

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: P880396

Luminaire Tested: **EMM2-HSN-VA3-727-U-MQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P880396
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-VA3-727-U-MQ
Description: EPIC MODERN SHORT HOUSING 3W 70CRI 2700K VISUAL COMFORT FIXTURE w/
TYPE V MEDIUM DISTRIBUTION OPTIC
Light Source: (1) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

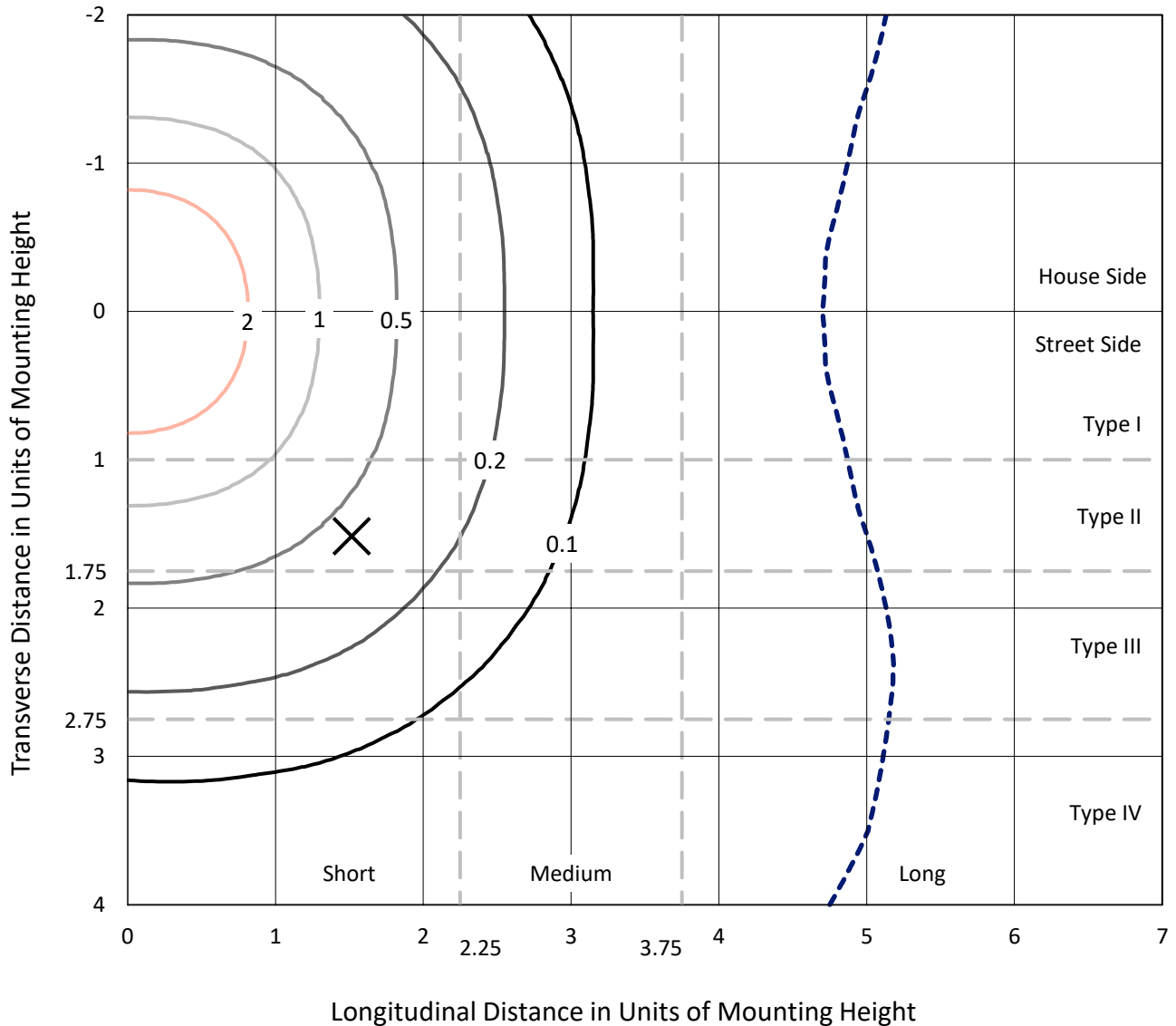
Lumens per Lamp: N/A
Luminaire Lumens: 5408.3 lumens
Efficiency: N/A
Efficacy: 110.4 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B2 - U0 - G2

Input Watts (W): 49
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 11%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P880396
 CATALOG NUMBER: EMM2-HSN-VA3-727-U-MQ

Iso-Footcandle Lines of Horizontal Illumination

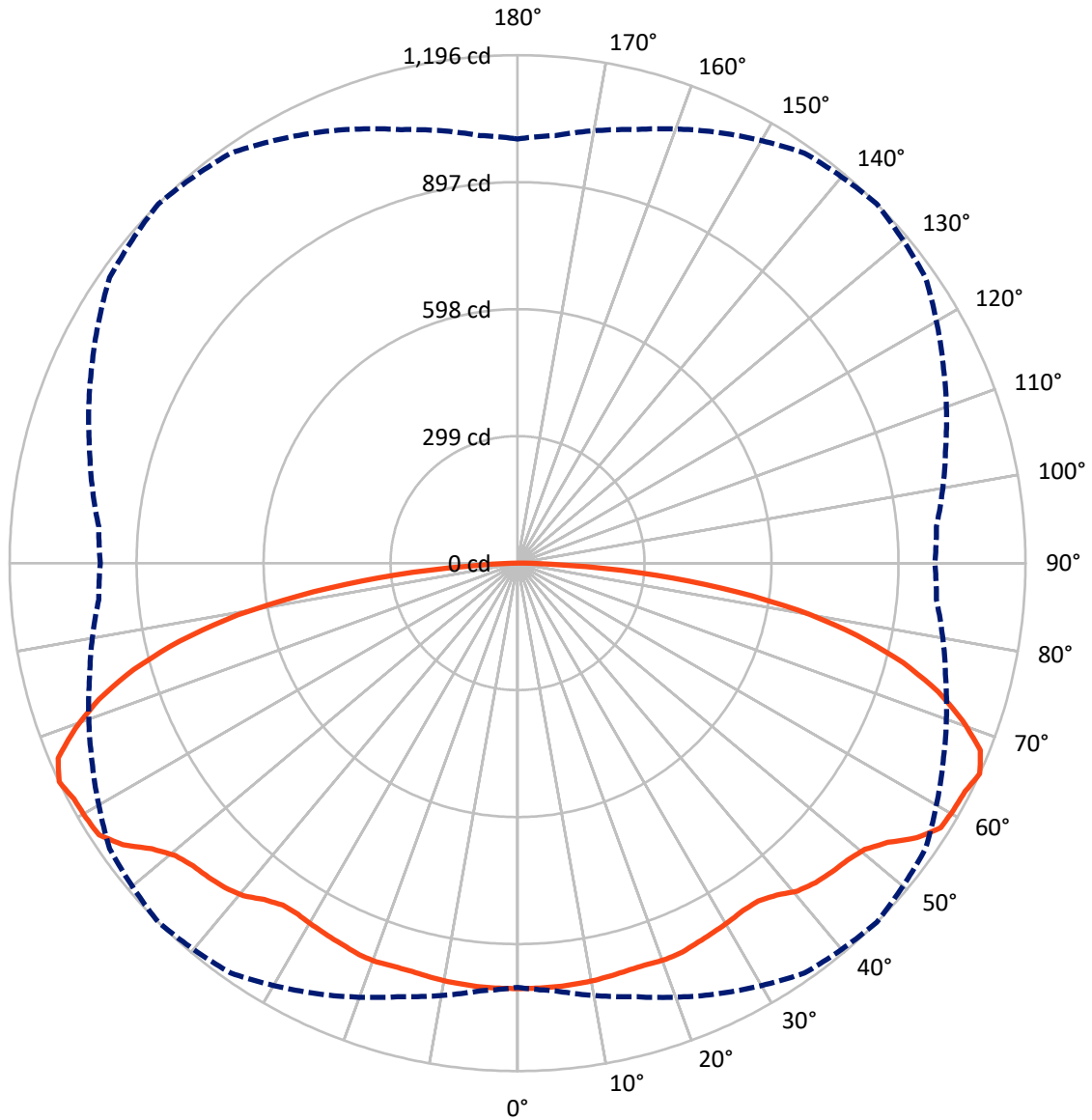
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 4.5 fc
 Type V - Short - N/A

REPORT NUMBER: P880396
CATALOG NUMBER: EMM2-HSN-VA3-727-U-MQ

Luminous Intensity Polar Plot



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

REPORT NUMBER: P880396
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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2704.1	0.0	2704.1
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	2704.1	0.0	2704.1
	% Fixture	50.0	0.0	50.0
Total	Lumens	5408.3	0.0	5408.3
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	95.5	1.8
10°-20°	281.6	5.2
20°-30°	455.9	8.4
30°-40°	612.6	11.3
40°-50°	781.9	14.5
50°-60°	961.9	17.8
60°-70°	1071.1	19.8
70°-80°	869.5	16.1
80°-90°	278.3	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°	5408.3	100.0
0°-180°	5408.3	100.0



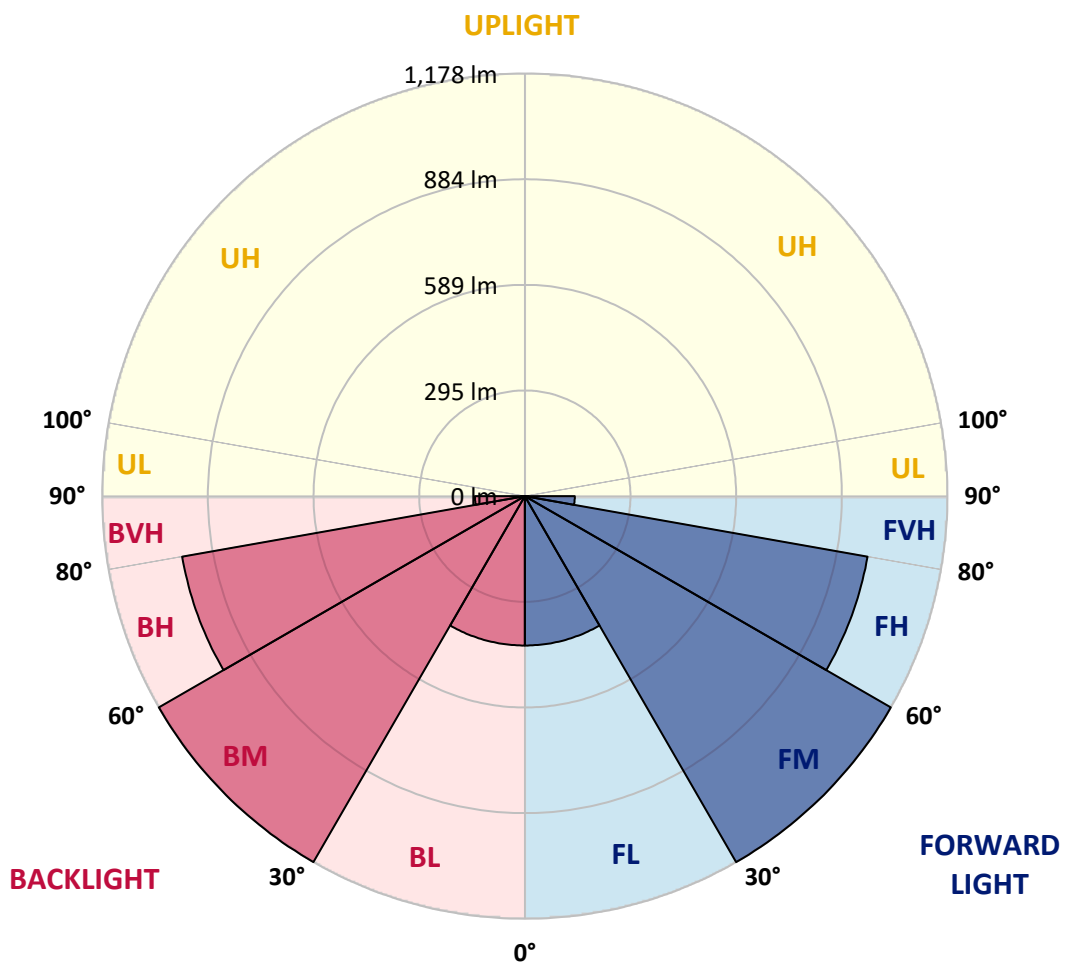
REPORT NUMBER: P880396
 CATALOG NUMBER: EMM2-HSN-VA3-727-U-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	416.5	7.7			
FM (30°-60°)	1178.2	21.8			
FH (60°-80°)	970.3	17.9			G1/1800
FVH (80°-90°)	139.2	2.6			G2/225
BL (0°-30°)	416.5	7.7	B1/500		
BM (30°-60°)	1178.2	21.8	B2/2500		
BH (60°-80°)	970.3	17.9	B2/1000		G1/1800
BVH (80°-90°)	139.2	2.6			G2/225
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B2-U0-G2

Type V Short





REPORT NUMBER: P880396

CATALOG NUMBER: EMM2-HSN-VA3-727-U-MQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6
2.5°	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6
5°	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1001.6	1000.1	1001.6	1001.6
7.5°	1000.1	1000.1	1000.1	1000.1	1000.1	1000.1	1000.1	1000.1	1000.1	1000.1	1000.1
10°	998.6	998.6	998.6	998.6	998.6	998.6	998.6	998.6	998.6	998.6	998.6
12.5°	995.7	995.7	995.7	995.7	995.7	995.7	995.7	995.7	995.7	995.7	995.7
15°	991.2	992.7	992.7	992.7	992.7	992.7	992.7	992.7	992.7	991.2	991.2
17.5°	989.7	989.7	989.7	991.2	992.7	992.7	992.7	991.2	989.7	988.3	988.3
20°	991.2	991.2	991.2	992.7	994.2	995.7	994.2	992.7	989.7	989.7	989.7
22.5°	989.7	991.2	991.2	992.7	994.2	994.2	992.7	991.2	989.7	988.3	988.3
25°	985.3	985.3	986.8	988.3	988.3	988.3	988.3	985.3	983.8	982.3	982.3
27.5°	979.4	980.9	980.9	982.3	983.8	983.8	982.3	979.4	977.9	976.4	976.4
30°	972.0	972.0	973.4	976.4	977.9	979.4	976.4	973.4	969.0	967.5	967.5
32.5°	964.6	966.0	969.0	972.0	973.4	974.9	972.0	969.0	964.6	961.6	960.1
35°	961.6	961.6	966.0	972.0	976.4	976.4	973.4	967.5	961.6	955.7	955.7
37.5°	966.0	967.5	973.4	983.8	991.2	991.2	989.7	979.4	969.0	960.1	958.6
40°	976.4	977.9	988.3	1001.6	1013.4	1014.9	1009.0	995.7	980.9	970.5	967.5
42.5°	982.3	985.3	997.1	1013.4	1023.8	1028.3	1020.9	1007.5	988.3	974.9	973.4
45°	985.3	988.3	1001.6	1019.4	1032.7	1037.2	1029.7	1012.0	991.2	976.4	974.9
47.5°	986.8	989.7	1003.1	1025.3	1040.1	1044.6	1038.6	1017.9	992.7	977.9	976.4
50°	988.3	994.2	1010.5	1034.2	1056.4	1059.4	1050.5	1025.3	998.6	980.9	976.4
52.5°	998.6	1003.1	1026.8	1060.9	1083.1	1092.0	1078.6	1053.5	1013.4	986.8	983.8
55°	1023.8	1025.3	1053.5	1096.4	1129.0	1140.9	1120.1	1086.0	1037.2	1010.5	1009.0
57.5°	1031.2	1040.1	1071.2	1120.1	1160.1	1174.9	1157.2	1105.3	1060.9	1025.3	1016.4
60°	1023.8	1031.2	1068.3	1124.6	1167.5	1179.4	1166.1	1117.2	1052.0	1012.0	1004.6
62.5°	1016.4	1025.3	1063.8	1127.5	1169.0	1182.4	1160.1	1118.6	1047.5	1007.5	1000.1
65°	998.6	1010.5	1056.4	1118.6	1177.9	1195.7	1172.0	1105.3	1043.1	989.7	982.3
67.5°	964.6	970.5	1020.9	1093.5	1157.2	1174.9	1149.8	1080.1	1006.0	954.2	948.3
70°	900.8	914.2	961.6	1041.6	1102.3	1111.2	1092.0	1022.3	949.7	894.9	887.5
72.5°	816.4	835.6	887.5	969.0	1017.9	1035.7	1010.5	954.2	878.6	816.4	806.0
75°	727.5	737.9	791.2	871.2	921.6	937.9	915.7	860.8	770.5	727.5	717.1
77.5°	629.7	637.1	684.5	755.6	803.1	816.4	794.2	749.7	668.2	628.2	623.8
80°	493.4	508.2	552.7	613.4	649.0	669.7	646.0	603.0	543.8	496.4	488.9
82.5°	352.6	363.0	403.0	444.5	478.6	484.5	474.1	432.6	388.2	351.2	342.3
85°	192.6	197.1	222.2	265.2	278.5	288.9	274.1	243.0	220.8	197.1	189.7
87.5°	50.4	51.9	59.3	69.6	75.6	77.0	75.6	66.7	54.8	43.0	47.4
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: SP1-2407-176-2

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-727-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-727-U-WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-2
 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-30-727-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K): 2691
 CIE u': 0.2627
 CIE v': 0.5285
 Duv: 0.0007
 CIE x: 0.4618
 CIE y: 0.4129
 CIE z: 0.1254
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 584
 Purity: 62.54863
 Rf: 70.6
 Rg: 97.2

CRI (Ra):	70.6		
R1:	67.7	R9:	-27.1
R2:	79.8	R10:	53.1
R3:	90.6	R11:	61.9
R4:	67.7	R12:	42.2
R5:	65.3	R13:	69.4
R6:	71.1	R14:	94.1
R7:	78.1	R15:	60.4
R8:	44.7		



Test Conditions

Stabilization Time: 28M
 Operation Time: 1H 28M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-2

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

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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 2700K 4-step quadrangle

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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	43	NR	620	881	NR	750	28	NR	880	0	NR
365	0	NR	495	67	NR	625	832	NR	755	25	NR	885	0	NR
370	0	NR	500	108	NR	630	776	NR	760	22	NR	890	0	NR
375	0	NR	505	165	NR	635	720	NR	765	19	NR	895	0	NR
380	0	NR	510	229	NR	640	660	NR	770	16	NR	900	0	NR
385	0	NR	515	297	NR	645	599	NR	775	14	NR	905	0	NR
390	0	NR	520	357	NR	650	538	NR	780	12	NR	910	0	NR
395	1	NR	525	408	NR	655	480	NR	785	10	NR	915	0	NR
400	3	NR	530	451	NR	660	423	NR	790	9	NR	920	0	NR
405	5	NR	535	488	NR	665	372	NR	795	7	NR	925	0	NR
410	10	NR	540	521	NR	670	325	NR	800	6	NR	930	0	NR
415	21	NR	545	555	NR	675	282	NR	805	5	NR	935	0	NR
420	46	NR	550	590	NR	680	246	NR	810	5	NR	940	0	NR
425	94	NR	555	631	NR	685	213	NR	815	4	NR	945	0	NR
430	169	NR	560	677	NR	690	185	NR	820	4	NR	950	0	NR
435	268	NR	565	728	NR	695	158	NR	825	3	NR	955	0	NR
440	354	NR	570	782	NR	700	136	NR	830	3	NR	960	0	NR
445	445	NR	575	838	NR	705	116	NR	835	2	NR	965	0	NR
450	411	NR	580	891	NR	710	98	NR	840	2	NR	970	0	NR
455	210	NR	585	935	NR	715	82	NR	845	2	NR	975	0	NR
460	119	NR	590	972	NR	720	68	NR	850	2	NR	980	0	NR
465	84	NR	595	991	NR	725	56	NR	855	1	NR	985	0	NR
470	50	NR	600	997	NR	730	47	NR	860	1	NR	990	0	NR
475	35	NR	605	988	NR	735	40	NR	865	1	NR	995	0	NR
480	32	NR	610	965	NR	740	35	NR	870	1	NR	1000	0	NR
485	33	NR	615	927	NR	745	31	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.03

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	43	NR	620	881	NR	750	28	NR	880	0	NR
365	0	NR	495	67	NR	625	832	NR	755	25	NR	885	0	NR
370	0	NR	500	108	NR	630	776	NR	760	22	NR	890	0	NR
375	0	NR	505	165	NR	635	720	NR	765	19	NR	895	0	NR
380	0	NR	510	229	NR	640	660	NR	770	16	NR	900	0	NR
385	0	NR	515	297	NR	645	599	NR	775	14	NR	905	0	NR
390	0	NR	520	357	NR	650	538	NR	780	12	NR	910	0	NR
395	1	NR	525	408	NR	655	480	NR	785	10	NR	915	0	NR
400	3	NR	530	451	NR	660	423	NR	790	9	NR	920	0	NR
405	5	NR	535	488	NR	665	372	NR	795	7	NR	925	0	NR
410	10	NR	540	521	NR	670	325	NR	800	6	NR	930	0	NR
415	21	NR	545	555	NR	675	282	NR	805	5	NR	935	0	NR
420	46	NR	550	590	NR	680	246	NR	810	5	NR	940	0	NR
425	94	NR	555	631	NR	685	213	NR	815	4	NR	945	0	NR
430	169	NR	560	677	NR	690	185	NR	820	4	NR	950	0	NR
435	268	NR	565	728	NR	695	158	NR	825	3	NR	955	0	NR
440	354	NR	570	782	NR	700	136	NR	830	3	NR	960	0	NR
445	445	NR	575	838	NR	705	116	NR	835	2	NR	965	0	NR
450	411	NR	580	891	NR	710	98	NR	840	2	NR	970	0	NR
455	210	NR	585	935	NR	715	82	NR	845	2	NR	975	0	NR
460	119	NR	590	972	NR	720	68	NR	850	2	NR	980	0	NR
465	84	NR	595	991	NR	725	56	NR	855	1	NR	985	0	NR
470	50	NR	600	997	NR	730	47	NR	860	1	NR	990	0	NR
475	35	NR	605	988	NR	735	40	NR	865	1	NR	995	0	NR
480	32	NR	610	965	NR	740	35	NR	870	1	NR	1000	0	NR
485	33	NR	615	927	NR	745	31	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.73

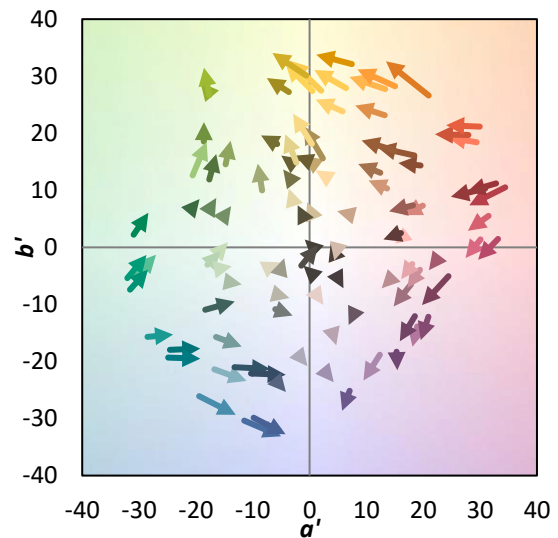
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	43	NR	620	881	NR	750	28	NR	880	0	NR
365	0	NR	495	67	NR	625	832	NR	755	25	NR	885	0	NR
370	0	NR	500	108	NR	630	776	NR	760	22	NR	890	0	NR
375	0	NR	505	165	NR	635	720	NR	765	19	NR	895	0	NR
380	0	NR	510	229	NR	640	660	NR	770	16	NR	900	0	NR
385	0	NR	515	297	NR	645	599	NR	775	14	NR	905	0	NR
390	0	NR	520	357	NR	650	538	NR	780	12	NR	910	0	NR
395	1	NR	525	408	NR	655	480	NR	785	10	NR	915	0	NR
400	3	NR	530	451	NR	660	423	NR	790	9	NR	920	0	NR
405	5	NR	535	488	NR	665	372	NR	795	7	NR	925	0	NR
410	10	NR	540	521	NR	670	325	NR	800	6	NR	930	0	NR
415	21	NR	545	555	NR	675	282	NR	805	5	NR	935	0	NR
420	46	NR	550	590	NR	680	246	NR	810	5	NR	940	0	NR
425	94	NR	555	631	NR	685	213	NR	815	4	NR	945	0	NR
430	169	NR	560	677	NR	690	185	NR	820	4	NR	950	0	NR
435	268	NR	565	728	NR	695	158	NR	825	3	NR	955	0	NR
440	354	NR	570	782	NR	700	136	NR	830	3	NR	960	0	NR
445	445	NR	575	838	NR	705	116	NR	835	2	NR	965	0	NR
450	411	NR	580	891	NR	710	98	NR	840	2	NR	970	0	NR
455	210	NR	585	935	NR	715	82	NR	845	2	NR	975	0	NR
460	119	NR	590	972	NR	720	68	NR	850	2	NR	980	0	NR
465	84	NR	595	991	NR	725	56	NR	855	1	NR	985	0	NR
470	50	NR	600	997	NR	730	47	NR	860	1	NR	990	0	NR
475	35	NR	605	988	NR	735	40	NR	865	1	NR	995	0	NR
480	32	NR	610	965	NR	740	35	NR	870	1	NR	1000	0	NR
485	33	NR	615	927	NR	745	31	NR	875	1	NR			

Summary

$R_f = 70.6$
 $R_g = 97.2$
 CIE $R_a = 70.6$
 $R_9 = -27.1$

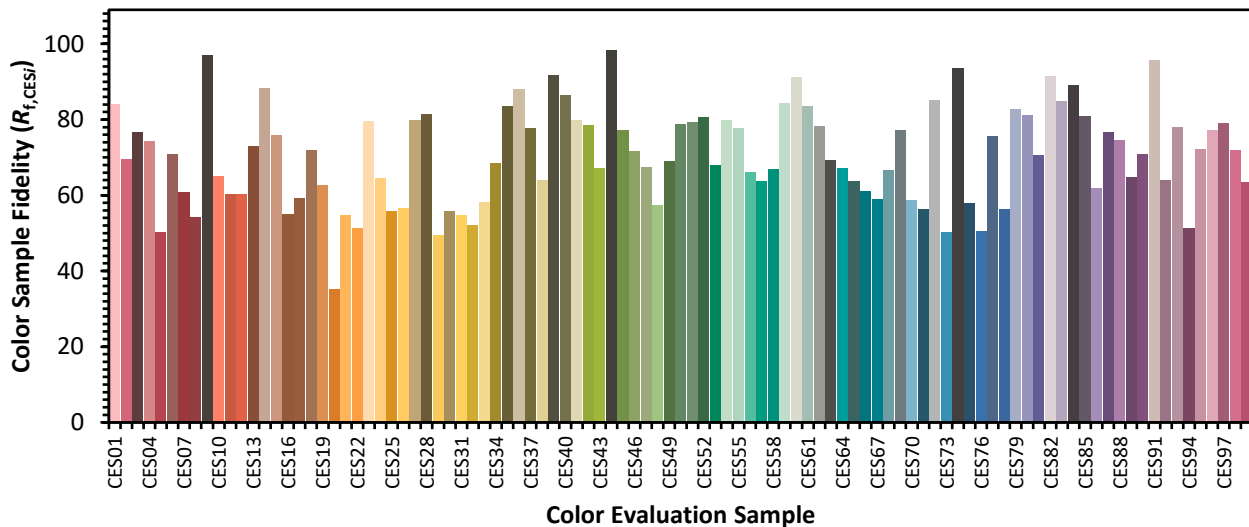


Color Vector Graphics



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

CES01 = 86	CES26 = 57	CES51 = 79	CES76 = 50
CES02 = 63	CES27 = 80	CES52 = 81	CES77 = 76
CES03 = 31	CES28 = 81	CES53 = 68	CES78 = 56
CES04 = 71	CES29 = 49	CES54 = 80	CES79 = 83
CES05 = 50	CES30 = 56	CES55 = 78	CES80 = 81
CES06 = 52	CES31 = 55	CES56 = 66	CES81 = 71
CES07 = 42	CES32 = 52	CES57 = 64	CES82 = 92
CES08 = 41	CES33 = 58	CES58 = 67	CES83 = 85
CES09 = 29	CES34 = 69	CES59 = 84	CES84 = 89
CES10 = 77	CES35 = 84	CES60 = 91	CES85 = 81
CES11 = 60	CES36 = 88	CES61 = 84	CES86 = 62
CES12 = 66	CES37 = 78	CES62 = 78	CES87 = 77
CES13 = 44	CES38 = 64	CES63 = 69	CES88 = 75
CES14 = 74	CES39 = 92	CES64 = 67	CES89 = 65
CES15 = 72	CES40 = 86	CES65 = 64	CES90 = 71
CES16 = 48	CES41 = 80	CES66 = 61	CES91 = 96
CES17 = 51	CES42 = 79	CES67 = 59	CES92 = 64
CES18 = 57	CES43 = 67	CES68 = 67	CES93 = 78
CES19 = 73	CES44 = 98	CES69 = 77	CES94 = 51
CES20 = 67	CES45 = 77	CES70 = 59	CES95 = 72
CES21 = 88	CES46 = 72	CES71 = 56	CES96 = 77
CES22 = 80	CES47 = 67	CES72 = 85	CES97 = 79
CES23 = 92	CES48 = 57	CES73 = 50	CES98 = 72
CES24 = 92	CES49 = 69	CES74 = 94	CES99 = 63
CES25 = 73	CES50 = 79	CES75 = 58	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)