

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: STREETWORKS

Report Number: P1384559

Luminaire Tested: **VAL-T-SB5A-730-U-SL3-HSS**

Issue Date: 02/18/2026

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

**Test Information**

Test Method: LM-79-08  
 Report Number: P1384559  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB5A-730-U-SL3-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 55 SQUARE 143W 70CRI  
 3000K FIXTURE w/ TYPE III SPILL CONTROL DISTRIBUTION OPTIC AND HOUSE SIDE  
 SHIELD  
 Light Source: (130) 3000K CCT, 70 CRI LEDS  
 Ballast/Driver: ELECTRONIC DRIVER  
 Luminaire Equipment:

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

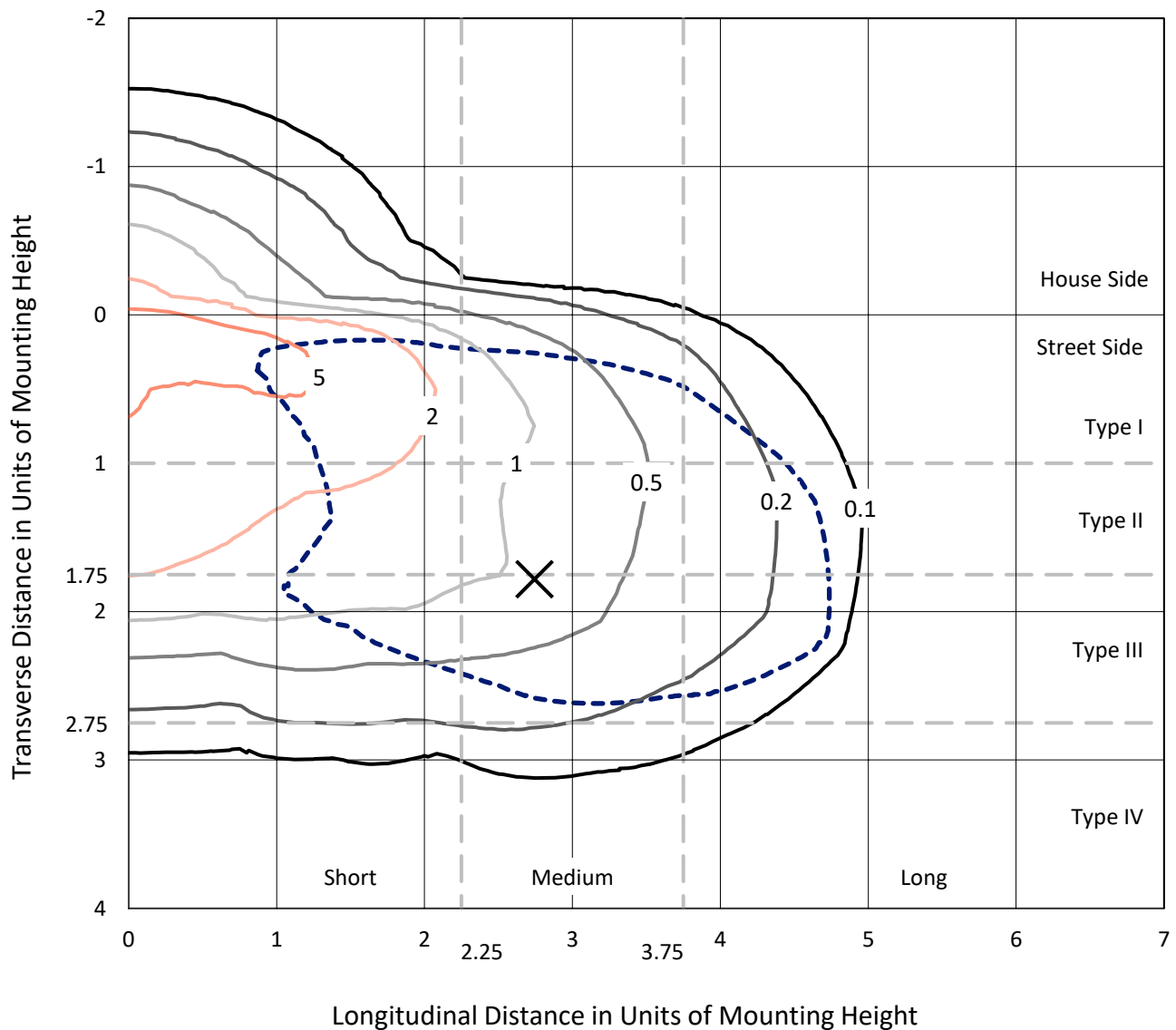
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 15501.4 lumens  
 Efficiency: N/A  
 Efficacy: 108.4 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type III - Medium  
 BUG Rating: B1 - U0 - G3  
  
 Input Watts (W): 143  
 Input Voltage (V): 120  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.98  
 Total Harmonic Distortion (THDi): 10.5%  
 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

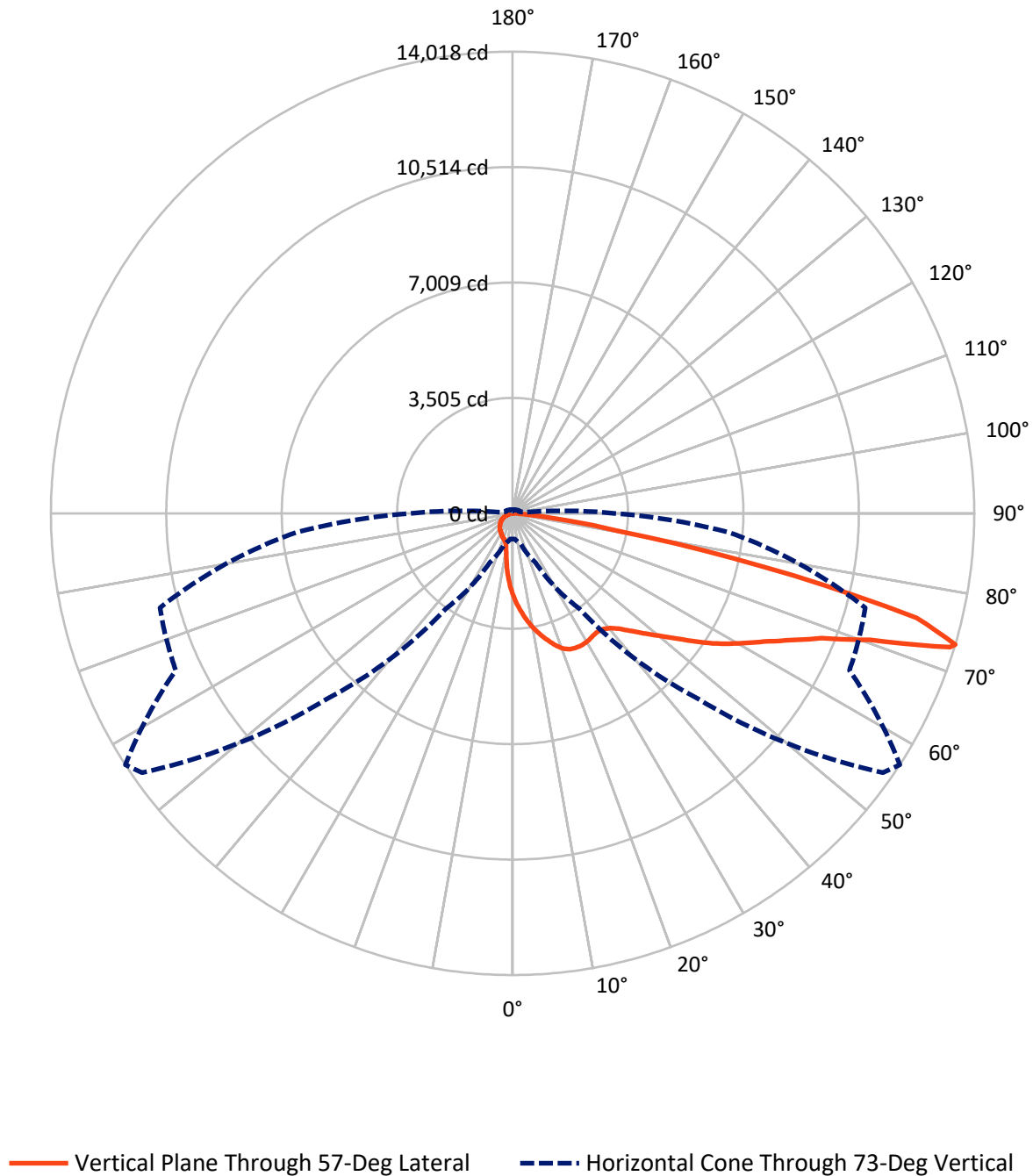
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 9.1 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1388.5   | 0.0    | 1388.5  |
|                    | % Fixture | 9.0      | 0.0    | 9.0     |
| <b>Street Side</b> | Lumens    | 14112.9  | 0.0    | 14112.9 |
|                    | % Fixture | 91.0     | 0.0    | 91.0    |
| <b>Total</b>       | Lumens    | 15501.4  | 0.0    | 15501.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 231.2   | 1.5       |
| 10°-20°   | 663.0   | 4.3       |
| 20°-30°   | 1006.2  | 6.5       |
| 30°-40°   | 1457.3  | 9.4       |
| 40°-50°   | 2176.3  | 14.0      |
| 50°-60°   | 3151.1  | 20.3      |
| 60°-70°   | 3817.5  | 24.6      |
| 70°-80°   | 2757.1  | 17.8      |
| 80°-90°   | 241.8   | 1.6       |
| 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°    | 15501.4 | 100.0     |
| 0°-180°   | 15501.4 | 100.0     |

**Coefficient of Utilization**



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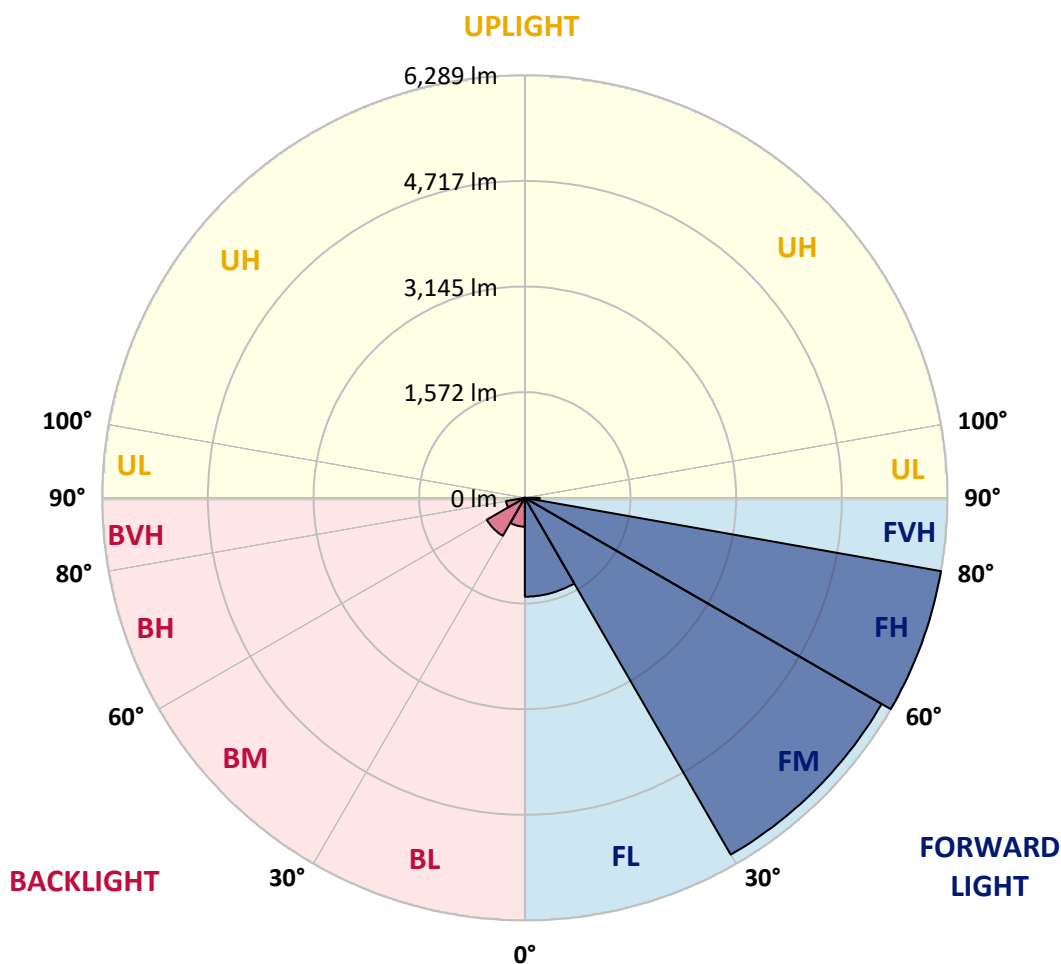
CATALOG NUMBER: VAL-T-SB5A-730-U-SL3-HSS

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1471.2 | 9.5       |                         |      |         |
| FM   | (30°-60°)   | 6131.6 | 39.6      |                         |      |         |
| FH   | (60°-80°)   | 6289.3 | 40.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 220.8  | 1.4       |                         |      | G2/225  |
| BL   | (0°-30°)    | 429.2  | 2.8       | B1/500                  |      |         |
| BM   | (30°-60°)   | 653.1  | 4.2       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 285.2  | 1.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 21.0   | 0.1       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G3**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°     | 55°     | 57°     | 65°     | 75°     | 85°    |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|--------|
| 0°    | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7  | 2493.7  | 2493.7  | 2493.7  | 2493.7  | 2493.7 |
| 2.5°  | 2998.5 | 3008.5 | 2973.2 | 2953.0 | 2912.6 | 2847.0  | 2781.4  | 2781.4  | 2705.7  | 2635.0  | 2544.1 |
| 5°    | 3442.7 | 3412.4 | 3397.2 | 3346.8 | 3271.0 | 3190.3  | 3074.2  | 3043.9  | 2922.7  | 2771.3  | 2589.6 |
| 7.5°  | 3780.9 | 3745.5 | 3730.4 | 3685.0 | 3599.2 | 3493.1  | 3336.7  | 3311.4  | 3134.7  | 2912.6  | 2650.1 |
| 10°   | 3987.8 | 3962.6 | 3962.6 | 3927.3 | 3861.6 | 3750.6  | 3594.1  | 3558.8  | 3346.8  | 3043.9  | 2690.5 |
| 12.5° | 3897.0 | 3886.9 | 3947.5 | 4028.2 | 4058.5 | 3992.9  | 3826.3  | 3780.9  | 3538.6  | 3190.3  | 2741.0 |
| 15°   | 3483.0 | 3473.0 | 3584.0 | 3796.0 | 4053.5 | 4164.5  | 4038.3  | 3997.9  | 3745.5  | 3341.7  | 2791.5 |
| 17.5° | 3084.3 | 3069.1 | 3175.1 | 3387.1 | 3770.8 | 4184.7  | 4260.4  | 4209.9  | 3952.5  | 3493.1  | 2847.0 |
| 20°   | 2857.1 | 2842.0 | 2912.6 | 3084.3 | 3432.6 | 4023.2  | 4376.5  | 4386.6  | 4179.7  | 3659.7  | 2902.5 |
| 22.5° | 2776.3 | 2771.3 | 2806.6 | 2922.7 | 3170.1 | 3745.5  | 4422.0  | 4482.5  | 4427.0  | 3851.5  | 2983.3 |
| 25°   | 2811.7 | 2791.5 | 2801.6 | 2847.0 | 3023.7 | 3523.4  | 4396.7  | 4512.8  | 4634.0  | 4083.7  | 3089.3 |
| 27.5° | 2902.5 | 2887.4 | 2872.3 | 2872.3 | 2963.1 | 3361.9  | 4331.1  | 4522.9  | 4846.0  | 4336.1  | 3180.2 |
| 30°   | 3054.0 | 3033.8 | 2988.4 | 2932.8 | 2963.1 | 3260.9  | 4255.4  | 4497.7  | 5027.7  | 4608.7  | 3306.4 |
| 32.5° | 3397.2 | 3382.1 | 3250.8 | 3074.2 | 3033.8 | 3235.7  | 4169.6  | 4452.2  | 5224.6  | 4931.8  | 3452.8 |
| 35°   | 3735.4 | 3720.3 | 3629.4 | 3377.0 | 3154.9 | 3255.9  | 4114.0  | 4422.0  | 5466.9  | 5325.5  | 3624.4 |
| 37.5° | 3886.9 | 3861.6 | 3791.0 | 3654.7 | 3437.6 | 3372.0  | 4129.2  | 4457.3  | 5815.2  | 5759.6  | 3836.4 |
| 40°   | 4078.7 | 4038.3 | 3932.3 | 3806.1 | 3710.2 | 3639.5  | 4250.3  | 4578.4  | 6203.9  | 6259.4  | 4068.6 |
| 42.5° | 4361.4 | 4316.0 | 4159.5 | 3982.8 | 3871.7 | 4013.1  | 4482.5  | 4795.5  | 6683.4  | 6814.7  | 4351.3 |
| 45°   | 4750.1 | 4689.5 | 4487.6 | 4255.4 | 4119.1 | 4199.8  | 4795.5  | 5103.4  | 7218.5  | 7445.6  | 4679.4 |
| 47.5° | 5103.4 | 5088.3 | 4861.1 | 4593.6 | 4432.1 | 4326.0  | 5133.7  | 5461.8  | 7783.9  | 8152.4  | 5017.6 |
| 50°   | 5436.6 | 5381.1 | 5159.0 | 4896.5 | 4760.2 | 4583.5  | 5507.3  | 5860.6  | 8349.2  | 8798.5  | 5381.1 |
| 52.5° | 5800.0 | 5739.5 | 5436.6 | 5138.8 | 5002.5 | 4962.1  | 5991.9  | 6335.1  | 8843.9  | 9479.9  | 5749.6 |
| 55°   | 6082.7 | 5996.9 | 5663.7 | 5416.4 | 5199.3 | 5335.6  | 6511.8  | 6905.5  | 9283.1  | 10095.8 | 6123.1 |
| 57.5° | 6436.1 | 6325.0 | 5850.5 | 5668.8 | 5502.2 | 5714.2  | 7097.3  | 7475.9  | 9742.4  | 10615.7 | 6496.6 |
| 60°   | 6744.0 | 6658.2 | 6198.8 | 5971.7 | 5815.2 | 6143.3  | 7667.8  | 8000.9  | 10100.8 | 11059.9 | 6839.9 |
| 62.5° | 5805.1 | 5795.0 | 5916.1 | 6597.6 | 6365.4 | 6794.5  | 8278.5  | 8571.3  | 10317.9 | 11357.8 | 6981.2 |
| 65°   | 4119.1 | 4149.4 | 4487.6 | 6607.7 | 7435.6 | 7884.8  | 9081.2  | 9273.0  | 10328.0 | 11019.6 | 6703.6 |
| 67.5° | 2619.9 | 2589.6 | 3008.5 | 5532.5 | 7475.9 | 10035.2 | 10302.8 | 10110.9 | 9863.6  | 10656.1 | 6738.9 |
| 70°   | 1569.9 | 1580.0 | 1721.3 | 4013.1 | 6163.5 | 10524.9 | 12008.9 | 11514.3 | 10141.2 | 10923.6 | 6769.2 |
| 72.5° | 853.1  | 873.3  | 1075.2 | 1968.7 | 4083.7 | 8374.5  | 13816.1 | 13886.8 | 11090.2 | 11049.8 | 6653.1 |
| 73°   | 777.4  | 782.4  | 964.1  | 1645.6 | 3533.5 | 7960.5  | 13730.3 | 14018.0 | 11282.0 | 11085.2 | 6577.4 |
| 75°   | 514.9  | 514.9  | 656.2  | 933.9  | 1549.7 | 6188.7  | 11398.1 | 12670.2 | 11933.2 | 10721.7 | 5986.8 |
| 77.5° | 318.0  | 338.2  | 454.3  | 646.1  | 565.4  | 3114.6  | 6703.6  | 7753.6  | 10641.0 | 8066.5  | 3760.7 |
| 80°   | 116.1  | 126.2  | 282.7  | 424.0  | 328.1  | 1181.2  | 2811.7  | 3225.6  | 4931.8  | 4093.8  | 1357.9 |
| 82.5° | 60.6   | 65.6   | 176.7  | 217.1  | 176.7  | 307.9   | 1256.9  | 1342.7  | 1988.9  | 1065.1  | 252.4  |
| 85°   | 30.3   | 35.3   | 75.7   | 90.9   | 70.7   | 101.0   | 313.0   | 292.8   | 449.3   | 141.3   | 70.7   |
| 87.5° | 0.0    | 0.0    | 5.0    | 10.1   | 15.1   | 20.2    | 30.3    | 30.3    | 35.3    | 40.4    | 40.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    |



REPORT NUMBER: P1384559

CATALOG NUMBER: VAL-T-SB5A-730-U-SL3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 | 2493.7 |
| 2.5°  | 2488.6 | 2448.2 | 2352.3 | 2256.4 | 2185.7 | 2110.0 | 2039.4 | 1978.8 | 1943.4 | 1928.3 | 1943.4 |
| 5°    | 2493.7 | 2407.8 | 2211.0 | 2014.1 | 1822.3 | 1665.8 | 1519.4 | 1413.4 | 1337.7 | 1312.5 | 1302.4 |
| 7.5°  | 2493.7 | 2352.3 | 2044.4 | 1721.3 | 1438.7 | 1231.7 | 1085.3 | 1019.7 | 984.3  | 979.3  | 979.3  |
| 10°   | 2488.6 | 2286.7 | 1857.6 | 1433.6 | 1110.5 | 969.2  | 923.8  | 913.7  | 913.7  | 913.7  | 918.7  |
| 12.5° | 2483.6 | 2226.1 | 1645.6 | 1156.0 | 933.9  | 888.4  | 873.3  | 873.3  | 878.3  | 883.4  | 888.4  |
| 15°   | 2473.5 | 2135.3 | 1423.5 | 964.1  | 868.2  | 853.1  | 843.0  | 843.0  | 848.0  | 858.1  | 858.1  |
| 17.5° | 2463.4 | 2044.4 | 1206.4 | 878.3  | 838.0  | 822.8  | 817.8  | 812.7  | 822.8  | 832.9  | 832.9  |
| 20°   | 2443.2 | 1928.3 | 1024.7 | 832.9  | 807.7  | 797.6  | 792.5  | 787.5  | 792.5  | 802.6  | 807.7  |
| 22.5° | 2417.9 | 1781.9 | 903.6  | 802.6  | 782.4  | 767.3  | 762.2  | 757.2  | 757.2  | 777.4  | 777.4  |
| 25°   | 2392.7 | 1620.4 | 832.9  | 772.3  | 752.1  | 737.0  | 726.9  | 721.8  | 726.9  | 742.0  | 742.0  |
| 27.5° | 2342.2 | 1443.7 | 787.5  | 747.1  | 726.9  | 706.7  | 696.6  | 686.5  | 691.6  | 706.7  | 706.7  |
| 30°   | 2266.5 | 1256.9 | 762.2  | 721.8  | 696.6  | 671.4  | 656.2  | 646.1  | 651.2  | 666.3  | 671.4  |
| 32.5° | 2155.5 | 1095.4 | 752.1  | 701.7  | 671.4  | 636.0  | 615.8  | 600.7  | 605.7  | 625.9  | 625.9  |
| 35°   | 2039.4 | 979.3  | 747.1  | 681.5  | 641.1  | 605.7  | 570.4  | 550.2  | 560.3  | 580.5  | 585.6  |
| 37.5° | 1918.2 | 913.7  | 747.1  | 671.4  | 620.9  | 575.5  | 525.0  | 504.8  | 509.8  | 530.0  | 535.1  |
| 40°   | 1812.2 | 883.4  | 752.1  | 661.3  | 595.7  | 540.1  | 484.6  | 459.4  | 469.5  | 494.7  | 489.6  |
| 42.5° | 1771.8 | 878.3  | 752.1  | 636.0  | 570.4  | 504.8  | 444.2  | 419.0  | 429.1  | 444.2  | 449.3  |
| 45°   | 1817.2 | 898.5  | 742.0  | 610.8  | 535.1  | 464.4  | 413.9  | 388.7  | 393.7  | 403.8  | 413.9  |
| 47.5° | 1973.7 | 923.8  | 726.9  | 580.5  | 504.8  | 434.1  | 383.6  | 363.4  | 353.4  | 368.5  | 373.5  |
| 50°   | 2190.8 | 938.9  | 701.7  | 550.2  | 479.6  | 403.8  | 358.4  | 333.2  | 323.1  | 328.1  | 333.2  |
| 52.5° | 2438.1 | 938.9  | 676.4  | 519.9  | 454.3  | 373.5  | 338.2  | 313.0  | 292.8  | 297.8  | 297.8  |
| 55°   | 2685.5 | 928.8  | 610.8  | 494.7  | 429.1  | 353.4  | 318.0  | 282.7  | 267.5  | 267.5  | 262.5  |
| 57.5° | 2942.9 | 913.7  | 530.0  | 459.4  | 398.8  | 328.1  | 292.8  | 262.5  | 242.3  | 232.2  | 232.2  |
| 60°   | 3195.3 | 893.5  | 484.6  | 424.0  | 363.4  | 307.9  | 267.5  | 242.3  | 217.1  | 201.9  | 196.9  |
| 62.5° | 3326.6 | 838.0  | 434.1  | 378.6  | 328.1  | 277.6  | 242.3  | 217.1  | 186.8  | 166.6  | 161.5  |
| 65°   | 3255.9 | 721.8  | 373.5  | 338.2  | 297.8  | 247.3  | 217.1  | 191.8  | 156.5  | 131.2  | 131.2  |
| 67.5° | 3331.6 | 605.7  | 318.0  | 287.7  | 257.4  | 212.0  | 181.7  | 166.6  | 136.3  | 116.1  | 116.1  |
| 70°   | 3356.9 | 474.5  | 267.5  | 247.3  | 222.1  | 176.7  | 156.5  | 146.4  | 121.1  | 101.0  | 95.9   |
| 72.5° | 3170.1 | 353.4  | 217.1  | 207.0  | 181.7  | 136.3  | 131.2  | 121.1  | 101.0  | 80.8   | 80.8   |
| 73°   | 3094.4 | 328.1  | 207.0  | 196.9  | 171.6  | 131.2  | 126.2  | 116.1  | 95.9   | 80.8   | 75.7   |
| 75°   | 2725.9 | 252.4  | 171.6  | 161.5  | 136.3  | 111.1  | 106.0  | 95.9   | 80.8   | 65.6   | 65.6   |
| 77.5° | 1807.1 | 181.7  | 131.2  | 121.1  | 101.0  | 85.8   | 80.8   | 70.7   | 60.6   | 50.5   | 50.5   |
| 80°   | 666.3  | 121.1  | 95.9   | 85.8   | 75.7   | 70.7   | 60.6   | 50.5   | 40.4   | 40.4   | 35.3   |
| 82.5° | 136.3  | 80.8   | 70.7   | 60.6   | 55.5   | 50.5   | 40.4   | 35.3   | 30.3   | 30.3   | 30.3   |
| 85°   | 55.5   | 50.5   | 40.4   | 40.4   | 40.4   | 35.3   | 30.3   | 30.3   | 25.2   | 25.2   | 20.2   |
| 87.5° | 35.3   | 30.3   | 30.3   | 25.2   | 25.2   | 20.2   | 20.2   | 20.2   | 20.2   | 20.2   | 20.2   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-4

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-730-U-5WQ

Data in this report applies to families of products including GSS-SB1A-730-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-730-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 3000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 2985  
 CIE  $u'$ : 0.2504  
 CIE  $v'$ : 0.5243  
 Duv: 0.0019  
 CIE x: 0.4408  
 CIE y: 0.4101  
 CIE z: 0.1491  
 Peak Wavelength (nm): 595  
 Dominant Wavelength (nm): 582  
 Purity: 55.41818  
 R<sub>f</sub>: 73.8  
 R<sub>g</sub>: 94.4

CRI (Ra): 70.8  
 R1: 66.3  
 R2: 80.6  
 R3: 94.5  
 R4: 68.2  
 R5: 66.5  
 R6: 74.7  
 R7: 76.2  
 R8: 39.6  
 R9: -43.2  
 R10: 57.6  
 R11: 64.8  
 R12: 53.5  
 R13: 68.7  
 R14: 97.0  
 R15: 56.4



### Test Conditions

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-4

| 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

REPORT NUMBER: SP1-2407-184-4

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 142                                  | NR                             | 620               | 803                                  | NR                             | 750               | 17                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 189                                  | NR                             | 625               | 734                                  | NR                             | 755               | 15                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 240                                  | NR                             | 630               | 670                                  | NR                             | 760               | 13                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 290                                  | NR                             | 635               | 600                                  | NR                             | 765               | 11                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 335                                  | NR                             | 640               | 535                                  | NR                             | 770               | 9                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 375                                  | NR                             | 645               | 473                                  | NR                             | 775               | 8                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 408                                  | NR                             | 650               | 415                                  | NR                             | 780               | 7                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 434                                  | NR                             | 655               | 362                                  | NR                             | 785               | 6                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 461                                  | NR                             | 660               | 313                                  | NR                             | 790               | 5                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 486                                  | NR                             | 665               | 271                                  | NR                             | 795               | 4                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 16                                   | NR                             | 540               | 514                                  | NR                             | 670               | 231                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 33                                   | NR                             | 545               | 549                                  | NR                             | 675               | 198                                  | NR                             | 805               | 3                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 69                                   | NR                             | 550               | 591                                  | NR                             | 680               | 169                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 131                                  | NR                             | 555               | 640                                  | NR                             | 685               | 144                                  | NR                             | 815               | 2                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 227                                  | NR                             | 560               | 695                                  | NR                             | 690               | 123                                  | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 369                                  | NR                             | 565               | 757                                  | NR                             | 695               | 104                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 822                                  | NR                             | 700               | 88                                   | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 498                                  | NR                             | 575               | 882                                  | NR                             | 705               | 75                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 315                                  | NR                             | 580               | 935                                  | NR                             | 710               | 63                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 204                                  | NR                             | 585               | 972                                  | NR                             | 715               | 54                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 145                                  | NR                             | 590               | 996                                  | NR                             | 720               | 46                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 100                                  | NR                             | 595               | 1000                                 | NR                             | 725               | 39                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 78                                   | NR                             | 600               | 989                                  | NR                             | 730               | 33                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 76                                   | NR                             | 605               | 960                                  | NR                             | 735               | 28                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 83                                   | NR                             | 610               | 918                                  | NR                             | 740               | 24                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 105                                  | NR                             | 615               | 864                                  | NR                             | 745               | 20                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.19

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 142                                  | NR                             | 620               | 803                                  | NR                             | 750               | 17                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 189                                  | NR                             | 625               | 734                                  | NR                             | 755               | 15                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 240                                  | NR                             | 630               | 670                                  | NR                             | 760               | 13                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 290                                  | NR                             | 635               | 600                                  | NR                             | 765               | 11                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 335                                  | NR                             | 640               | 535                                  | NR                             | 770               | 9                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 375                                  | NR                             | 645               | 473                                  | NR                             | 775               | 8                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 408                                  | NR                             | 650               | 415                                  | NR                             | 780               | 7                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 434                                  | NR                             | 655               | 362                                  | NR                             | 785               | 6                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 461                                  | NR                             | 660               | 313                                  | NR                             | 790               | 5                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 486                                  | NR                             | 665               | 271                                  | NR                             | 795               | 4                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 16                                   | NR                             | 540               | 514                                  | NR                             | 670               | 231                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 33                                   | NR                             | 545               | 549                                  | NR                             | 675               | 198                                  | NR                             | 805               | 3                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 69                                   | NR                             | 550               | 591                                  | NR                             | 680               | 169                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 131                                  | NR                             | 555               | 640                                  | NR                             | 685               | 144                                  | NR                             | 815               | 2                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 227                                  | NR                             | 560               | 695                                  | NR                             | 690               | 123                                  | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 369                                  | NR                             | 565               | 757                                  | NR                             | 695               | 104                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 822                                  | NR                             | 700               | 88                                   | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 498                                  | NR                             | 575               | 882                                  | NR                             | 705               | 75                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 315                                  | NR                             | 580               | 935                                  | NR                             | 710               | 63                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 204                                  | NR                             | 585               | 972                                  | NR                             | 715               | 54                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 145                                  | NR                             | 590               | 996                                  | NR                             | 720               | 46                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 100                                  | NR                             | 595               | 1000                                 | NR                             | 725               | 39                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 78                                   | NR                             | 600               | 989                                  | NR                             | 730               | 33                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 76                                   | NR                             | 605               | 960                                  | NR                             | 735               | 28                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 83                                   | NR                             | 610               | 918                                  | NR                             | 740               | 24                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 105                                  | NR                             | 615               | 864                                  | NR                             | 745               | 20                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 2.13**

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 142                                  | NR                             | 620               | 803                                  | NR                             | 750               | 17                                   | NR                             | 880               | 0                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 189                                  | NR                             | 625               | 734                                  | NR                             | 755               | 15                                   | NR                             | 885               | 0                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 240                                  | NR                             | 630               | 670                                  | NR                             | 760               | 13                                   | NR                             | 890               | 0                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 290                                  | NR                             | 635               | 600                                  | NR                             | 765               | 11                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 335                                  | NR                             | 640               | 535                                  | NR                             | 770               | 9                                    | NR                             | 900               | 0                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 375                                  | NR                             | 645               | 473                                  | NR                             | 775               | 8                                    | NR                             | 905               | 0                                    | NR                             |
| 390               | 1                                    | NR                             | 520               | 408                                  | NR                             | 650               | 415                                  | NR                             | 780               | 7                                    | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 434                                  | NR                             | 655               | 362                                  | NR                             | 785               | 6                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 461                                  | NR                             | 660               | 313                                  | NR                             | 790               | 5                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 8                                    | NR                             | 535               | 486                                  | NR                             | 665               | 271                                  | NR                             | 795               | 4                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 16                                   | NR                             | 540               | 514                                  | NR                             | 670               | 231                                  | NR                             | 800               | 4                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 33                                   | NR                             | 545               | 549                                  | NR                             | 675               | 198                                  | NR                             | 805               | 3                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 69                                   | NR                             | 550               | 591                                  | NR                             | 680               | 169                                  | NR                             | 810               | 3                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 131                                  | NR                             | 555               | 640                                  | NR                             | 685               | 144                                  | NR                             | 815               | 2                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 227                                  | NR                             | 560               | 695                                  | NR                             | 690               | 123                                  | NR                             | 820               | 2                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 369                                  | NR                             | 565               | 757                                  | NR                             | 695               | 104                                  | NR                             | 825               | 2                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 822                                  | NR                             | 700               | 88                                   | NR                             | 830               | 2                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 498                                  | NR                             | 575               | 882                                  | NR                             | 705               | 75                                   | NR                             | 835               | 1                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 315                                  | NR                             | 580               | 935                                  | NR                             | 710               | 63                                   | NR                             | 840               | 1                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 204                                  | NR                             | 585               | 972                                  | NR                             | 715               | 54                                   | NR                             | 845               | 1                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 145                                  | NR                             | 590               | 996                                  | NR                             | 720               | 46                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 100                                  | NR                             | 595               | 1000                                 | NR                             | 725               | 39                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 78                                   | NR                             | 600               | 989                                  | NR                             | 730               | 33                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 76                                   | NR                             | 605               | 960                                  | NR                             | 735               | 28                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 83                                   | NR                             | 610               | 918                                  | NR                             | 740               | 24                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 105                                  | NR                             | 615               | 864                                  | NR                             | 745               | 20                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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TM-30-18

### Summary

$R_f = 73.8$   
 $R_g = 94.4$   
 $CIE R_a = 70.8$   
 $R_g = -43.2$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 63 | CES51 = 86 | CES76 = 61 |
| CES02 = 62 | CES27 = 83 | CES52 = 86 | CES77 = 81 |
| CES03 = 31 | CES28 = 86 | CES53 = 75 | CES78 = 64 |
| CES04 = 71 | CES29 = 58 | CES54 = 81 | CES79 = 86 |
| CES05 = 49 | CES30 = 61 | CES55 = 80 | CES80 = 86 |
| CES06 = 51 | CES31 = 63 | CES56 = 71 | CES81 = 70 |
| CES07 = 41 | CES32 = 61 | CES57 = 69 | CES82 = 94 |
| CES08 = 40 | CES33 = 65 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 90 |
| CES10 = 76 | CES35 = 88 | CES60 = 93 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 86 | CES86 = 60 |
| CES12 = 65 | CES37 = 85 | CES62 = 81 | CES87 = 78 |
| CES13 = 43 | CES38 = 69 | CES63 = 73 | CES88 = 75 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 66 |
| CES15 = 71 | CES40 = 89 | CES65 = 67 | CES90 = 72 |
| CES16 = 47 | CES41 = 83 | CES66 = 70 | CES91 = 95 |
| CES17 = 50 | CES42 = 87 | CES67 = 68 | CES92 = 59 |
| CES18 = 56 | CES43 = 77 | CES68 = 73 | CES93 = 76 |
| CES19 = 73 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 66 | CES45 = 83 | CES70 = 66 | CES95 = 70 |
| CES21 = 87 | CES46 = 77 | CES71 = 66 | CES96 = 76 |
| CES22 = 79 | CES47 = 74 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 62 | CES73 = 59 | CES98 = 73 |
| CES24 = 91 | CES49 = 77 | CES74 = 93 | CES99 = 60 |
| CES25 = 73 | CES50 = 85 | CES75 = 67 |            |



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)