

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: P869147

Luminaire Tested: **EMM2-HSN-SA2A-722-U-T5W**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P869147
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA2A-722-U-T5W
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 70W 70CRI 2200K
FITXURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC
Light Source: (20) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

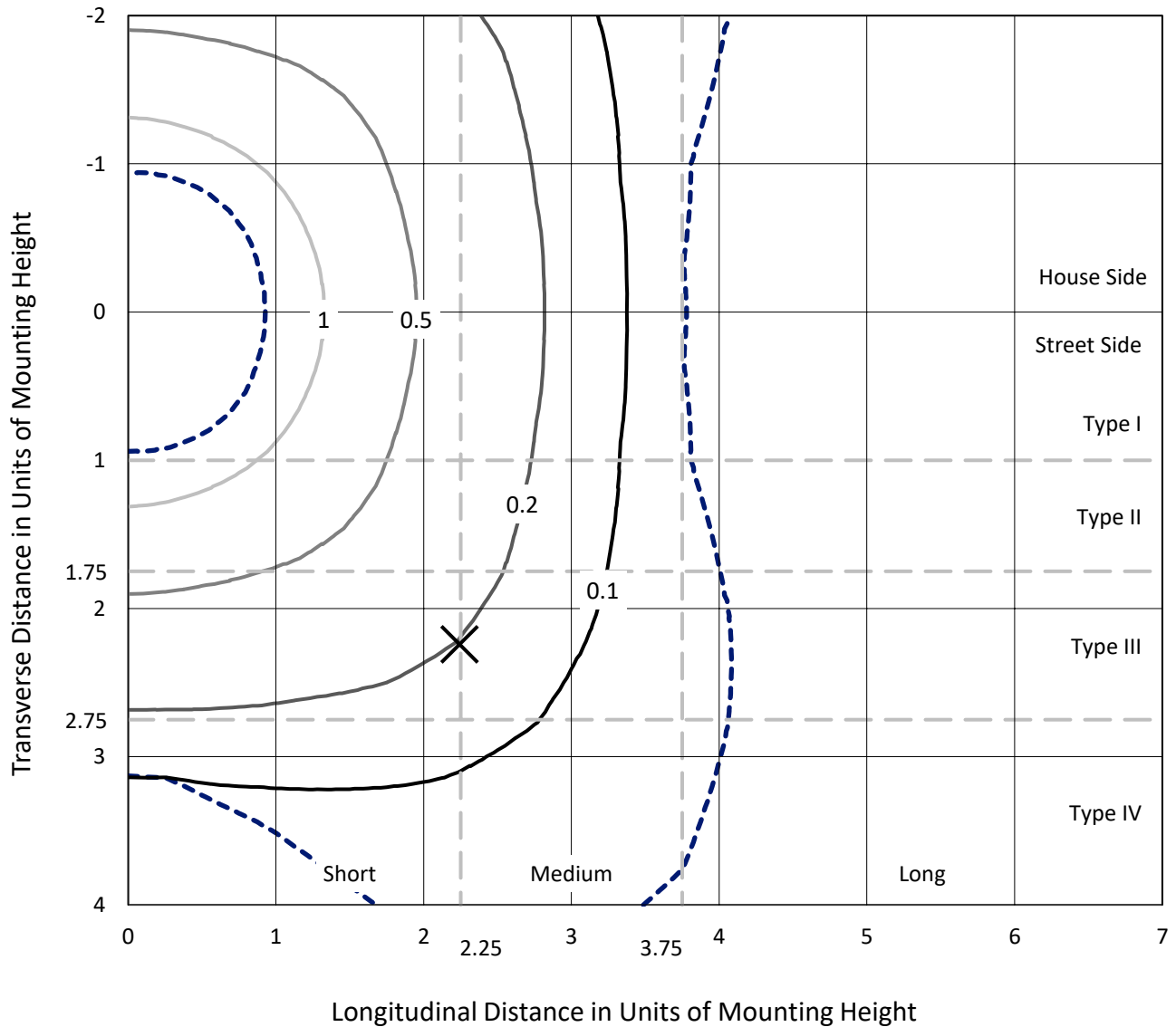
Lumens per Lamp: N/A
Luminaire Lumens: 8301 lumens
Efficiency: N/A
Efficacy: 136.1 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G2

Input Watts (W): 61
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 9.89%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P869147
 CATALOG NUMBER: EMM2-HSN-SA2A-722-U-T5W

Iso-Footcandle Lines of Horizontal Illumination

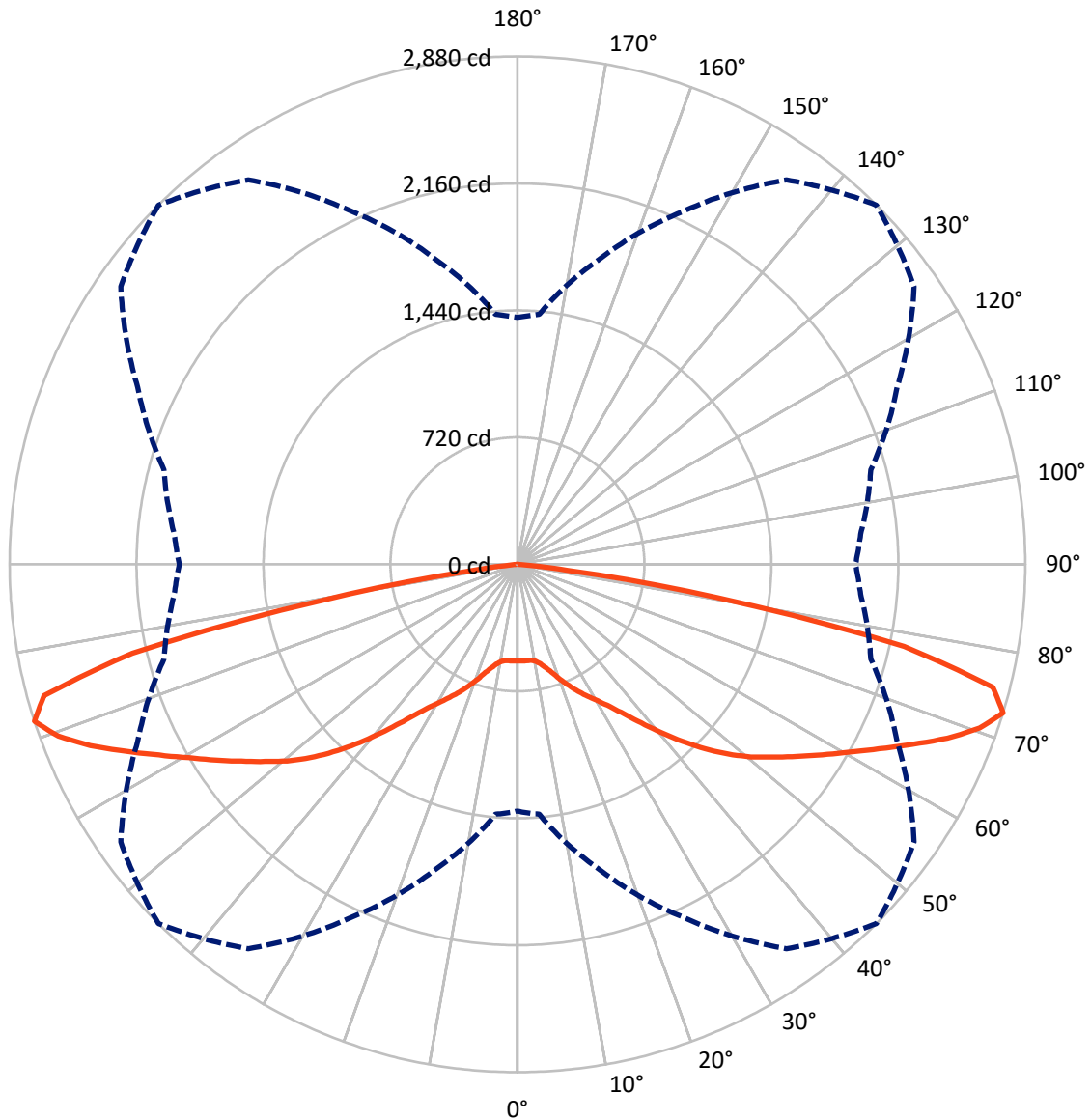
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 1.5 fc
 Type V - Short - N/A

REPORT NUMBER: P869147
CATALOG NUMBER: EMM2-HSN-SA2A-722-U-T5W

Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

REPORT NUMBER: P869147
 CATALOG NUMBER: EMM2-HSN-SA2A-722-U-T5W

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4150.5	0.0	4150.5
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4150.5	0.0	4150.5
	% Fixture	50.0	0.0	50.0
Total	Lumens	8301.0	0.0	8301.0
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	52.5	0.6
10°-20°	175.3	2.1
20°-30°	361.7	4.4
30°-40°	665.9	8.0
40°-50°	1170.7	14.1
50°-60°	1698.0	20.5
60°-70°	2213.5	26.7
70°-80°	1839.9	22.2
80°-90°	123.5	1.5
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°	8301.0	100.0
0°-180°	8301.0	100.0



REPORT NUMBER: P869147

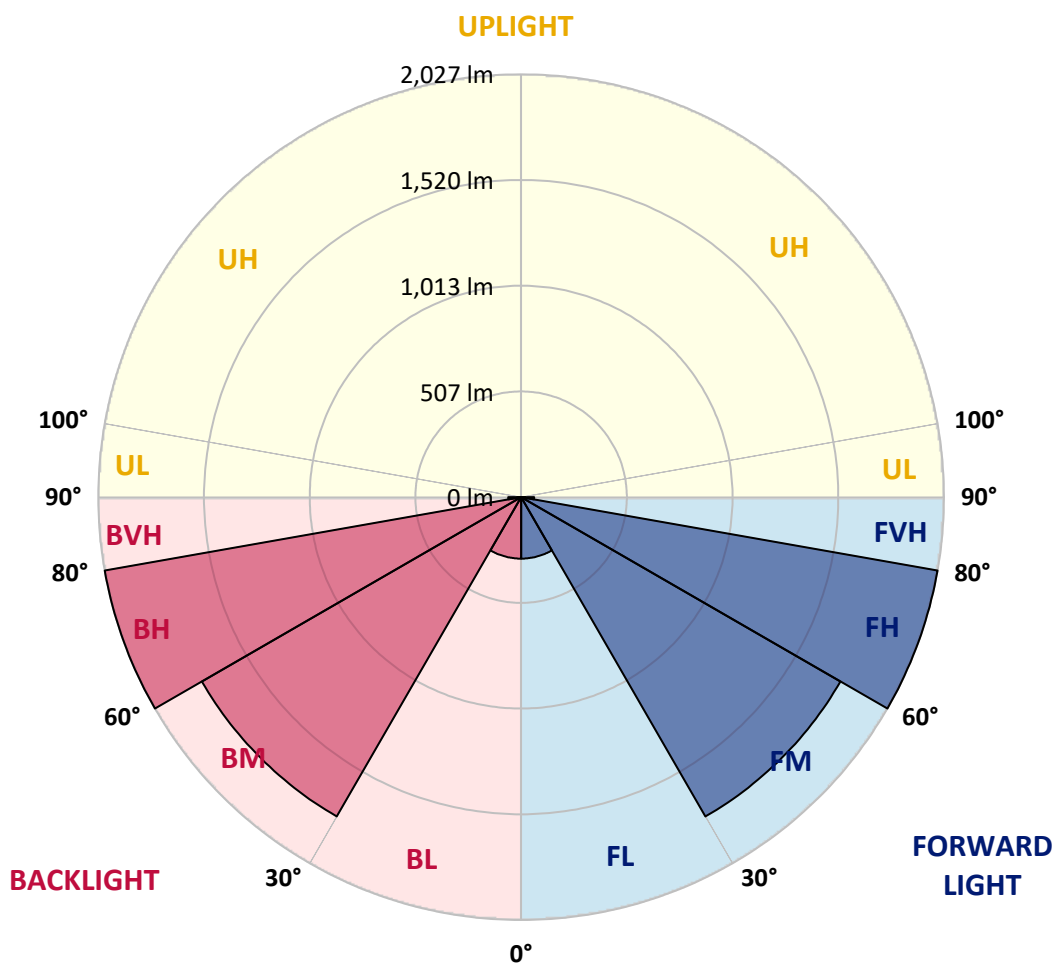
CATALOG NUMBER: EMM2-HSN-SA2A-722-U-T5W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	294.7	3.6			
FM (30°-60°)	1767.3	21.3			
FH (60°-80°)	2026.7	24.4			G2/5000
FVH (80°-90°)	61.8	0.7			G1/100
BL (0°-30°)	294.7	3.6	B1/500		
BM (30°-60°)	1767.3	21.3	B2/2500		
BH (60°-80°)	2026.7	24.4	B3/2500		G2/5000
BVH (80°-90°)	61.8	0.7			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G2

Type V Short





REPORT NUMBER: P869147

CATALOG NUMBER: EMM2-HSN-SA2A-722-U-T5W

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	548.0	548.0	548.0	548.0	548.0	548.0	548.0	548.0	548.0	548.0	548.0
2.5°	546.3	547.2	547.2	547.2	548.0	548.9	549.7	550.6	552.3	553.2	553.2
5°	548.9	548.0	547.2	548.9	548.9	548.9	549.7	550.6	550.6	550.6	551.5
7.5°	546.3	547.2	546.3	546.3	548.9	549.7	548.9	548.0	548.0	548.9	548.9
10°	555.8	554.9	554.0	554.0	556.6	557.5	556.6	555.8	555.8	557.5	557.5
12.5°	577.3	579.0	573.8	573.8	577.3	579.0	576.4	575.5	576.4	578.1	578.1
15°	610.8	610.0	606.5	603.1	606.5	609.1	605.7	603.9	604.8	609.1	605.7
17.5°	647.8	648.7	645.2	641.8	644.4	647.8	642.6	638.3	639.2	640.9	639.2
20°	689.1	688.2	687.4	687.4	692.5	696.8	689.1	678.8	676.2	674.5	674.5
22.5°	719.2	721.8	722.7	730.4	742.4	746.7	736.4	722.7	712.3	707.2	703.7
25°	766.5	763.9	762.2	770.8	788.9	796.6	783.7	764.8	754.5	753.6	756.2
27.5°	809.5	809.5	813.0	821.6	838.8	846.5	835.4	816.4	811.3	811.3	808.7
30°	865.5	862.9	866.3	880.9	893.9	899.0	889.6	876.6	872.3	872.3	868.0
32.5°	930.8	931.7	936.9	946.3	959.2	960.1	956.7	950.6	948.1	945.5	949.8
35°	1030.6	1030.6	1028.9	1035.8	1039.2	1041.0	1042.7	1040.1	1040.1	1040.1	1036.7
37.5°	1154.5	1147.6	1146.8	1140.8	1136.5	1140.8	1148.5	1157.1	1164.0	1159.7	1158.0
40°	1277.5	1274.1	1263.8	1254.3	1250.9	1252.6	1262.1	1280.1	1287.9	1287.9	1294.8
42.5°	1410.0	1403.1	1390.2	1379.1	1369.6	1372.2	1380.8	1403.1	1420.4	1428.1	1424.7
45°	1528.8	1522.7	1509.8	1499.5	1492.6	1491.8	1502.9	1517.6	1540.8	1547.7	1552.8
47.5°	1630.3	1626.0	1614.8	1604.5	1607.0	1607.9	1611.3	1624.2	1643.2	1652.6	1651.8
50°	1712.9	1709.4	1699.1	1703.4	1710.3	1717.2	1712.9	1721.5	1733.5	1737.8	1741.2
52.5°	1788.6	1783.4	1776.5	1784.3	1802.3	1816.1	1818.7	1812.7	1816.1	1818.7	1816.1
55°	1863.4	1857.4	1855.7	1869.4	1897.0	1922.8	1920.2	1903.0	1898.7	1893.5	1890.9
57.5°	1924.5	1920.2	1927.1	1950.3	2003.6	2038.1	2026.9	1987.3	1970.1	1958.0	1954.6
60°	1963.2	1962.3	1977.8	2032.0	2112.9	2161.1	2143.0	2075.0	2036.3	2025.1	2020.0
62.5°	1983.9	1984.7	2012.2	2108.6	2237.6	2303.0	2271.2	2167.1	2106.9	2095.7	2097.4
65°	2002.8	2000.2	2036.3	2173.1	2372.7	2461.3	2418.3	2278.1	2190.3	2168.0	2168.0
67.5°	2016.5	2019.1	2073.3	2237.6	2504.3	2630.8	2568.0	2395.9	2279.8	2246.2	2241.9
70°	1842.8	1867.7	2037.2	2280.7	2608.4	2780.5	2697.9	2468.2	2283.2	2187.7	2178.3
72.5°	1399.7	1422.9	1789.4	2204.1	2661.8	2880.3	2746.1	2376.1	2075.0	1953.7	1917.6
75°	923.1	939.4	1333.5	1925.4	2513.8	2785.7	2500.9	2046.7	1633.7	1476.3	1485.7
77.5°	411.2	463.7	850.0	1502.1	2070.7	2241.9	1907.3	1396.3	997.9	844.8	828.5
80°	172.1	188.4	320.9	800.9	1200.1	1148.5	812.1	468.0	297.7	231.4	223.7
82.5°	49.9	51.6	63.7	138.5	244.3	287.3	172.9	87.8	83.4	66.2	61.1
85°	3.4	3.4	5.2	8.6	12.0	19.8	22.4	25.8	29.3	24.9	24.9
87.5°	1.7	1.7	1.7	2.6	2.6	3.4	2.6	2.6	2.6	2.6	2.6
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

Streetworks

Report Number: SP1-2407-157-2

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-722-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-722-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-722-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 2253
 CIE u': 0.2868
 CIE v': 0.5332
 Duv: -0.0014
 CIE x: 0.4974
 CIE y: 0.4110
 CIE z: 0.0915
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 587
 Purity: 72.69432
 Rf: 76.9
 Rg: 92.7

CRI (Ra):	70.6		
R1:	68.4	R9:	-36.0
R2:	88.7	R10:	78.2
R3:	85.4	R11:	61.0
R4:	63.5	R12:	74.2
R5:	69.0	R13:	72.8
R6:	88.9	R14:	92.2
R7:	68.5	R15:	58.0
R8:	32.0		



Test Conditions

Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2407-157-2

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: SP1-2407-157-2

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2200K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-2

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	117	NR	620	896	NR	750	20	NR	880	0	NR
365	0	NR	495	137	NR	625	838	NR	755	17	NR	885	0	NR
370	0	NR	500	160	NR	630	774	NR	760	14	NR	890	0	NR
375	0	NR	505	183	NR	635	704	NR	765	12	NR	895	0	NR
380	0	NR	510	202	NR	640	635	NR	770	10	NR	900	0	NR
385	0	NR	515	219	NR	645	565	NR	775	9	NR	905	0	NR
390	0	NR	520	235	NR	650	501	NR	780	7	NR	910	0	NR
395	0	NR	525	249	NR	655	440	NR	785	6	NR	915	0	NR
400	0	NR	530	263	NR	660	383	NR	790	5	NR	920	0	NR
405	0	NR	535	281	NR	665	332	NR	795	5	NR	925	0	NR
410	1	NR	540	302	NR	670	286	NR	800	4	NR	930	0	NR
415	3	NR	545	331	NR	675	245	NR	805	3	NR	935	0	NR
420	6	NR	550	366	NR	680	210	NR	810	3	NR	940	0	NR
425	12	NR	555	411	NR	685	178	NR	815	3	NR	945	0	NR
430	21	NR	560	469	NR	690	152	NR	820	2	NR	950	0	NR
435	38	NR	565	536	NR	695	129	NR	825	2	NR	955	0	NR
440	66	NR	570	614	NR	700	109	NR	830	2	NR	960	0	NR
445	122	NR	575	701	NR	705	92	NR	835	1	NR	965	0	NR
450	215	NR	580	785	NR	710	77	NR	840	1	NR	970	0	NR
455	236	NR	585	863	NR	715	66	NR	845	1	NR	975	0	NR
460	170	NR	590	928	NR	720	55	NR	850	1	NR	980	0	NR
465	148	NR	595	971	NR	725	47	NR	855	1	NR	985	0	NR
470	132	NR	600	994	NR	730	40	NR	860	1	NR	990	0	NR
475	104	NR	605	996	NR	735	33	NR	865	1	NR	995	0	NR
480	97	NR	610	979	NR	740	28	NR	870	1	NR	1000	0	NR
485	105	NR	615	943	NR	745	24	NR	875	0	NR			

REPORT NUMBER: SP1-2407-157-2

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR S/P: 0.96

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	117	NR	620	896	NR	750	20	NR	880	0	NR
365	0	NR	495	137	NR	625	838	NR	755	17	NR	885	0	NR
370	0	NR	500	160	NR	630	774	NR	760	14	NR	890	0	NR
375	0	NR	505	183	NR	635	704	NR	765	12	NR	895	0	NR
380	0	NR	510	202	NR	640	635	NR	770	10	NR	900	0	NR
385	0	NR	515	219	NR	645	565	NR	775	9	NR	905	0	NR
390	0	NR	520	235	NR	650	501	NR	780	7	NR	910	0	NR
395	0	NR	525	249	NR	655	440	NR	785	6	NR	915	0	NR
400	0	NR	530	263	NR	660	383	NR	790	5	NR	920	0	NR
405	0	NR	535	281	NR	665	332	NR	795	5	NR	925	0	NR
410	1	NR	540	302	NR	670	286	NR	800	4	NR	930	0	NR
415	3	NR	545	331	NR	675	245	NR	805	3	NR	935	0	NR
420	6	NR	550	366	NR	680	210	NR	810	3	NR	940	0	NR
425	12	NR	555	411	NR	685	178	NR	815	3	NR	945	0	NR
430	21	NR	560	469	NR	690	152	NR	820	2	NR	950	0	NR
435	38	NR	565	536	NR	695	129	NR	825	2	NR	955	0	NR
440	66	NR	570	614	NR	700	109	NR	830	2	NR	960	0	NR
445	122	NR	575	701	NR	705	92	NR	835	1	NR	965	0	NR
450	215	NR	580	785	NR	710	77	NR	840	1	NR	970	0	NR
455	236	NR	585	863	NR	715	66	NR	845	1	NR	975	0	NR
460	170	NR	590	928	NR	720	55	NR	850	1	NR	980	0	NR
465	148	NR	595	971	NR	725	47	NR	855	1	NR	985	0	NR
470	132	NR	600	994	NR	730	40	NR	860	1	NR	990	0	NR
475	104	NR	605	996	NR	735	33	NR	865	1	NR	995	0	NR
480	97	NR	610	979	NR	740	28	NR	870	1	NR	1000	0	NR
485	105	NR	615	943	NR	745	24	NR	875	0	NR			

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)
360	0	NR	490	117	NR	620	896	NR	750	20	NR	880	0	NR
365	0	NR	495	137	NR	625	838	NR	755	17	NR	885	0	NR
370	0	NR	500	160	NR	630	774	NR	760	14	NR	890	0	NR
375	0	NR	505	183	NR	635	704	NR	765	12	NR	895	0	NR
380	0	NR	510	202	NR	640	635	NR	770	10	NR	900	0	NR
385	0	NR	515	219	NR	645	565	NR	775	9	NR	905	0	NR
390	0	NR	520	235	NR	650	501	NR	780	7	NR	910	0	NR
395	0	NR	525	249	NR	655	440	NR	785	6	NR	915	0	NR
400	0	NR	530	263	NR	660	383	NR	790	5	NR	920	0	NR
405	0	NR	535	281	NR	665	332	NR	795	5	NR	925	0	NR
410	1	NR	540	302	NR	670	286	NR	800	4	NR	930	0	NR
415	3	NR	545	331	NR	675	245	NR	805	3	NR	935	0	NR
420	6	NR	550	366	NR	680	210	NR	810	3	NR	940	0	NR
425	12	NR	555	411	NR	685	178	NR	815	3	NR	945	0	NR
430	21	NR	560	469	NR	690	152	NR	820	2	NR	950	0	NR
435	38	NR	565	536	NR	695	129	NR	825	2	NR	955	0	NR
440	66	NR	570	614	NR	700	109	NR	830	2	NR	960	0	NR
445	122	NR	575	701	NR	705	92	NR	835	1	NR	965	0	NR
450	215	NR	580	785	NR	710	77	NR	840	1	NR	970	0	NR
455	236	NR	585	863	NR	715	66	NR	845	1	NR	975	0	NR
460	170	NR	590	928	NR	720	55	NR	850	1	NR	980	0	NR
465	148	NR	595	971	NR	725	47	NR	855	1	NR	985	0	NR
470	132	NR	600	994	NR	730	40	NR	860	1	NR	990	0	NR
475	104	NR	605	996	NR	735	33	NR	865	1	NR	995	0	NR
480	97	NR	610	979	NR	740	28	NR	870	1	NR	1000	0	NR
485	105	NR	615	943	NR	745	24	NR	875	0	NR			

Summary

$R_f = 76.9$
 $R_g = 92.7$
 $CIE R_a = 70.6$
 $R_g = -36.0$

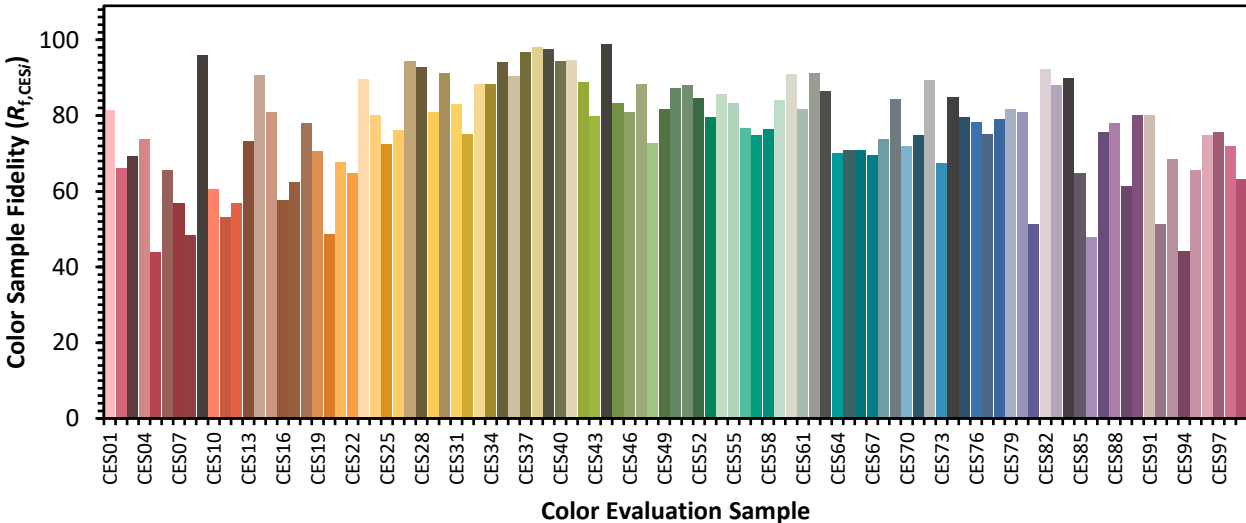


Color Vector Graphics

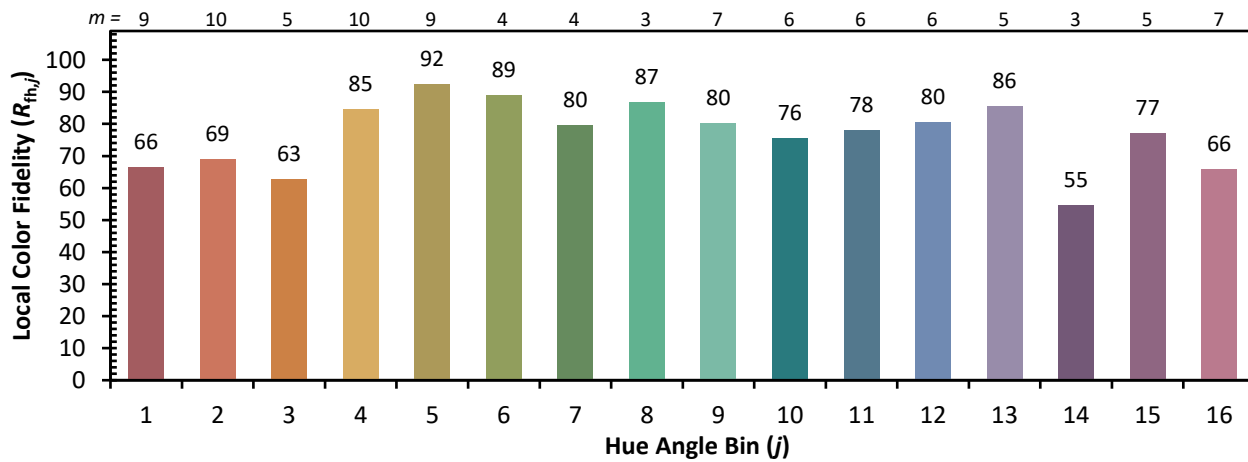
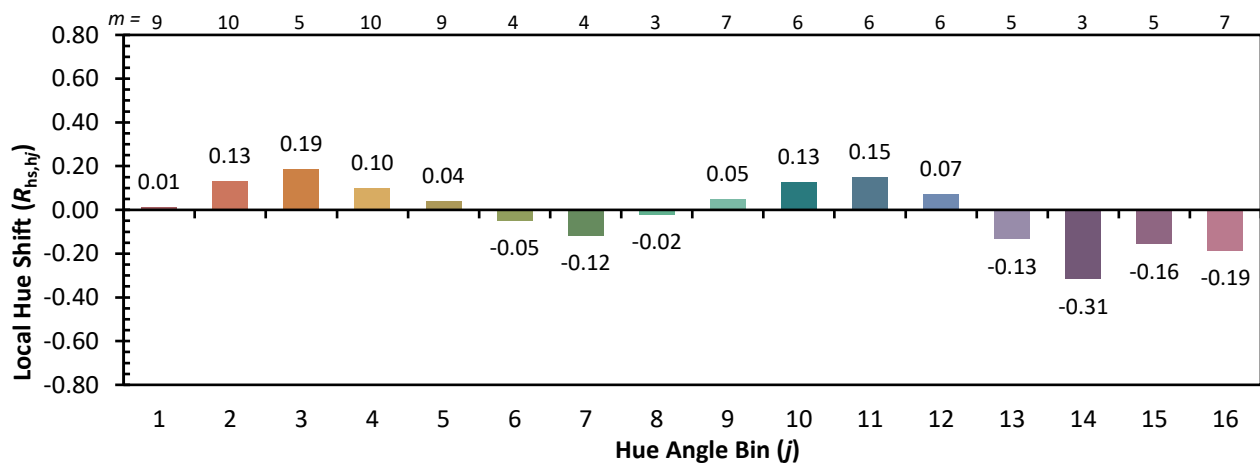
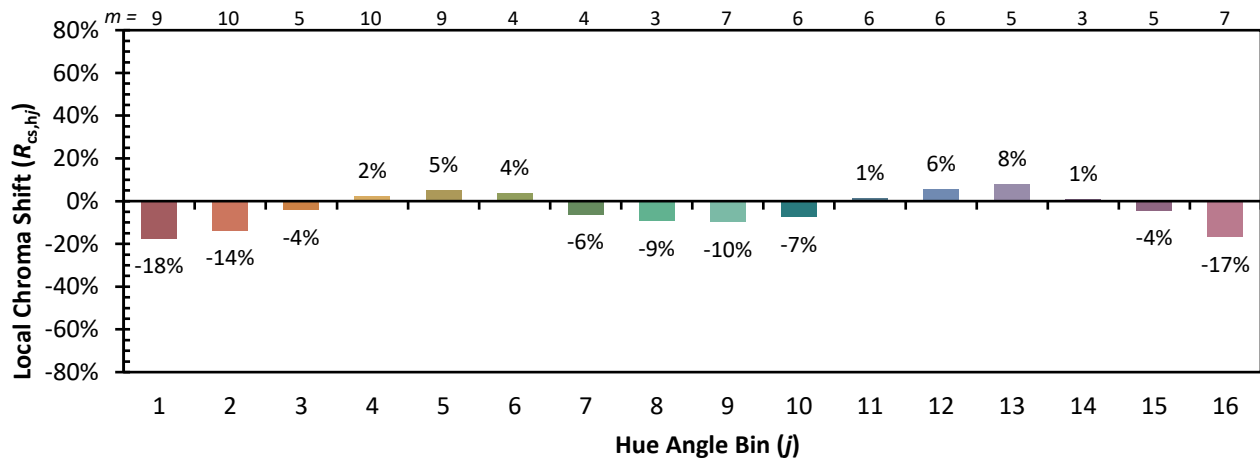


Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 87	CES26 = 76	CES51 = 88	CES76 = 78
CES02 = 65	CES27 = 94	CES52 = 85	CES77 = 75
CES03 = 32	CES28 = 93	CES53 = 80	CES78 = 79
CES04 = 72	CES29 = 81	CES54 = 86	CES79 = 82
CES05 = 51	CES30 = 91	CES55 = 83	CES80 = 81
CES06 = 52	CES31 = 83	CES56 = 77	CES81 = 51
CES07 = 44	CES32 = 75	CES57 = 75	CES82 = 92
CES08 = 42	CES33 = 88	CES58 = 76	CES83 = 88
CES09 = 29	CES34 = 88	CES59 = 84	CES84 = 90
CES10 = 79	CES35 = 94	CES60 = 91	CES85 = 65
CES11 = 62	CES36 = 90	CES61 = 82	CES86 = 48
CES12 = 68	CES37 = 97	CES62 = 91	CES87 = 76
CES13 = 45	CES38 = 98	CES63 = 86	CES88 = 78
CES14 = 75	CES39 = 97	CES64 = 70	CES89 = 61
CES15 = 72	CES40 = 94	CES65 = 71	CES90 = 80
CES16 = 48	CES41 = 95	CES66 = 71	CES91 = 80
CES17 = 51	CES42 = 89	CES67 = 70	CES92 = 51
CES18 = 57	CES43 = 80	CES68 = 74	CES93 = 68
CES19 = 74	CES44 = 99	CES69 = 84	CES94 = 44
CES20 = 68	CES45 = 83	CES70 = 72	CES95 = 66
CES21 = 88	CES46 = 81	CES71 = 75	CES96 = 75
CES22 = 81	CES47 = 88	CES72 = 89	CES97 = 76
CES23 = 92	CES48 = 73	CES73 = 68	CES98 = 72
CES24 = 92	CES49 = 82	CES74 = 85	CES99 = 63
CES25 = 73	CES50 = 87	CES75 = 80	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)