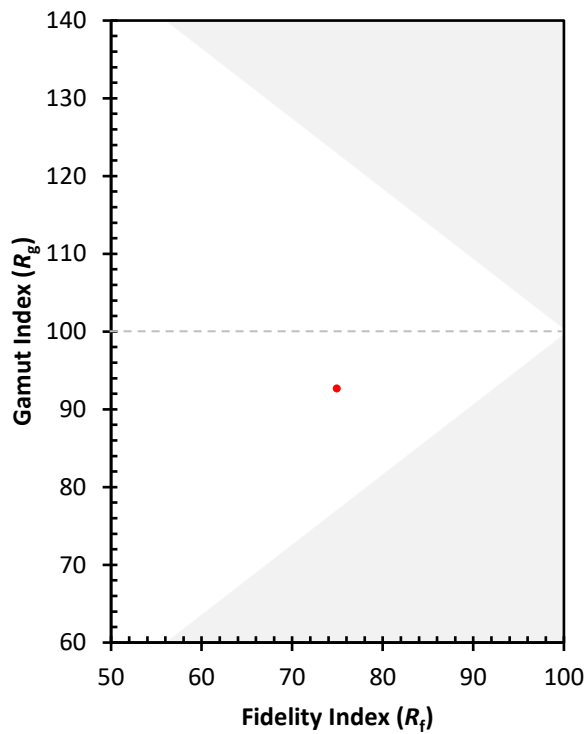
Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-2307-100-1

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)