

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



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

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: INVUE

Report Number: P880416

Luminaire Tested: **EMM2-HSN-VA5-740-U-MQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P880416
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-VA5-740-U-MQ
Description: EPIC MODERN SHORT HOUSING 5W 70CRI 4000K VISUAL COMFORT FIXTURE w/
TYPE V MEDIUM DISTRIBUTION OPTIC
Light Source: (1) 4000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

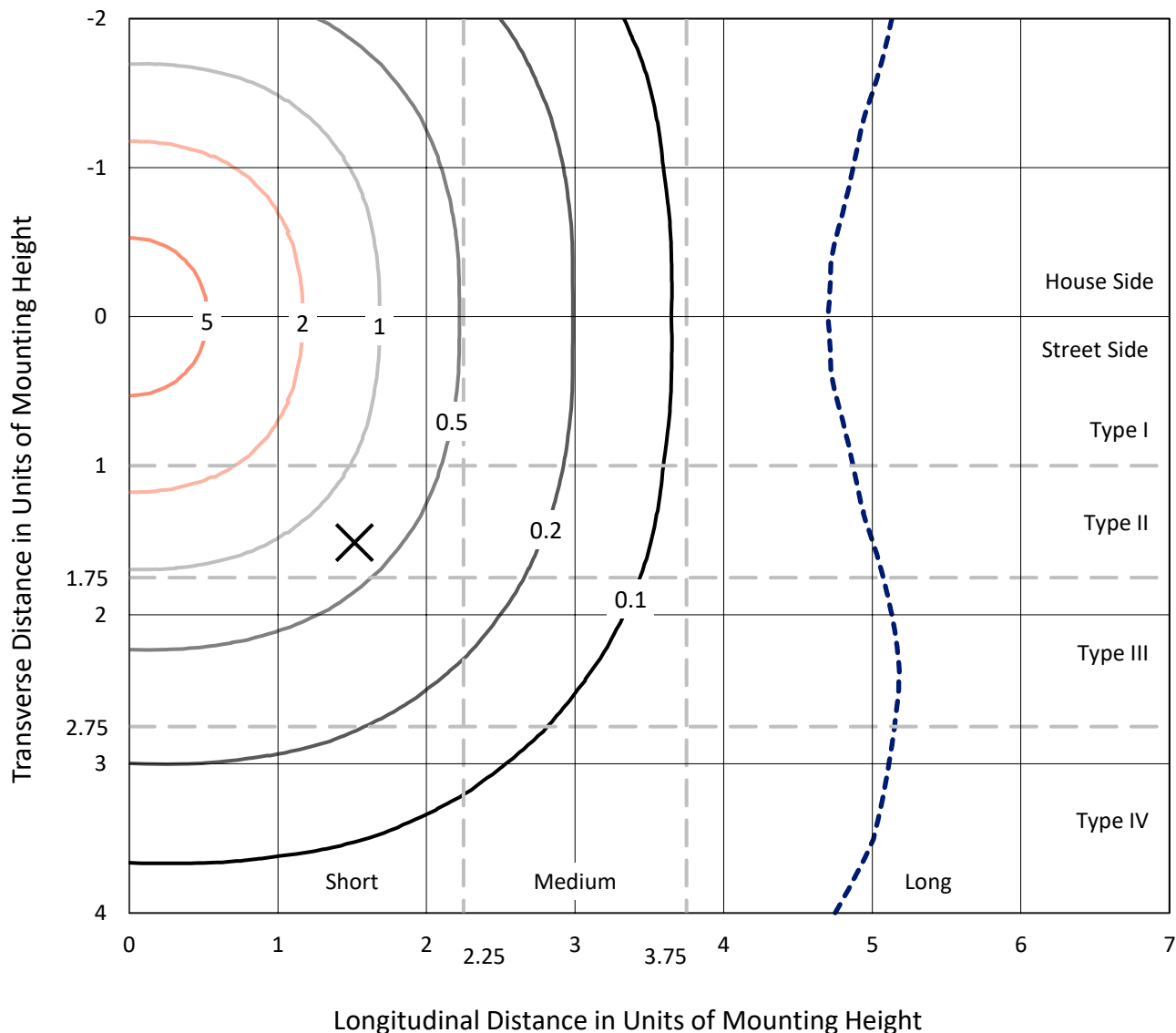
Lumens per Lamp: N/A
Luminaire Lumens: 9022.7 lumens
Efficiency: N/A
Efficacy: 115.7 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G3

Input Watts (W): 78
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P880416
 CATALOG NUMBER: EMM2-HSN-VA5-740-U-MQ

Iso-Footcandle Lines of Horizontal Illumination

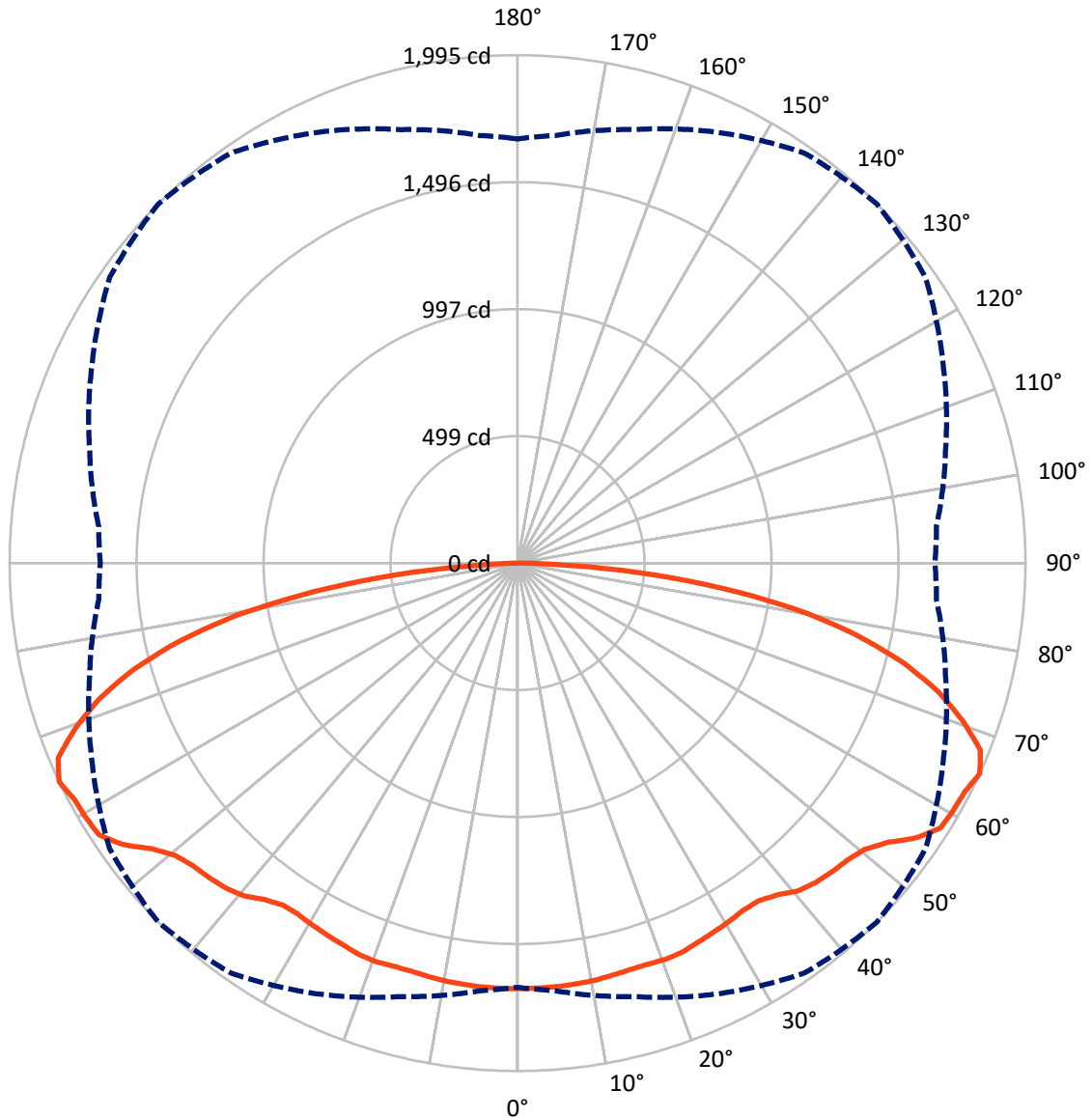
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 7.4 fc
 Type V - Short - N/A

REPORT NUMBER: P880416
CATALOG NUMBER: EMM2-HSN-VA5-740-U-MQ

Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

REPORT NUMBER: P880416
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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4511.4	0.0	4511.4
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4511.4	0.0	4511.4
	% Fixture	50.0	0.0	50.0
Total	Lumens	9022.7	0.0	9022.7
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	159.3	1.8
10°-20°	469.7	5.2
20°-30°	760.5	8.4
30°-40°	1022.1	11.3
40°-50°	1304.4	14.5
50°-60°	1604.8	17.8
60°-70°	1787.0	19.8
70°-80°	1450.5	16.1
80°-90°	464.3	5.1
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°	9022.7	100.0
0°-180°	9022.7	100.0



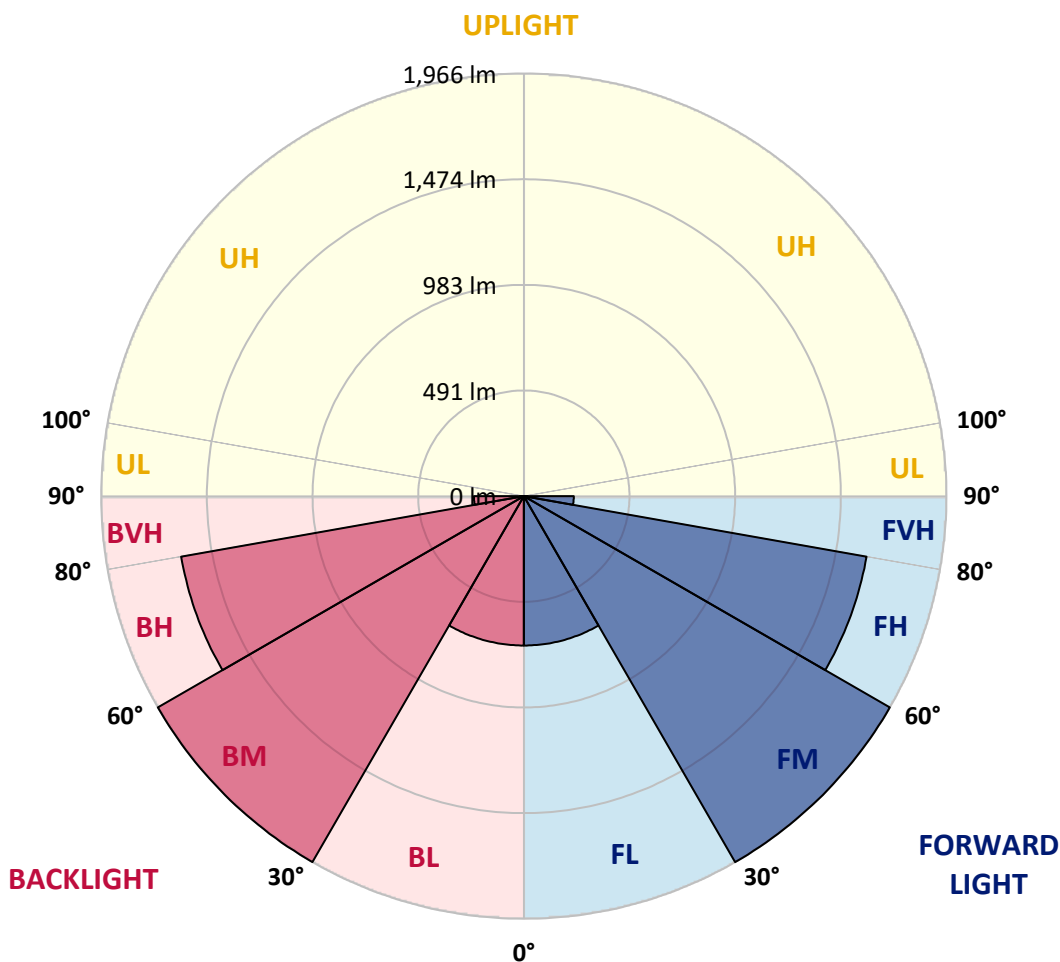
REPORT NUMBER: P880416
 CATALOG NUMBER: EMM2-HSN-VA5-740-U-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	694.8	7.7			
FM (30°-60°)	1965.7	21.8			
FH (60°-80°)	1618.8	17.9			G1/1800
FVH (80°-90°)	232.2	2.6			G3/500
BL (0°-30°)	694.8	7.7	B2/1000		
BM (30°-60°)	1965.7	21.8	B2/2500		
BH (60°-80°)	1618.8	17.9	B3/2500		G1/1800
BVH (80°-90°)	232.2	2.6			G3/500
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G3

Type V Short





REPORT NUMBER: P880416

CATALOG NUMBER: EMM2-HSN-VA5-740-U-MQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0
2.5°	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0
5°	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1671.0	1668.5	1671.0	1671.0
7.5°	1668.5	1668.5	1668.5	1668.5	1668.5	1668.5	1668.5	1668.5	1668.5	1668.5	1668.5
10°	1666.0	1666.0	1666.0	1666.0	1666.0	1666.0	1666.0	1666.0	1666.0	1666.0	1666.0
12.5°	1661.1	1661.1	1661.1	1661.1	1661.1	1661.1	1661.1	1661.1	1661.1	1661.1	1661.1
15°	1653.7	1656.1	1656.1	1656.1	1656.1	1656.1	1656.1	1656.1	1656.1	1653.7	1653.7
17.5°	1651.2	1651.2	1651.2	1653.7	1656.1	1656.1	1656.1	1653.7	1651.2	1648.7	1648.7
20°	1653.7	1653.7	1653.7	1656.1	1658.6	1661.1	1658.6	1656.1	1651.2	1651.2	1651.2
22.5°	1651.2	1653.7	1653.7	1656.1	1658.6	1658.6	1656.1	1653.7	1651.2	1648.7	1648.7
25°	1643.8	1643.8	1646.3	1648.7	1648.7	1648.7	1648.7	1643.8	1641.3	1638.8	1638.8
27.5°	1633.9	1636.4	1636.4	1638.8	1641.3	1641.3	1638.8	1633.9	1631.4	1629.0	1629.0
30°	1621.5	1621.5	1624.0	1629.0	1631.4	1633.9	1629.0	1624.0	1616.6	1614.1	1614.1
32.5°	1609.2	1611.7	1616.6	1621.5	1624.0	1626.5	1621.5	1616.6	1609.2	1604.2	1601.8
35°	1604.2	1604.2	1611.7	1621.5	1629.0	1629.0	1624.0	1614.1	1604.2	1594.3	1594.3
37.5°	1611.7	1614.1	1624.0	1641.3	1653.7	1653.7	1651.2	1633.9	1616.6	1601.8	1599.3
40°	1629.0	1631.4	1648.7	1671.0	1690.8	1693.2	1683.3	1661.1	1636.4	1619.1	1614.1
42.5°	1638.8	1643.8	1663.6	1690.8	1708.1	1715.5	1703.1	1680.9	1648.7	1626.5	1624.0
45°	1643.8	1648.7	1671.0	1700.6	1722.9	1730.3	1717.9	1688.3	1653.7	1629.0	1626.5
47.5°	1646.3	1651.2	1673.4	1710.5	1735.2	1742.7	1732.8	1698.2	1656.1	1631.4	1629.0
50°	1648.7	1658.6	1685.8	1725.4	1762.4	1767.4	1752.5	1710.5	1666.0	1636.4	1629.0
52.5°	1666.0	1673.4	1713.0	1769.9	1806.9	1821.8	1799.5	1757.5	1690.8	1646.3	1641.3
55°	1708.1	1710.5	1757.5	1829.2	1883.6	1903.3	1868.7	1811.9	1730.3	1685.8	1683.3
57.5°	1720.4	1735.2	1787.2	1868.7	1935.5	1960.2	1930.5	1844.0	1769.9	1710.5	1695.7
60°	1708.1	1720.4	1782.2	1876.1	1947.8	1967.6	1945.4	1863.8	1755.0	1688.3	1675.9
62.5°	1695.7	1710.5	1774.8	1881.1	1950.3	1972.5	1935.5	1866.3	1747.6	1680.9	1668.5
65°	1666.0	1685.8	1762.4	1866.3	1965.1	1994.8	1955.2	1844.0	1740.2	1651.2	1638.8
67.5°	1609.2	1619.1	1703.1	1824.2	1930.5	1960.2	1918.2	1802.0	1678.4	1591.9	1582.0
70°	1502.9	1525.1	1604.2	1737.7	1839.1	1853.9	1821.8	1705.6	1584.5	1493.0	1480.6
72.5°	1362.0	1394.1	1480.6	1616.6	1698.2	1727.8	1685.8	1591.9	1465.8	1362.0	1344.7
75°	1213.7	1231.0	1320.0	1453.5	1537.5	1564.7	1527.6	1436.2	1285.4	1213.7	1196.4
77.5°	1050.5	1062.9	1142.0	1260.6	1339.7	1362.0	1324.9	1250.8	1114.8	1048.1	1040.7
80°	823.1	847.8	922.0	1023.3	1082.7	1117.3	1077.7	1006.0	907.2	828.1	815.7
82.5°	588.3	605.6	672.3	741.6	798.4	808.3	791.0	721.8	647.6	585.8	571.0
85°	321.3	328.8	370.8	442.5	464.7	482.0	457.3	405.4	368.3	328.8	316.4
87.5°	84.0	86.5	98.9	116.2	126.1	128.5	126.1	111.2	91.5	71.7	79.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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



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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-5

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-740-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-740-U-WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-5
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 09/27/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-VA-30-740-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K): 3819
 CIE u': 0.2261
 CIE v': 0.5108
 Duv: 0.0046
 CIE x: 0.3926
 CIE y: 0.3942
 CIE z: 0.2132
 Peak Wavelength (nm): 450
 Dominant Wavelength (nm): 577
 Purity: 36.15483
 Rf: 75.6
 Rg: 94.8

CRI (Ra):	72.9		
R1:	70.1	R9:	-21.5
R2:	78.4	R10:	48.5
R3:	85.0	R11:	68.4
R4:	72.9	R12:	39.0
R5:	69.1	R13:	71.1
R6:	69.2	R14:	91.3
R7:	82.8	R15:	63.2
R8:	55.4		



Test Conditions

Stabilization Time: 30M
 Operation Time: 1H 30M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-5

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

REPORT NUMBER: SP1-2407-176-5

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 4000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-5

Photopic Flux vs. Wavelength



Photopic Lumens: NR

λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)
360	0	NR	490	127	NR	620	748	NR	750	25	NR	880	0	NR
365	0	NR	495	173	NR	625	699	NR	755	22	NR	885	0	NR
370	0	NR	500	246	NR	630	648	NR	760	20	NR	890	0	NR
375	0	NR	505	335	NR	635	599	NR	765	17	NR	895	0	NR
380	0	NR	510	427	NR	640	547	NR	770	15	NR	900	0	NR
385	0	NR	515	517	NR	645	495	NR	775	13	NR	905	0	NR
390	0	NR	520	589	NR	650	445	NR	780	11	NR	910	0	NR
395	1	NR	525	649	NR	655	396	NR	785	9	NR	915	0	NR
400	4	NR	530	695	NR	660	349	NR	790	8	NR	920	0	NR
405	6	NR	535	733	NR	665	308	NR	795	7	NR	925	0	NR
410	11	NR	540	763	NR	670	269	NR	800	6	NR	930	0	NR
415	23	NR	545	792	NR	675	235	NR	805	5	NR	935	0	NR
420	46	NR	550	813	NR	680	205	NR	810	5	NR	940	0	NR
425	95	NR	555	835	NR	685	178	NR	815	4	NR	945	0	NR
430	183	NR	560	859	NR	690	155	NR	820	3	NR	950	0	NR
435	338	NR	565	880	NR	695	134	NR	825	3	NR	955	0	NR
440	534	NR	570	900	NR	700	115	NR	830	3	NR	960	0	NR
445	782	NR	575	918	NR	705	99	NR	835	2	NR	965	0	NR
450	1000	NR	580	931	NR	710	84	NR	840	2	NR	970	0	NR
455	739	NR	585	937	NR	715	71	NR	845	2	NR	975	0	NR
460	393	NR	590	939	NR	720	59	NR	850	1	NR	980	0	NR
465	276	NR	595	925	NR	725	49	NR	855	1	NR	985	0	NR
470	190	NR	600	907	NR	730	41	NR	860	1	NR	990	0	NR
475	123	NR	605	878	NR	735	35	NR	865	1	NR	995	0	NR
480	105	NR	610	842	NR	740	31	NR	870	1	NR	1000	0	NR
485	108	NR	615	797	NR	745	28	NR	875	1	NR			

REPORT NUMBER: SP1-2407-176-5

Scotopic Flux vs. Wavelength



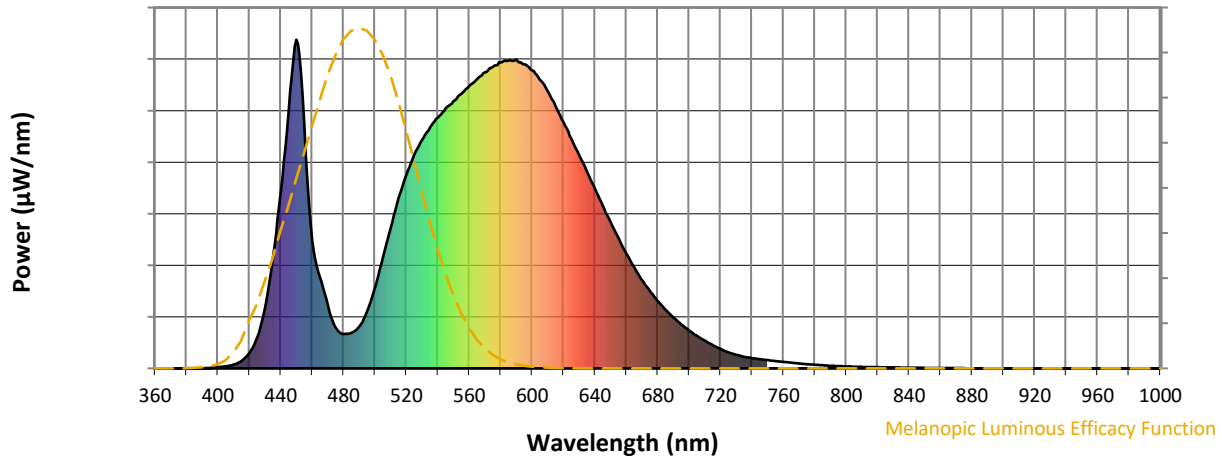
Scotopic Lumens: NR

S/P: 1.45

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	127	NR	620	748	NR	750	25	NR	880	0	NR
365	0	NR	495	173	NR	625	699	NR	755	22	NR	885	0	NR
370	0	NR	500	246	NR	630	648	NR	760	20	NR	890	0	NR
375	0	NR	505	335	NR	635	599	NR	765	17	NR	895	0	NR
380	0	NR	510	427	NR	640	547	NR	770	15	NR	900	0	NR
385	0	NR	515	517	NR	645	495	NR	775	13	NR	905	0	NR
390	0	NR	520	589	NR	650	445	NR	780	11	NR	910	0	NR
395	1	NR	525	649	NR	655	396	NR	785	9	NR	915	0	NR
400	4	NR	530	695	NR	660	349	NR	790	8	NR	920	0	NR
405	6	NR	535	733	NR	665	308	NR	795	7	NR	925	0	NR
410	11	NR	540	763	NR	670	269	NR	800	6	NR	930	0	NR
415	23	NR	545	792	NR	675	235	NR	805	5	NR	935	0	NR
420	46	NR	550	813	NR	680	205	NR	810	5	NR	940	0	NR
425	95	NR	555	835	NR	685	178	NR	815	4	NR	945	0	NR
430	183	NR	560	859	NR	690	155	NR	820	3	NR	950	0	NR
435	338	NR	565	880	NR	695	134	NR	825	3	NR	955	0	NR
440	534	NR	570	900	NR	700	115	NR	830	3	NR	960	0	NR
445	782	NR	575	918	NR	705	99	NR	835	2	NR	965	0	NR
450	1000	NR	580	931	NR	710	84	NR	840	2	NR	970	0	NR
455	739	NR	585	937	NR	715	71	NR	845	2	NR	975	0	NR
460	393	NR	590	939	NR	720	59	NR	850	1	NR	980	0	NR
465	276	NR	595	925	NR	725	49	NR	855	1	NR	985	0	NR
470	190	NR	600	907	NR	730	41	NR	860	1	NR	990	0	NR
475	123	NR	605	878	NR	735	35	NR	865	1	NR	995	0	NR
480	105	NR	610	842	NR	740	31	NR	870	1	NR	1000	0	NR
485	108	NR	615	797	NR	745	28	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.76

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	127	NR	620	748	NR	750	25	NR	880	0	NR
365	0	NR	495	173	NR	625	699	NR	755	22	NR	885	0	NR
370	0	NR	500	246	NR	630	648	NR	760	20	NR	890	0	NR
375	0	NR	505	335	NR	635	599	NR	765	17	NR	895	0	NR
380	0	NR	510	427	NR	640	547	NR	770	15	NR	900	0	NR
385	0	NR	515	517	NR	645	495	NR	775	13	NR	905	0	NR
390	0	NR	520	589	NR	650	445	NR	780	11	NR	910	0	NR
395	1	NR	525	649	NR	655	396	NR	785	9	NR	915	0	NR
400	4	NR	530	695	NR	660	349	NR	790	8	NR	920	0	NR
405	6	NR	535	733	NR	665	308	NR	795	7	NR	925	0	NR
410	11	NR	540	763	NR	670	269	NR	800	6	NR	930	0	NR
415	23	NR	545	792	NR	675	235	NR	805	5	NR	935	0	NR
420	46	NR	550	813	NR	680	205	NR	810	5	NR	940	0	NR
425	95	NR	555	835	NR	685	178	NR	815	4	NR	945	0	NR
430	183	NR	560	859	NR	690	155	NR	820	3	NR	950	0	NR
435	338	NR	565	880	NR	695	134	NR	825	3	NR	955	0	NR
440	534	NR	570	900	NR	700	115	NR	830	3	NR	960	0	NR
445	782	NR	575	918	NR	705	99	NR	835	2	NR	965	0	NR
450	1000	NR	580	931	NR	710	84	NR	840	2	NR	970	0	NR
455	739	NR	585	937	NR	715	71	NR	845	2	NR	975	0	NR
460	393	NR	590	939	NR	720	59	NR	850	1	NR	980	0	NR
465	276	NR	595	925	NR	725	49	NR	855	1	NR	985	0	NR
470	190	NR	600	907	NR	730	41	NR	860	1	NR	990	0	NR
475	123	NR	605	878	NR	735	35	NR	865	1	NR	995	0	NR
480	105	NR	610	842	NR	740	31	NR	870	1	NR	1000	0	NR
485	108	NR	615	797	NR	745	28	NR	875	1	NR			

Summary

$R_f = 75.6$
 $R_g = 94.8$
 $CIE R_a = 72.9$
 $R_g = -21.5$



Color Vector Graphics

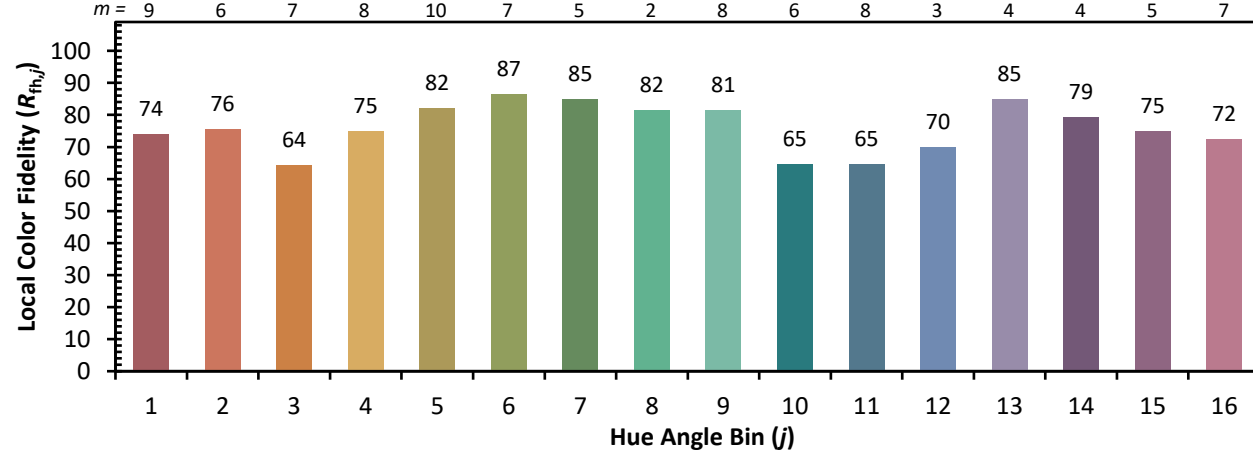


Individual Sample Fidelity Index ($R_{f,i}$)

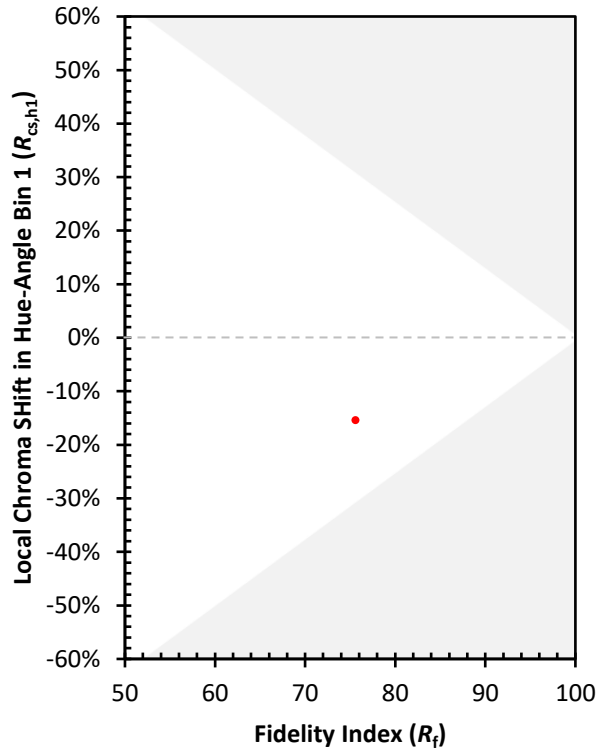
CES01 = 85	CES26 = 65	CES51 = 89	CES76 = 53
CES02 = 61	CES27 = 89	CES52 = 88	CES77 = 71
CES03 = 30	CES28 = 82	CES53 = 78	CES78 = 56
CES04 = 70	CES29 = 68	CES54 = 85	CES79 = 83
CES05 = 48	CES30 = 84	CES55 = 84	CES80 = 79
CES06 = 50	CES31 = 71	CES56 = 74	CES81 = 79
CES07 = 40	CES32 = 63	CES57 = 73	CES82 = 91
CES08 = 39	CES33 = 79	CES58 = 74	CES83 = 90
CES09 = 29	CES34 = 72	CES59 = 86	CES84 = 87
CES10 = 74	CES35 = 84	CES60 = 90	CES85 = 78
CES11 = 57	CES36 = 91	CES61 = 84	CES86 = 74
CES12 = 63	CES37 = 79	CES62 = 85	CES87 = 78
CES13 = 42	CES38 = 93	CES63 = 73	CES88 = 82
CES14 = 74	CES39 = 96	CES64 = 67	CES89 = 72
CES15 = 71	CES40 = 91	CES65 = 64	CES90 = 81
CES16 = 47	CES41 = 93	CES66 = 60	CES91 = 75
CES17 = 49	CES42 = 80	CES67 = 57	CES92 = 62
CES18 = 56	CES43 = 78	CES68 = 66	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 75	CES94 = 57
CES20 = 65	CES45 = 86	CES70 = 58	CES95 = 68
CES21 = 86	CES46 = 83	CES71 = 51	CES96 = 78
CES22 = 78	CES47 = 86	CES72 = 84	CES97 = 85
CES23 = 92	CES48 = 78	CES73 = 49	CES98 = 77
CES24 = 91	CES49 = 81	CES74 = 93	CES99 = 67
CES25 = 72	CES50 = 88	CES75 = 53	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)