

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: P868736

Luminaire Tested: **EMM2-HTN-SA2C-727-U-T5W**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868736
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA2C-727-U-T5W
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 120W 70CRI 2700K
FIXTURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC
Light Source: (20) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

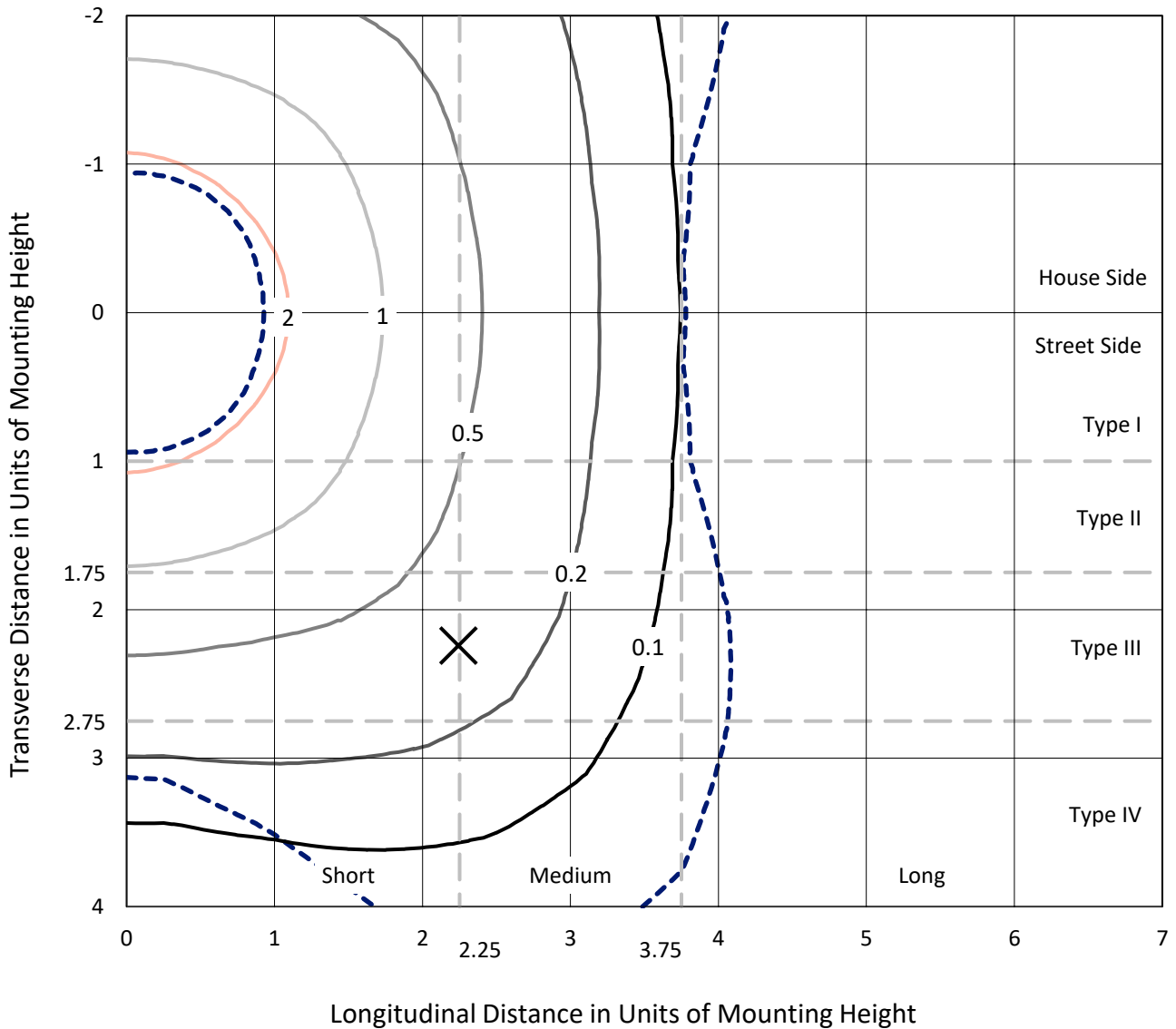
Lumens per Lamp: N/A
Luminaire Lumens: 13115.4 lumens
Efficiency: N/A
Efficacy: 129.9 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

Input Watts (W): 101
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 9.45%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P868736
 CATALOG NUMBER: EMM2-HTN-SA2C-727-U-T5W

Iso-Footcandle Lines of Horizontal Illumination

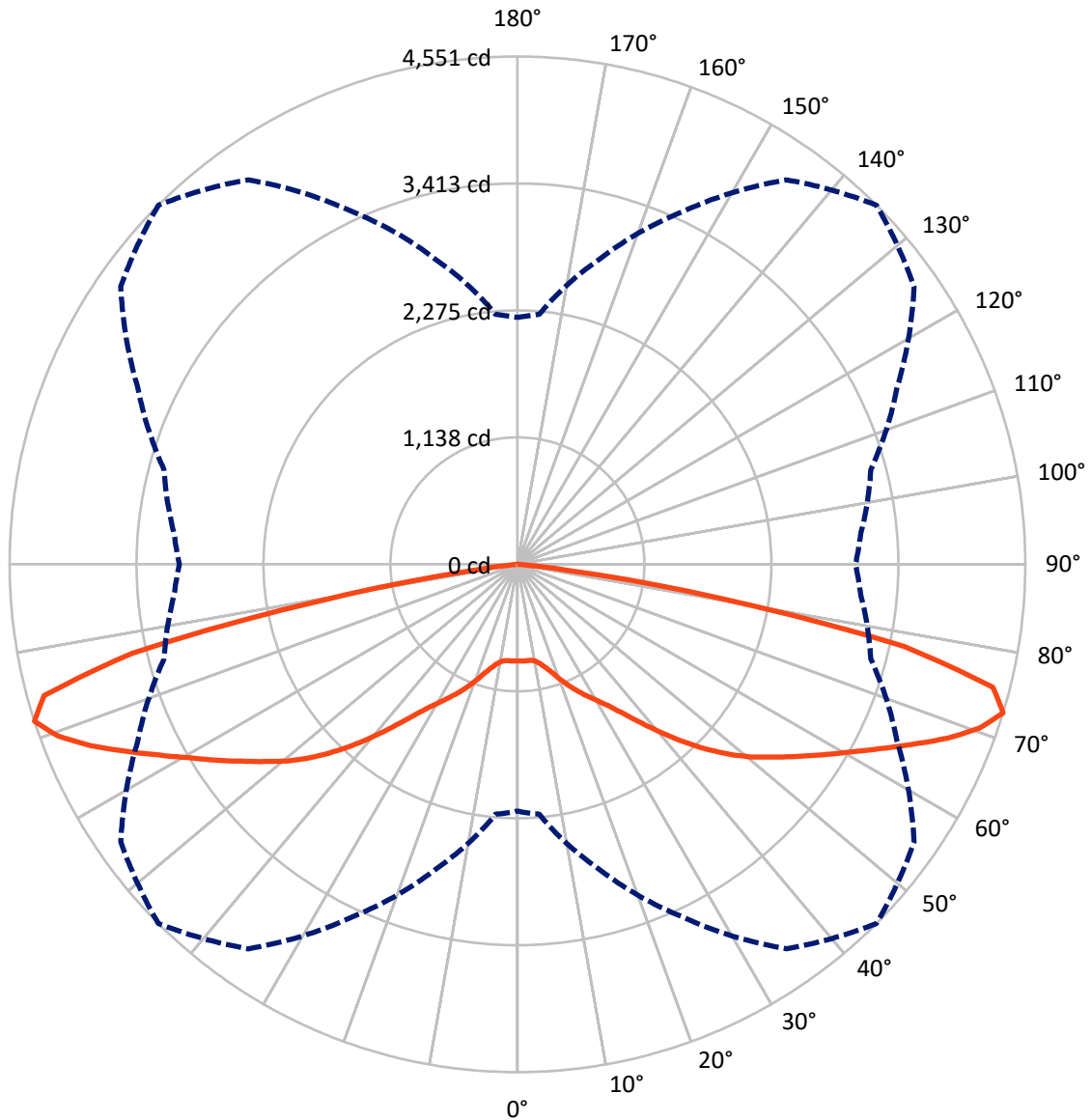
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.3 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



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

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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	6557.7	0.0	6557.7
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	6557.7	0.0	6557.7
	% Fixture	50.0	0.0	50.0
Total	Lumens	13115.4	0.0	13115.4
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	83.0	0.6
10°-20°	277.0	2.1
20°-30°	571.4	4.4
30°-40°	1052.0	8.0
40°-50°	1849.7	14.1
50°-60°	2682.7	20.5
60°-70°	3497.3	26.7
70°-80°	2907.1	22.2
80°-90°	195.2	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°	13115.4	100.0
0°-180°	13115.4	100.0

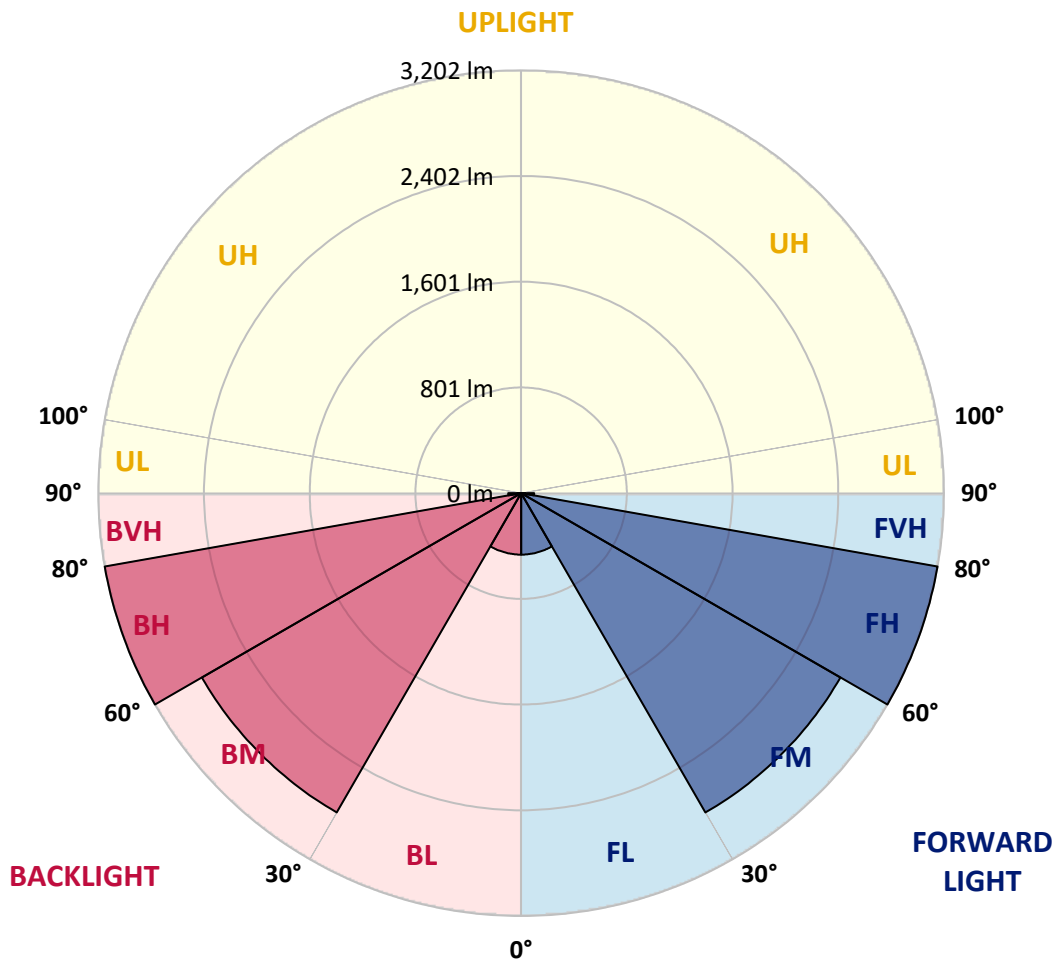


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	465.7	3.6			
FM (30°-60°)	2792.2	21.3			
FH (60°-80°)	3202.2	24.4			G2/5000
FVH (80°-90°)	97.6	0.7			G1/100
BL (0°-30°)	465.7	3.6	B1/500		
BM (30°-60°)	2792.2	21.3	B3/5000		
BH (60°-80°)	3202.2	24.4	B4/5000		G2/5000
BVH (80°-90°)	97.6	0.7			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G2
 Type V Short





REPORT NUMBER: P868736

CATALOG NUMBER: EMM2-HTN-SA2C-727-U-T5W

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	865.8	865.8	865.8	865.8	865.8	865.8	865.8	865.8	865.8	865.8	865.8
2.5°	863.1	864.5	864.5	864.5	865.8	867.2	868.6	869.9	872.6	874.0	874.0
5°	867.2	865.8	864.5	867.2	867.2	867.2	868.6	869.9	869.9	869.9	871.3
7.5°	863.1	864.5	863.1	863.1	867.2	868.6	867.2	865.8	865.8	867.2	867.2
10°	878.1	876.7	875.4	875.4	879.4	880.8	879.4	878.1	878.1	880.8	880.8
12.5°	912.1	914.8	906.6	906.6	912.1	914.8	910.7	909.3	910.7	913.4	913.4
15°	965.1	963.7	958.3	952.8	958.3	962.3	956.9	954.2	955.6	962.3	956.9
17.5°	1023.5	1024.9	1019.4	1014.0	1018.1	1023.5	1015.4	1008.6	1009.9	1012.6	1009.9
20°	1088.8	1087.4	1086.0	1086.0	1094.2	1101.0	1088.8	1072.4	1068.4	1065.7	1065.7
22.5°	1136.3	1140.4	1141.8	1154.0	1173.0	1179.8	1163.5	1141.8	1125.5	1117.3	1111.9
25°	1211.1	1207.0	1204.3	1217.9	1246.4	1258.7	1238.3	1208.4	1192.1	1190.7	1194.8
27.5°	1279.1	1279.1	1284.5	1298.1	1325.3	1337.5	1319.8	1289.9	1281.8	1281.8	1277.7
30°	1367.4	1363.3	1368.8	1391.9	1412.3	1420.4	1405.5	1385.1	1378.3	1378.3	1371.5
32.5°	1470.7	1472.1	1480.2	1495.2	1515.6	1516.9	1511.5	1502.0	1497.9	1493.8	1500.6
35°	1628.4	1628.4	1625.7	1636.5	1642.0	1644.7	1647.4	1643.3	1643.3	1643.3	1637.9
37.5°	1824.1	1813.2	1811.9	1802.4	1795.6	1802.4	1814.6	1828.2	1839.1	1832.3	1829.6
40°	2018.5	2013.0	1996.7	1981.8	1976.3	1979.1	1994.0	2022.6	2034.8	2034.8	2045.7
42.5°	2227.8	2216.9	2196.5	2178.9	2163.9	2168.0	2181.6	2216.9	2244.1	2256.4	2250.9
45°	2415.4	2405.9	2385.5	2369.2	2358.3	2356.9	2374.6	2397.7	2434.4	2445.3	2453.4
47.5°	2575.8	2569.0	2551.3	2535.0	2539.1	2540.4	2545.9	2566.3	2596.2	2611.1	2609.8
50°	2706.3	2700.8	2684.5	2691.3	2702.2	2713.1	2706.3	2719.9	2738.9	2745.7	2751.1
52.5°	2825.9	2817.7	2806.9	2819.1	2847.6	2869.4	2873.5	2863.9	2869.4	2873.5	2869.4
55°	2944.1	2934.6	2931.9	2953.7	2997.1	3037.9	3033.8	3006.7	2999.9	2991.7	2987.6
57.5°	3040.6	3033.8	3044.7	3081.4	3165.7	3220.1	3202.4	3139.9	3112.7	3093.7	3088.2
60°	3101.8	3100.4	3124.9	3210.5	3338.3	3414.4	3385.9	3278.5	3217.3	3199.7	3191.5
62.5°	3134.4	3135.8	3179.3	3331.5	3535.4	3638.7	3588.4	3424.0	3328.8	3311.1	3313.9
65°	3164.3	3160.3	3217.3	3433.5	3748.8	3888.8	3820.9	3599.3	3460.7	3425.3	3425.3
67.5°	3186.1	3190.2	3275.8	3535.4	3956.8	4156.6	4057.4	3785.5	3602.0	3549.0	3542.2
70°	2911.5	2950.9	3218.7	3603.4	4121.2	4393.1	4262.6	3899.7	3607.4	3456.6	3441.6
72.5°	2211.5	2248.2	2827.2	3482.4	4205.5	4550.8	4338.7	3754.2	3278.5	3086.9	3029.8
75°	1458.5	1484.3	2106.8	3042.0	3971.7	4401.3	3951.3	3233.7	2581.2	2332.5	2347.4
77.5°	649.7	732.6	1342.9	2373.3	3271.7	3542.2	3013.5	2206.1	1576.7	1334.8	1309.0
80°	271.9	297.7	507.0	1265.5	1896.2	1814.6	1283.1	739.4	470.3	365.6	353.4
82.5°	78.8	81.6	100.6	218.8	386.0	454.0	273.2	138.6	131.8	104.7	96.5
85°	5.4	5.4	8.2	13.6	19.0	31.3	35.3	40.8	46.2	39.4	39.4
87.5°	2.7	2.7	2.7	4.1	4.1	5.4	4.1	4.1	4.1	4.1	4.1
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: SP1-2407-157-3

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-727-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-727-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-3
 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-40-727-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 2747
 CIE u': 0.2606
 CIE v': 0.5257
 Duv: -0.0005
 CIE x: 0.4552
 CIE y: 0.4082
 CIE z: 0.1366
 Peak Wavelength (nm): 597
 Dominant Wavelength (nm): 584
 Purity: 59.16856
 Rf: 75.5
 Rg: 93.6

CRI (Ra):	71.7		
R1:	68.1	R9:	-35.3
R2:	83.9	R10:	64.2
R3:	94.7	R11:	61.7
R4:	66.3	R12:	53.9
R5:	67.4	R13:	71.2
R6:	78.7	R14:	97.6
R7:	75.0	R15:	59.3
R8:	39.4		



Test Conditions

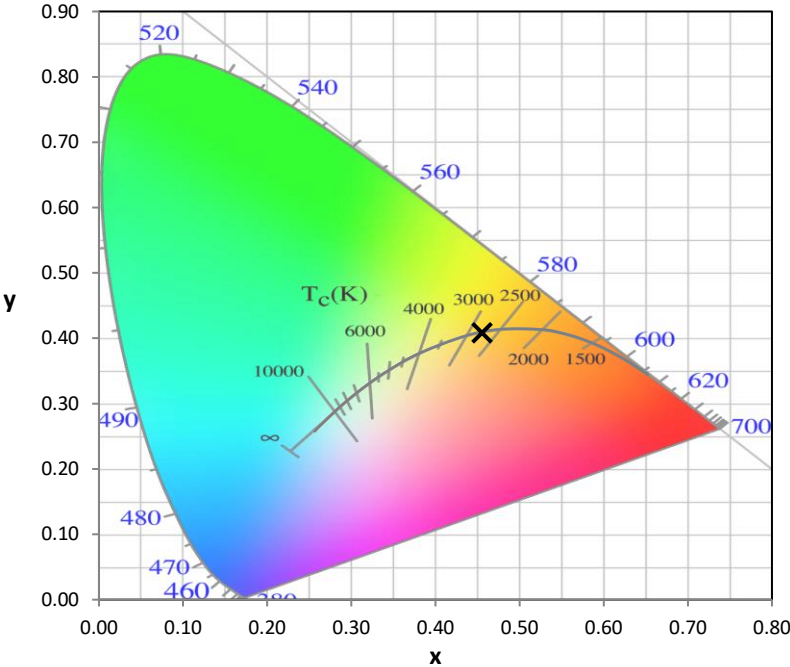
Stabilization Time: 22M
 Operation Time: 1H 22M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-3

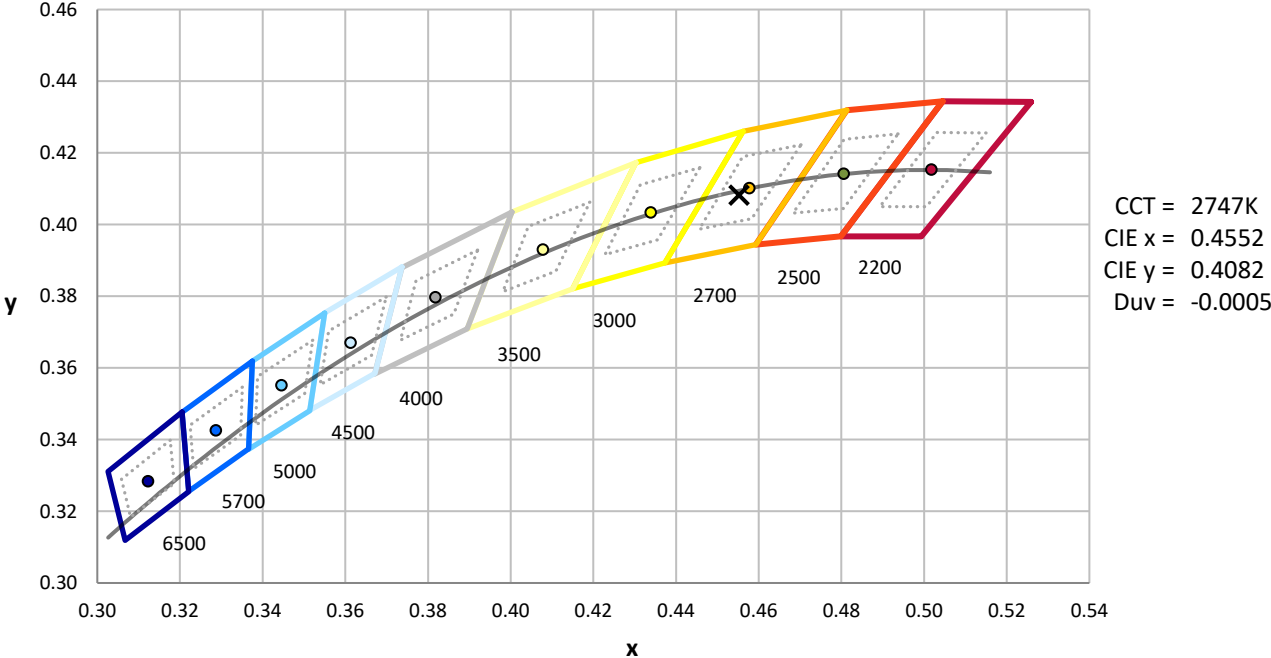
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	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	103	NR	620	846	NR	750	20	NR	880	0	NR
365	0	NR	495	130	NR	625	784	NR	755	17	NR	885	1	NR
370	0	NR	500	171	NR	630	720	NR	760	15	NR	890	0	NR
375	0	NR	505	221	NR	635	652	NR	765	13	NR	895	0	NR
380	0	NR	510	268	NR	640	587	NR	770	11	NR	900	0	NR
385	0	NR	515	313	NR	645	521	NR	775	9	NR	905	0	NR
390	0	NR	520	350	NR	650	461	NR	780	8	NR	910	0	NR
395	0	NR	525	381	NR	655	406	NR	785	7	NR	915	0	NR
400	0	NR	530	407	NR	660	353	NR	790	6	NR	920	0	NR
405	2	NR	535	435	NR	665	307	NR	795	5	NR	925	0	NR
410	4	NR	540	462	NR	670	264	NR	800	4	NR	930	0	NR
415	9	NR	545	496	NR	675	227	NR	805	4	NR	935	0	NR
420	20	NR	550	534	NR	680	196	NR	810	3	NR	940	0	NR
425	38	NR	555	582	NR	685	167	NR	815	3	NR	945	0	NR
430	69	NR	560	638	NR	690	144	NR	820	2	NR	950	0	NR
435	120	NR	565	700	NR	695	122	NR	825	2	NR	955	0	NR
440	193	NR	570	767	NR	700	103	NR	830	2	NR	960	0	NR
445	316	NR	575	836	NR	705	88	NR	835	2	NR	965	0	NR
450	469	NR	580	898	NR	710	74	NR	840	1	NR	970	0	NR
455	431	NR	585	947	NR	715	63	NR	845	1	NR	975	0	NR
460	264	NR	590	982	NR	720	54	NR	850	1	NR	980	0	NR
465	197	NR	595	997	NR	725	46	NR	855	1	NR	985	0	NR
470	155	NR	600	997	NR	730	39	NR	860	1	NR	990	0	NR
475	108	NR	605	978	NR	735	33	NR	865	1	NR	995	0	NR
480	90	NR	610	947	NR	740	28	NR	870	1	NR	1000	0	NR
485	92	NR	615	900	NR	745	24	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



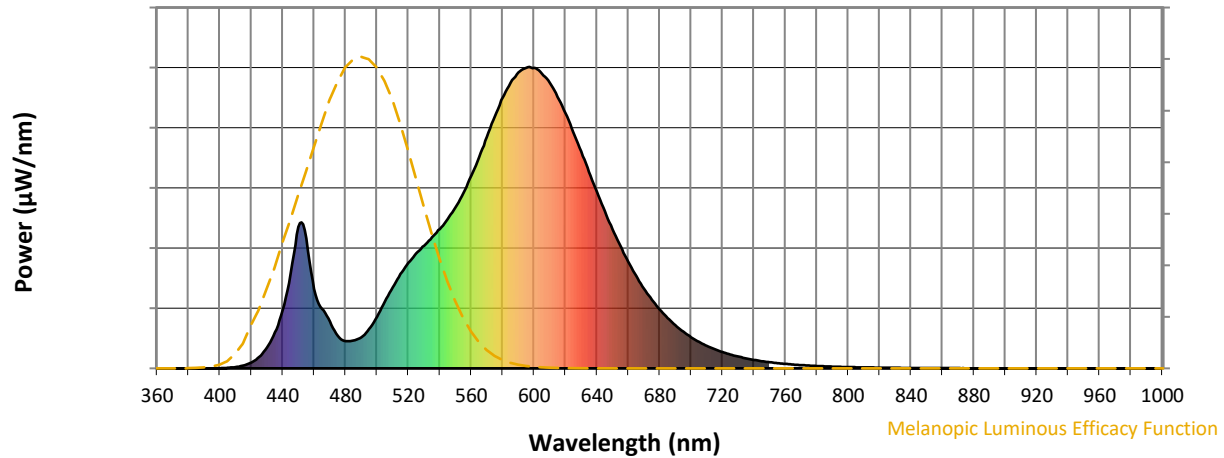
Scotopic Lumens: NR

S/P: 1.13

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	103	NR	620	846	NR	750	20	NR	880	0	NR
365	0	NR	495	130	NR	625	784	NR	755	17	NR	885	1	NR
370	0	NR	500	171	NR	630	720	NR	760	15	NR	890	0	NR
375	0	NR	505	221	NR	635	652	NR	765	13	NR	895	0	NR
380	0	NR	510	268	NR	640	587	NR	770	11	NR	900	0	NR
385	0	NR	515	313	NR	645	521	NR	775	9	NR	905	0	NR
390	0	NR	520	350	NR	650	461	NR	780	8	NR	910	0	NR
395	0	NR	525	381	NR	655	406	NR	785	7	NR	915	0	NR
400	0	NR	530	407	NR	660	353	NR	790	6	NR	920	0	NR
405	2	NR	535	435	NR	665	307	NR	795	5	NR	925	0	NR
410	4	NR	540	462	NR	670	264	NR	800	4	NR	930	0	NR
415	9	NR	545	496	NR	675	227	NR	805	4	NR	935	0	NR
420	20	NR	550	534	NR	680	196	NR	810	3	NR	940	0	NR
425	38	NR	555	582	NR	685	167	NR	815	3	NR	945	0	NR
430	69	NR	560	638	NR	690	144	NR	820	2	NR	950	0	NR
435	120	NR	565	700	NR	695	122	NR	825	2	NR	955	0	NR
440	193	NR	570	767	NR	700	103	NR	830	2	NR	960	0	NR
445	316	NR	575	836	NR	705	88	NR	835	2	NR	965	0	NR
450	469	NR	580	898	NR	710	74	NR	840	1	NR	970	0	NR
455	431	NR	585	947	NR	715	63	NR	845	1	NR	975	0	NR
460	264	NR	590	982	NR	720	54	NR	850	1	NR	980	0	NR
465	197	NR	595	997	NR	725	46	NR	855	1	NR	985	0	NR
470	155	NR	600	997	NR	730	39	NR	860	1	NR	990	0	NR
475	108	NR	605	978	NR	735	33	NR	865	1	NR	995	0	NR
480	90	NR	610	947	NR	740	28	NR	870	1	NR	1000	0	NR
485	92	NR	615	900	NR	745	24	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



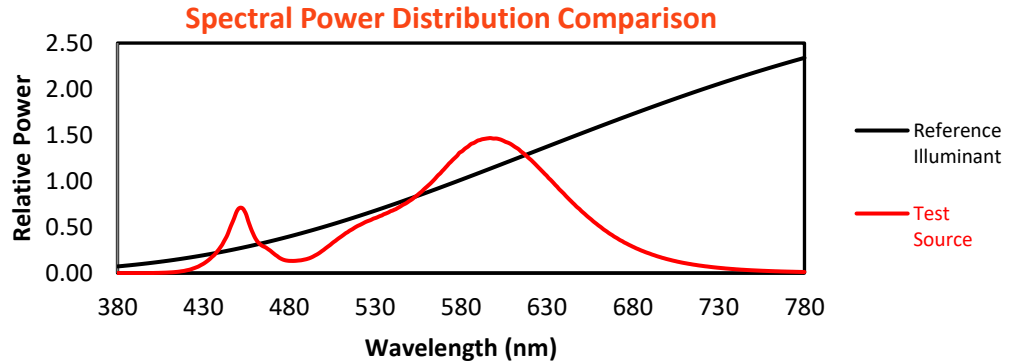
Melanopic Lumens: NR

M/P: 2.04

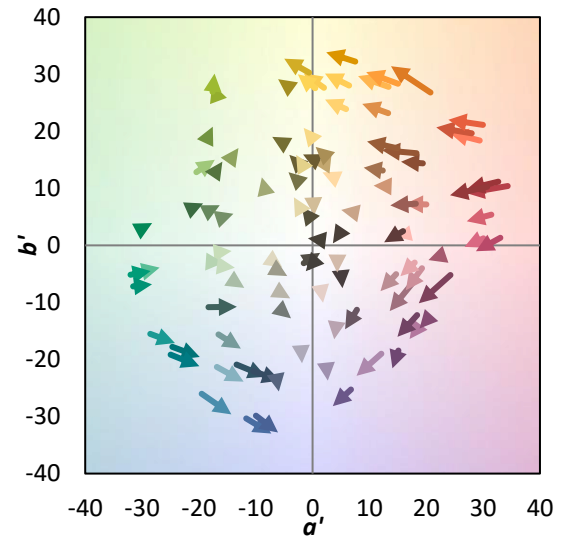
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	103	NR	620	846	NR	750	20	NR	880	0	NR
365	0	NR	495	130	NR	625	784	NR	755	17	NR	885	1	NR
370	0	NR	500	171	NR	630	720	NR	760	15	NR	890	0	NR
375	0	NR	505	221	NR	635	652	NR	765	13	NR	895	0	NR
380	0	NR	510	268	NR	640	587	NR	770	11	NR	900	0	NR
385	0	NR	515	313	NR	645	521	NR	775	9	NR	905	0	NR
390	0	NR	520	350	NR	650	461	NR	780	8	NR	910	0	NR
395	0	NR	525	381	NR	655	406	NR	785	7	NR	915	0	NR
400	0	NR	530	407	NR	660	353	NR	790	6	NR	920	0	NR
405	2	NR	535	435	NR	665	307	NR	795	5	NR	925	0	NR
410	4	NR	540	462	NR	670	264	NR	800	4	NR	930	0	NR
415	9	NR	545	496	NR	675	227	NR	805	4	NR	935	0	NR
420	20	NR	550	534	NR	680	196	NR	810	3	NR	940	0	NR
425	38	NR	555	582	NR	685	167	NR	815	3	NR	945	0	NR
430	69	NR	560	638	NR	690	144	NR	820	2	NR	950	0	NR
435	120	NR	565	700	NR	695	122	NR	825	2	NR	955	0	NR
440	193	NR	570	767	NR	700	103	NR	830	2	NR	960	0	NR
445	316	NR	575	836	NR	705	88	NR	835	2	NR	965	0	NR
450	469	NR	580	898	NR	710	74	NR	840	1	NR	970	0	NR
455	431	NR	585	947	NR	715	63	NR	845	1	NR	975	0	NR
460	264	NR	590	982	NR	720	54	NR	850	1	NR	980	0	NR
465	197	NR	595	997	NR	725	46	NR	855	1	NR	985	0	NR
470	155	NR	600	997	NR	730	39	NR	860	1	NR	990	0	NR
475	108	NR	605	978	NR	735	33	NR	865	1	NR	995	0	NR
480	90	NR	610	947	NR	740	28	NR	870	1	NR	1000	0	NR
485	92	NR	615	900	NR	745	24	NR	875	1	NR			

Summary

$R_f = 75.5$
 $R_g = 93.6$
 $CIE R_a = 71.7$
 $R_9 = -35.3$



Color Vector Graphics



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

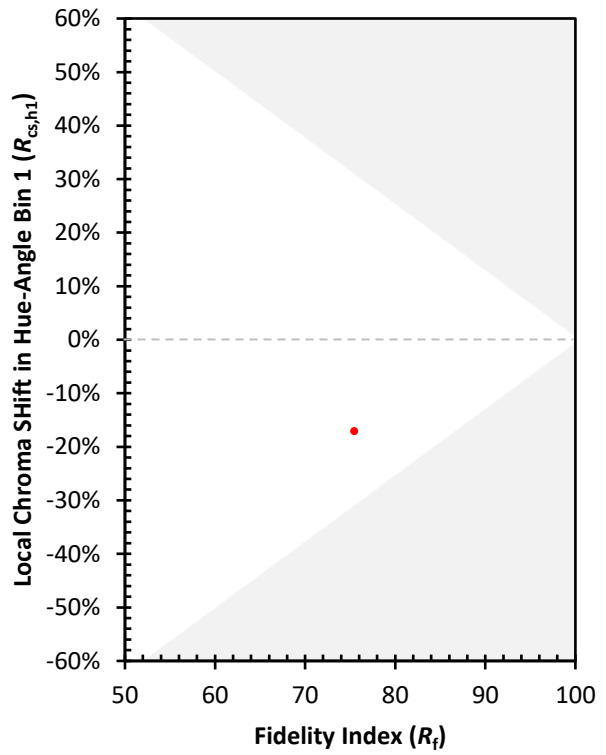
CES01 = 86	CES26 = 68	CES51 = 87	CES76 = 63
CES02 = 63	CES27 = 90	CES52 = 85	CES77 = 79
CES03 = 31	CES28 = 87	CES53 = 78	CES78 = 66
CES04 = 71	CES29 = 71	CES54 = 86	CES79 = 87
CES05 = 50	CES30 = 85	CES55 = 84	CES80 = 85
CES06 = 52	CES31 = 74	CES56 = 75	CES81 = 67
CES07 = 42	CES32 = 66	CES57 = 75	CES82 = 93
CES08 = 41	CES33 = 80	CES58 = 76	CES83 = 91
CES09 = 29	CES34 = 79	CES59 = 85	CES84 = 89
CES10 = 77	CES35 = 89	CES60 = 90	CES85 = 72
CES11 = 60	CES36 = 93	CES61 = 81	CES86 = 59
CES12 = 66	CES37 = 88	CES62 = 91	CES87 = 77
CES13 = 43	CES38 = 93	CES63 = 77	CES88 = 79
CES14 = 74	CES39 = 97	CES64 = 67	CES89 = 65
CES15 = 72	CES40 = 93	CES65 = 66	CES90 = 80
CES16 = 48	CES41 = 93	CES66 = 63	CES91 = 80
CES17 = 51	CES42 = 89	CES67 = 61	CES92 = 55
CES18 = 57	CES43 = 78	CES68 = 68	CES93 = 72
CES19 = 73	CES44 = 99	CES69 = 78	CES94 = 48
CES20 = 67	CES45 = 85	CES70 = 63	CES95 = 66
CES21 = 88	CES46 = 81	CES71 = 61	CES96 = 76
CES22 = 80	CES47 = 86	CES72 = 86	CES97 = 81
CES23 = 92	CES48 = 74	CES73 = 56	CES98 = 76
CES24 = 91	CES49 = 79	CES74 = 93	CES99 = 64
CES25 = 73	CES50 = 86	CES75 = 66	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)