

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: P880435

Luminaire Tested: **EMM2-HTN-VA6-727-U-CQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P880435
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-VA6-727-U-CQ
Description: EPIC MODERN TALL HOUSING 6W 70CRI 2700K VISUAL COMFORT FIXTURE w/
TYPE V CONCENTRATED DISTRIBUTION OPTIC
Light Source: (1) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

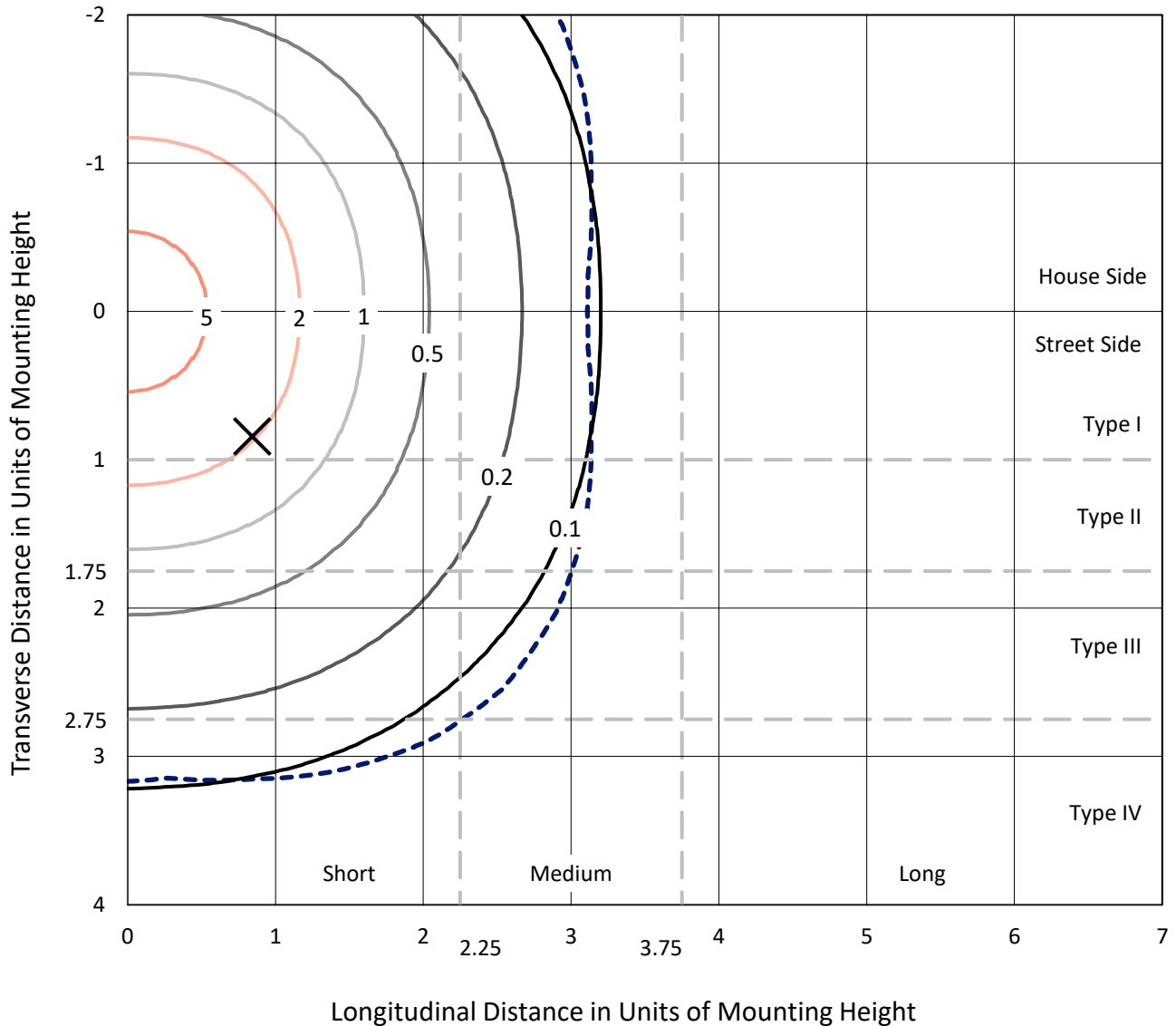
Lumens per Lamp: N/A
Luminaire Lumens: 7563.2 lumens
Efficiency: N/A
Efficacy: 71.4 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G1

Input Watts (W): 106
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 5%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P880435
 CATALOG NUMBER: EMM2-HTN-VA6-727-U-CQ

Iso-Footcandle Lines of Horizontal Illumination

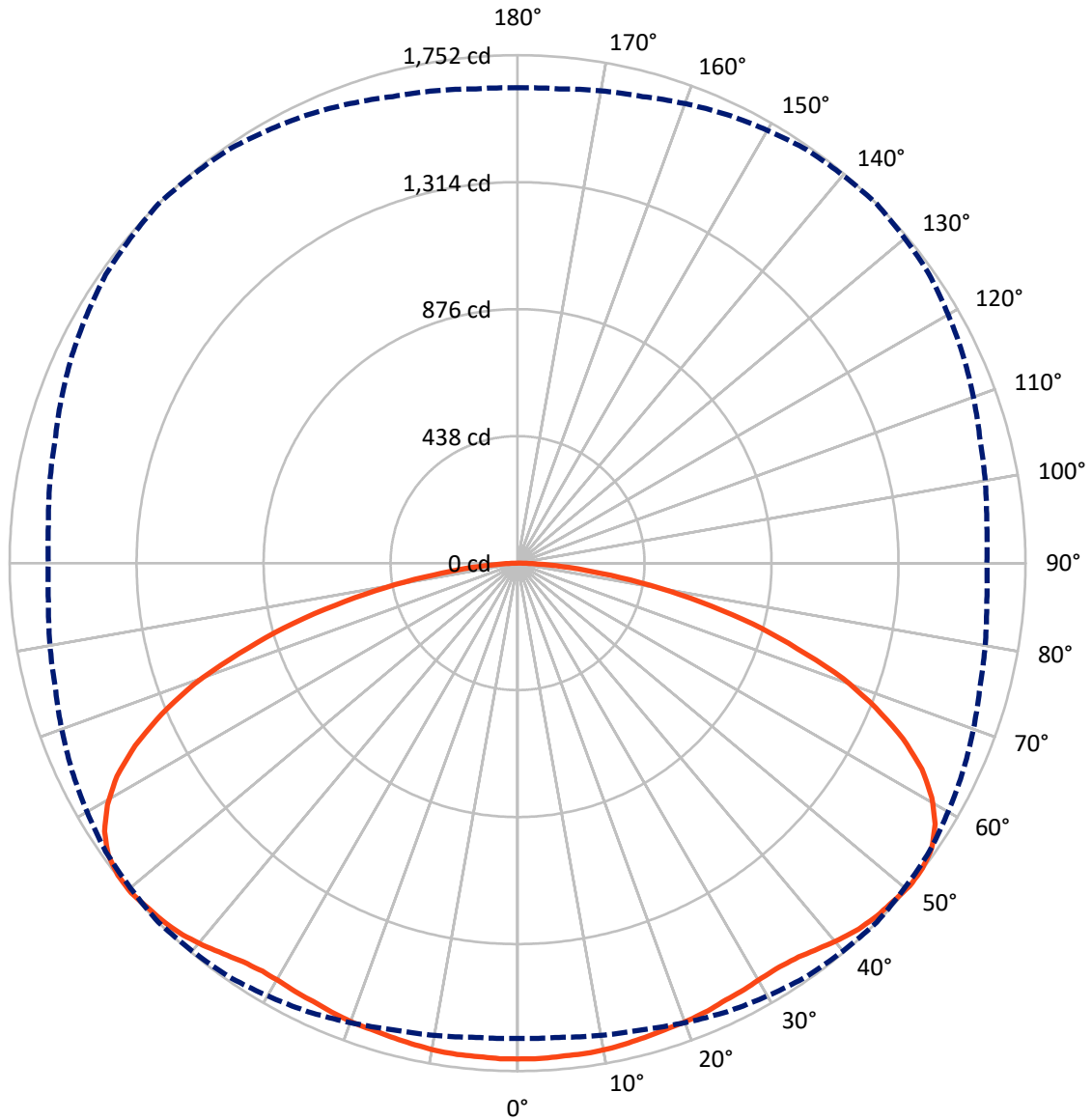
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 7.6 fc
 Type V - Short - N/A

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CATALOG NUMBER: EMM2-HTN-VA6-727-U-CQ

Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 50-Deg Vertical

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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	3781.6	0.0	3781.6
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	3781.6	0.0	3781.6
	% Fixture	50.0	0.0	50.0
Total	Lumens	7563.2	0.0	7563.2
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	162.9	2.2
10°-20°	479.2	6.3
20°-30°	770.9	10.2
30°-40°	1040.7	13.8
40°-50°	1308.4	17.3
50°-60°	1470.8	19.4
60°-70°	1339.3	17.7
70°-80°	808.7	10.7
80°-90°	182.3	2.4
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°	7563.2	100.0
0°-180°	7563.2	100.0



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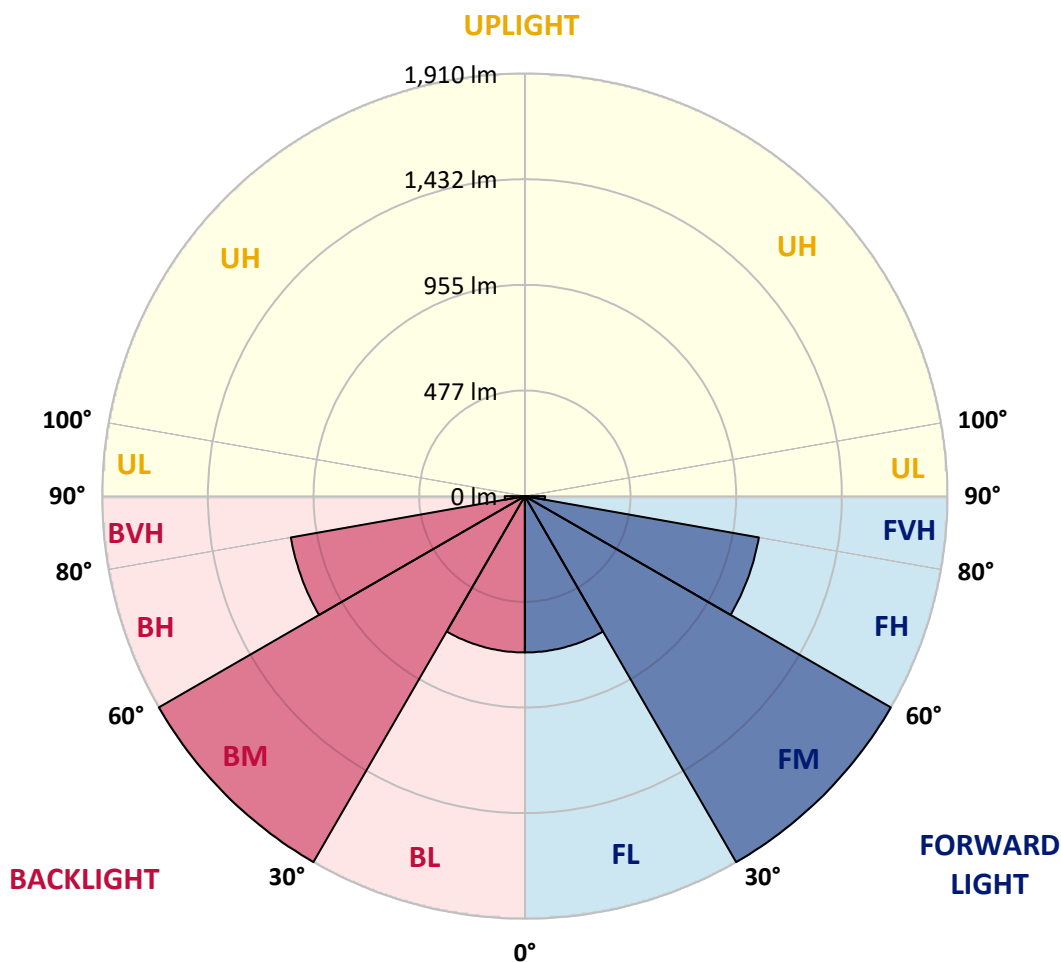
CATALOG NUMBER: EMM2-HTN-VA6-727-U-CQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	706.5	9.3			
FM (30°-60°)	1909.9	25.3			
FH (60°-80°)	1074.0	14.2			G1/1800
FVH (80°-90°)	91.1	1.2			G1/100
BL (0°-30°)	706.5	9.3	B2/1000		
BM (30°-60°)	1909.9	25.3	B2/2500		
BH (60°-80°)	1074.0	14.2	B3/2500		G1/1800
BVH (80°-90°)	91.1	1.2			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G1

Type V Short





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CATALOG NUMBER: EMM2-HTN-VA6-727-U-CQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1
2.5°	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1	1710.1
5°	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1	1710.1
7.5°	1704.2	1707.1	1707.1	1704.2	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1	1707.1
10°	1701.2	1701.2	1704.2	1704.2	1704.2	1704.2	1704.2	1704.2	1704.2	1704.2	1701.2
12.5°	1695.3	1698.2	1698.2	1698.2	1698.2	1698.2	1698.2	1698.2	1698.2	1698.2	1698.2
15°	1692.3	1692.3	1692.3	1692.3	1692.3	1692.3	1692.3	1692.3	1689.3	1689.3	1692.3
17.5°	1683.4	1683.4	1686.4	1686.4	1686.4	1686.4	1686.4	1686.4	1683.4	1683.4	1683.4
20°	1677.5	1677.5	1680.4	1680.4	1680.4	1683.4	1680.4	1677.5	1677.5	1677.5	1677.5
22.5°	1671.5	1671.5	1674.5	1674.5	1677.5	1677.5	1674.5	1674.5	1671.5	1671.5	1671.5
25°	1665.6	1665.6	1665.6	1668.6	1671.5	1668.6	1668.6	1665.6	1662.6	1659.6	1659.6
27.5°	1656.7	1656.7	1656.7	1662.6	1662.6	1665.6	1662.6	1659.6	1653.7	1650.7	1650.7
30°	1647.8	1647.8	1650.7	1656.7	1659.6	1659.6	1656.7	1650.7	1644.8	1641.8	1641.8
32.5°	1638.9	1641.8	1644.8	1653.7	1656.7	1659.6	1653.7	1647.8	1638.9	1632.9	1632.9
35°	1638.9	1638.9	1647.8	1656.7	1665.6	1668.6	1662.6	1650.7	1638.9	1630.0	1630.0
37.5°	1641.8	1644.8	1656.7	1668.6	1680.4	1686.4	1677.5	1662.6	1644.8	1632.9	1632.9
40°	1653.7	1653.7	1668.6	1689.3	1704.2	1707.1	1698.2	1677.5	1653.7	1638.9	1635.9
42.5°	1659.6	1662.6	1677.5	1701.2	1719.0	1725.0	1713.1	1689.3	1659.6	1638.9	1635.9
45°	1659.6	1662.6	1680.4	1707.1	1730.9	1736.8	1725.0	1695.3	1662.6	1641.8	1635.9
47.5°	1650.7	1653.7	1677.5	1710.1	1736.8	1742.8	1727.9	1698.2	1659.6	1635.9	1630.0
50°	1638.9	1641.8	1665.6	1707.1	1739.8	1751.7	1733.9	1695.3	1650.7	1624.0	1618.1
52.5°	1615.1	1618.1	1650.7	1695.3	1736.8	1748.7	1727.9	1686.4	1632.9	1603.2	1597.3
55°	1579.5	1585.4	1618.1	1671.5	1719.0	1733.9	1710.1	1662.6	1606.2	1570.6	1564.6
57.5°	1532.0	1534.9	1573.5	1632.9	1683.4	1698.2	1674.5	1624.0	1561.7	1523.1	1520.1
60°	1463.7	1469.6	1514.2	1573.5	1627.0	1641.8	1618.1	1564.6	1499.3	1457.8	1454.8
62.5°	1380.6	1386.5	1428.1	1496.4	1549.8	1564.6	1540.9	1484.5	1419.2	1374.6	1371.7
65°	1276.7	1282.6	1324.2	1389.5	1445.9	1460.7	1439.9	1380.6	1315.2	1273.7	1267.7
67.5°	1160.9	1166.8	1205.4	1261.8	1312.3	1333.1	1312.3	1261.8	1199.5	1149.0	1143.0
70°	1021.3	1021.3	1059.9	1116.3	1163.8	1190.6	1163.8	1113.4	1051.0	1009.4	1009.4
72.5°	875.8	869.9	905.5	959.0	997.6	1009.4	1003.5	959.0	899.6	861.0	855.1
75°	700.7	712.5	739.3	777.9	819.4	837.2	816.5	777.9	736.3	703.6	700.7
77.5°	543.3	552.2	576.0	608.6	632.4	644.3	638.3	608.6	564.1	549.3	543.3
80°	383.0	388.9	409.7	433.5	451.3	463.2	454.2	430.5	406.7	391.9	386.0
82.5°	249.4	246.4	264.2	279.1	293.9	291.0	288.0	270.2	261.3	249.4	246.4
85°	127.7	130.6	130.6	145.5	148.4	154.4	151.4	145.5	130.6	124.7	127.7
87.5°	41.6	41.6	44.5	44.5	50.5	50.5	53.4	47.5	44.5	38.6	38.6
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

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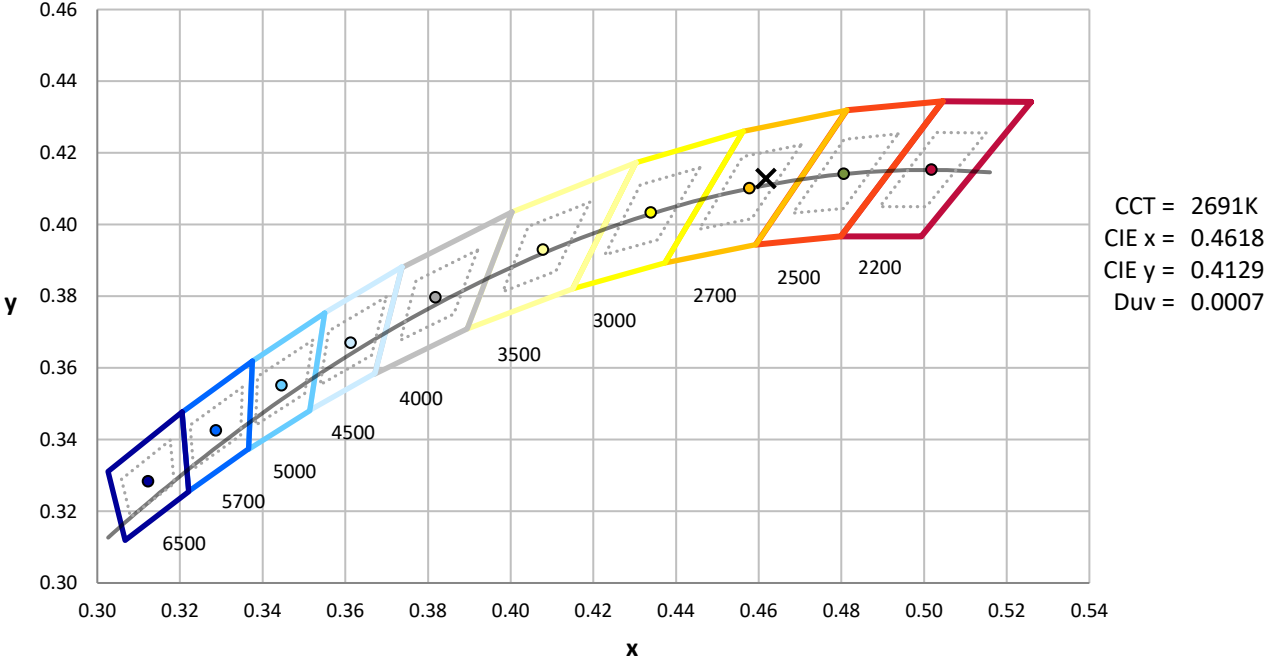
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	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



CCT = 2691K
 CIE x = 0.4618
 CIE y = 0.4129
 Duv = 0.0007

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



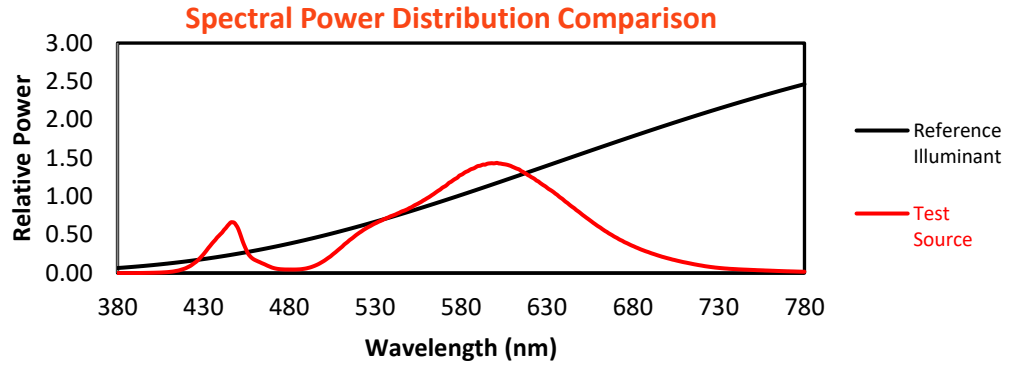
Melanopic Lumens: NR

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 $R_a = 70.6$
 $R_9 = -27.1$

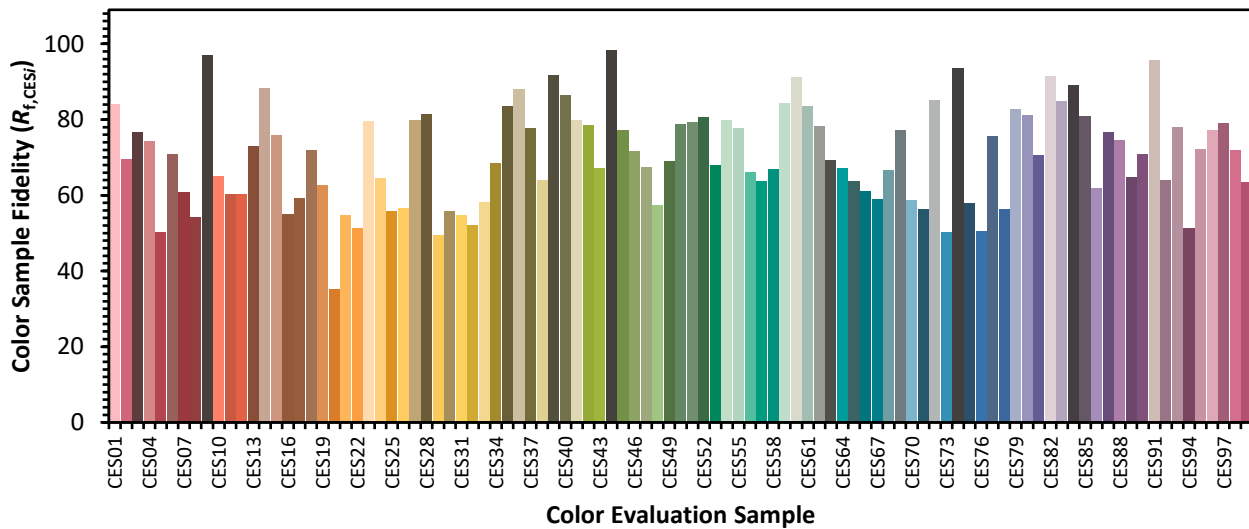


Color Vector Graphics



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

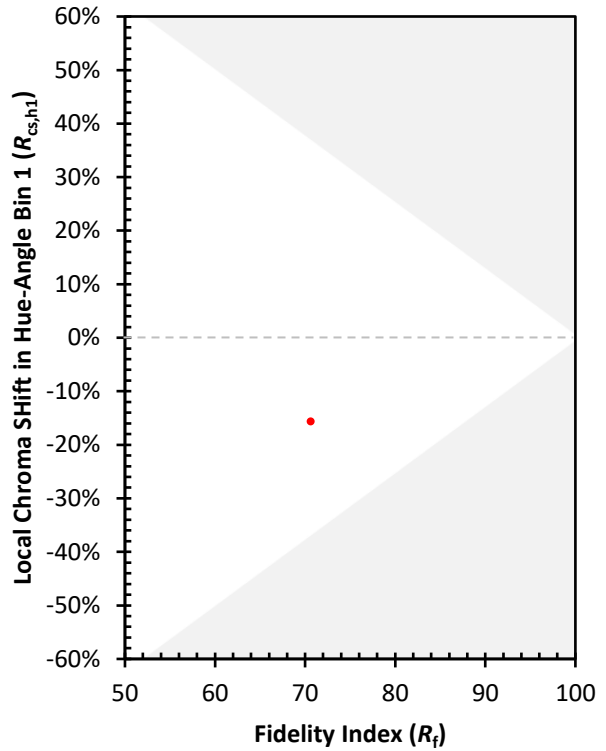
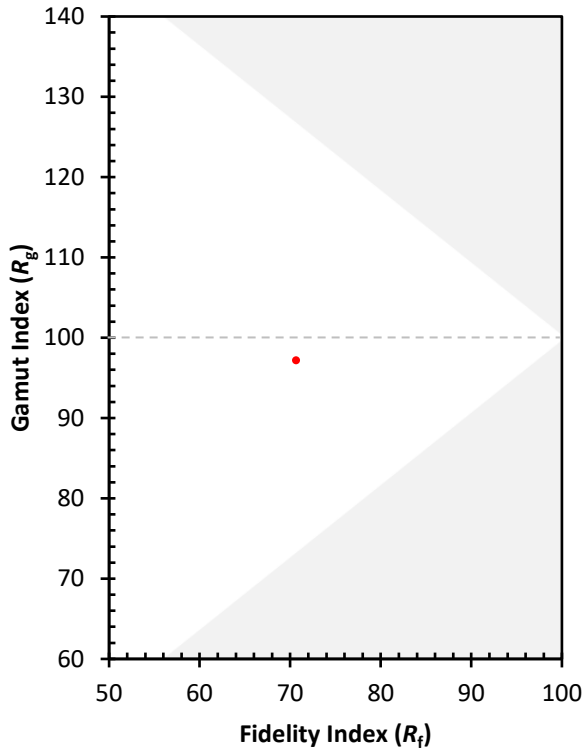
CES01 = 86	CES26 = 57	CES51 = 79	CES76 = 50
CES02 = 63	CES27 = 80	CES52 = 81	CES77 = 76
CES03 = 31	CES28 = 81	CES53 = 68	CES78 = 56
CES04 = 71	CES29 = 49	CES54 = 80	CES79 = 83
CES05 = 50	CES30 = 56	CES55 = 78	CES80 = 81
CES06 = 52	CES31 = 55	CES56 = 66	CES81 = 71
CES07 = 42	CES32 = 52	CES57 = 64	CES82 = 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)