

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: P880461

Luminaire Tested: **EMM2-HTN-VA2-830-U-CQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P880461
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-VA2-830-U-CQ
Description: EPIC MODERN TALL HOUSING 2W 80CRI 3000K VISUAL COMFORT FIXTURE w/
TYPE V CONCENTRATED DISTRIBUTION OPTIC
Light Source: (1) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

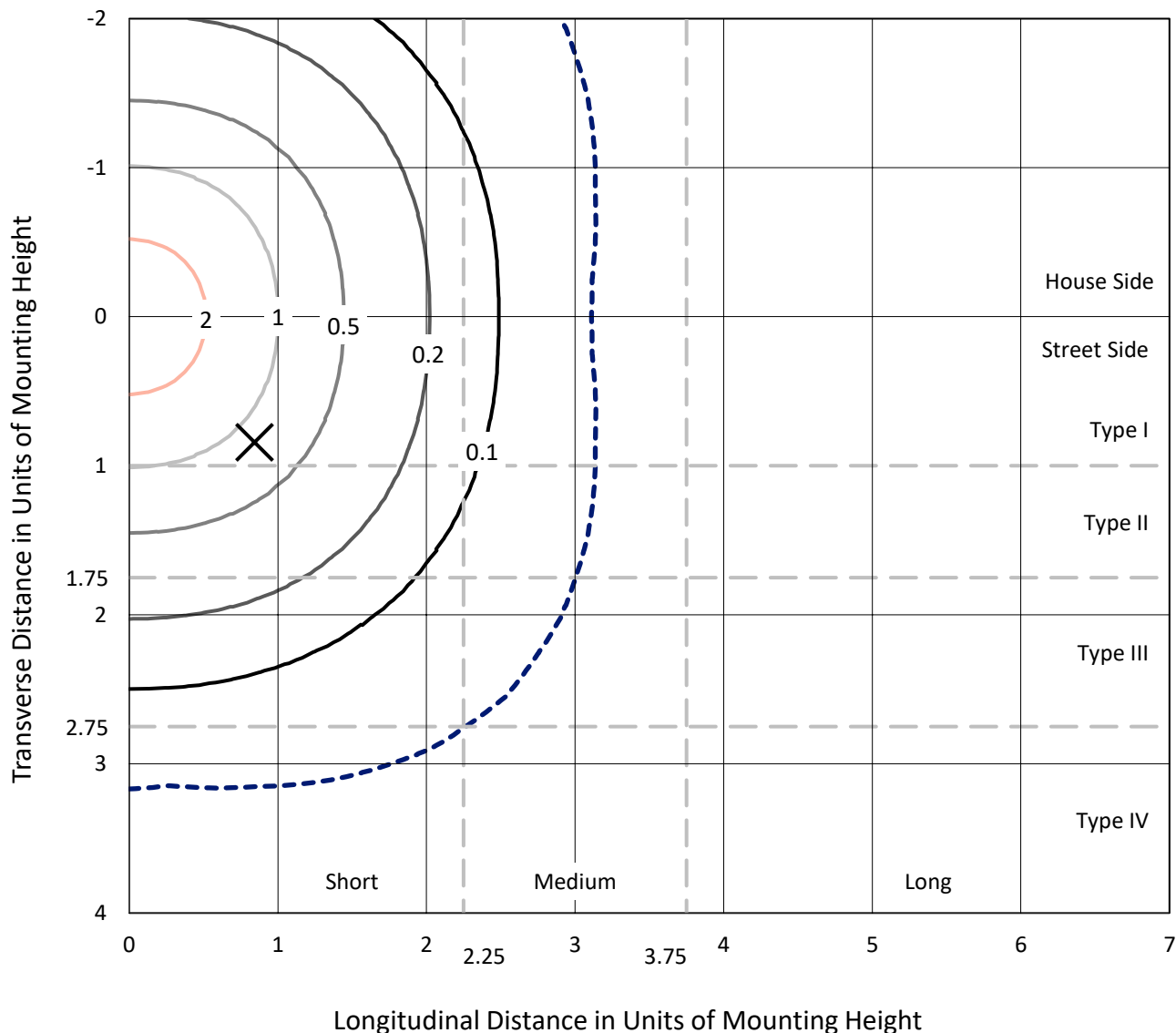
Lumens per Lamp: N/A
Luminaire Lumens: 2947.1 lumens
Efficiency: N/A
Efficacy: 76.3 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B1 - U0 - G1

Input Watts (W): 38.6
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 13%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P880461
 CATALOG NUMBER: EMM2-HTN-VA2-830-U-CQ

Iso-Footcandle Lines of Horizontal Illumination

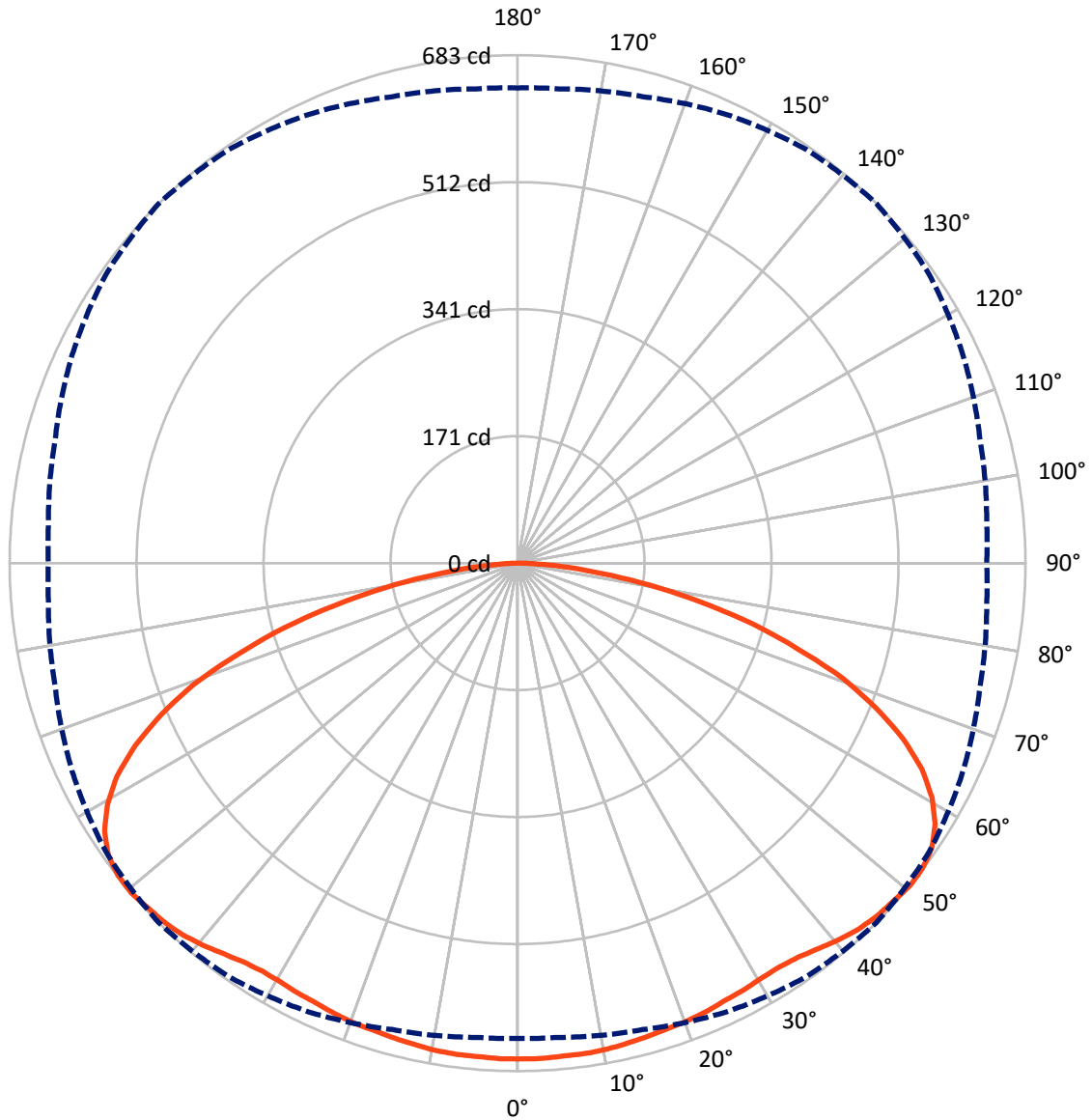
✕ Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 3 fc
 Type V - Short - N/A

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CATALOG NUMBER: EMM2-HTN-VA2-830-U-CQ

Luminous Intensity Polar Plot



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

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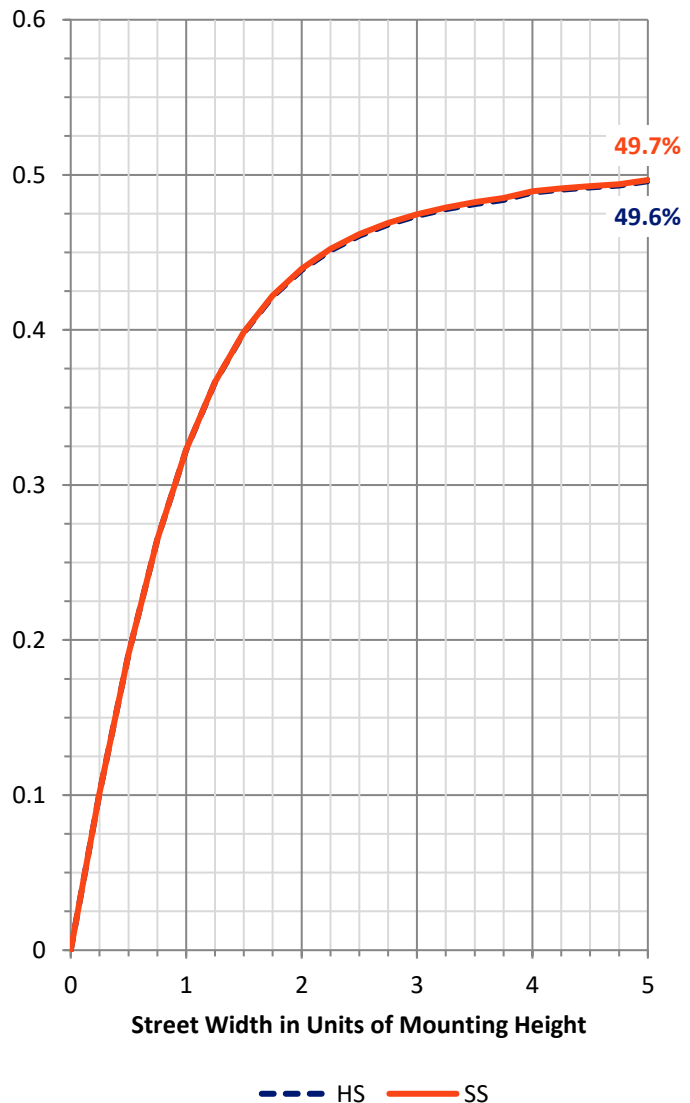
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	1473.5	0.0	1473.5
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	1473.5	0.0	1473.5
	% Fixture	50.0	0.0	50.0
Total	Lumens	2947.1	0.0	2947.1
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	63.5	2.2
10°-20°	186.7	6.3
20°-30°	300.4	10.2
30°-40°	405.5	13.8
40°-50°	509.8	17.3
50°-60°	573.1	19.4
60°-70°	521.9	17.7
70°-80°	315.1	10.7
80°-90°	71.0	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°	2947.1	100.0
0°-180°	2947.1	100.0



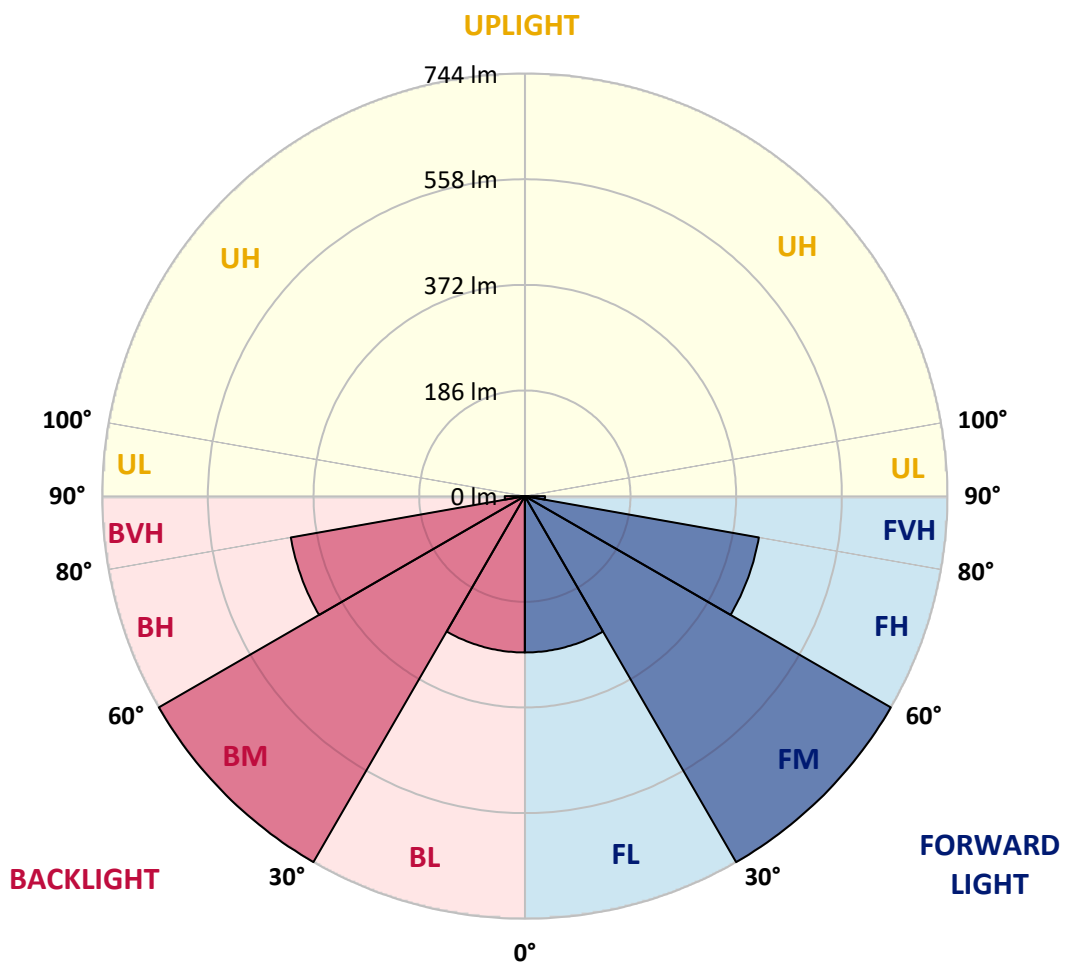
REPORT NUMBER: P880461
 CATALOG NUMBER: EMM2-HTN-VA2-830-U-CQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	275.3	9.3			
FM (30°-60°)	744.2	25.3			
FH (60°-80°)	418.5	14.2			G0/660
FVH (80°-90°)	35.5	1.2			G1/100
BL (0°-30°)	275.3	9.3	B1/500		
BM (30°-60°)	744.2	25.3	B1/1000		
BH (60°-80°)	418.5	14.2	B1/500		G0/660
BVH (80°-90°)	35.5	1.2			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B1-U0-G1

Type V Short





REPORT NUMBER: P880461
 CATALOG NUMBER: EMM2-HTN-VA2-830-U-CQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4
2.5°	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4	666.4
5°	665.2	665.2	665.2	665.2	665.2	665.2	665.2	665.2	665.2	665.2	666.4
7.5°	664.1	665.2	665.2	664.1	665.2	665.2	665.2	665.2	665.2	665.2	665.2
10°	662.9	662.9	664.1	664.1	664.1	664.1	664.1	664.1	664.1	664.1	662.9
12.5°	660.6	661.7	661.7	661.7	661.7	661.7	661.7	661.7	661.7	661.7	661.7
15°	659.4	659.4	659.4	659.4	659.4	659.4	659.4	659.4	658.3	658.3	659.4
17.5°	656.0	656.0	657.1	657.1	657.1	657.1	657.1	657.1	656.0	656.0	656.0
20°	653.6	653.6	654.8	654.8	654.8	654.8	654.8	653.6	653.6	653.6	653.6
22.5°	651.3	651.3	652.5	652.5	653.6	653.6	652.5	652.5	651.3	651.3	651.3
25°	649.0	649.0	649.0	650.2	651.3	650.2	650.2	649.0	647.9	646.7	646.7
27.5°	645.5	645.5	645.5	647.9	647.9	649.0	647.9	646.7	644.4	643.2	643.2
30°	642.1	642.1	643.2	645.5	646.7	646.7	645.5	643.2	640.9	639.8	639.8
32.5°	638.6	639.8	640.9	644.4	645.5	646.7	644.4	642.1	638.6	636.3	636.3
35°	638.6	638.6	642.1	645.5	649.0	650.2	647.9	643.2	638.6	635.1	635.1
37.5°	639.8	640.9	645.5	650.2	654.8	657.1	653.6	647.9	640.9	636.3	636.3
40°	644.4	644.4	650.2	658.3	664.1	665.2	661.7	653.6	644.4	638.6	637.4
42.5°	646.7	647.9	653.6	662.9	669.8	672.2	667.5	658.3	646.7	638.6	637.4
45°	646.7	647.9	654.8	665.2	674.5	676.8	672.2	660.6	647.9	639.8	637.4
47.5°	643.2	644.4	653.6	666.4	676.8	679.1	673.3	661.7	646.7	637.4	635.1
50°	638.6	639.8	649.0	665.2	677.9	682.6	675.6	660.6	643.2	632.8	630.5
52.5°	629.4	630.5	643.2	660.6	676.8	681.4	673.3	657.1	636.3	624.7	622.4
55°	615.5	617.8	630.5	651.3	669.8	675.6	666.4	647.9	625.9	612.0	609.7
57.5°	597.0	598.1	613.2	636.3	656.0	661.7	652.5	632.8	608.5	593.5	592.3
60°	570.3	572.7	590.0	613.2	634.0	639.8	630.5	609.7	584.2	568.0	566.9
62.5°	538.0	540.3	556.5	583.1	603.9	609.7	600.4	578.4	553.0	535.6	534.5
65°	497.5	499.8	516.0	541.4	563.4	569.2	561.1	538.0	512.5	496.3	494.0
67.5°	452.3	454.7	469.7	491.7	511.3	519.4	511.3	491.7	467.4	447.7	445.4
70°	398.0	398.0	413.0	435.0	453.5	463.9	453.5	433.8	409.5	393.3	393.3
72.5°	341.3	339.0	352.9	373.7	388.7	393.3	391.0	373.7	350.5	335.5	333.2
75°	273.0	277.7	288.1	303.1	319.3	326.2	318.1	303.1	286.9	274.2	273.0
77.5°	211.7	215.2	224.4	237.2	246.4	251.0	248.7	237.2	219.8	214.0	211.7
80°	149.2	151.6	159.7	168.9	175.8	180.5	177.0	167.7	158.5	152.7	150.4
82.5°	97.2	96.0	103.0	108.7	114.5	113.4	112.2	105.3	101.8	97.2	96.0
85°	49.7	50.9	50.9	56.7	57.8	60.2	59.0	56.7	50.9	48.6	49.7
87.5°	16.2	16.2	17.4	17.4	19.7	19.7	20.8	18.5	17.4	15.0	15.0
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: SP1-2407-176-7

Test Date: 09/27/2024

Luminaire Tested: MEM2-HTN-VA-30-830-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-830-U-WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-7
 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-30-830-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K): 2984
 CIE u': 0.2500
 CIE v': 0.5264
 Duv: 0.0033
 CIE x: 0.4431
 CIE y: 0.4147
 CIE z: 0.1422
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 581
 Purity: 57.4798
 Rf: 85.8
 Rg: 94.1

CRI (Ra):	81.8		
R1:	79.4	R9:	-1.1
R2:	89.9	R10:	78.4
R3:	96.6	R11:	80.8
R4:	80.6	R12:	72.8
R5:	80.1	R13:	81.7
R6:	88.9	R14:	98.5
R7:	82.6	R15:	70.2
R8:	56.0		



Test Conditions

Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-7

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 = 2984K
 CIE x = 0.4431
 CIE y = 0.4147
 Duv = 0.0033

Point lies inside the ANSI 3000K 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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.32

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.51

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

Summary

$R_f = 85.8$
 $R_g = 94.1$
 $CIE R_a = 81.8$
 $R_g = -1.1$



Color Vector Graphics

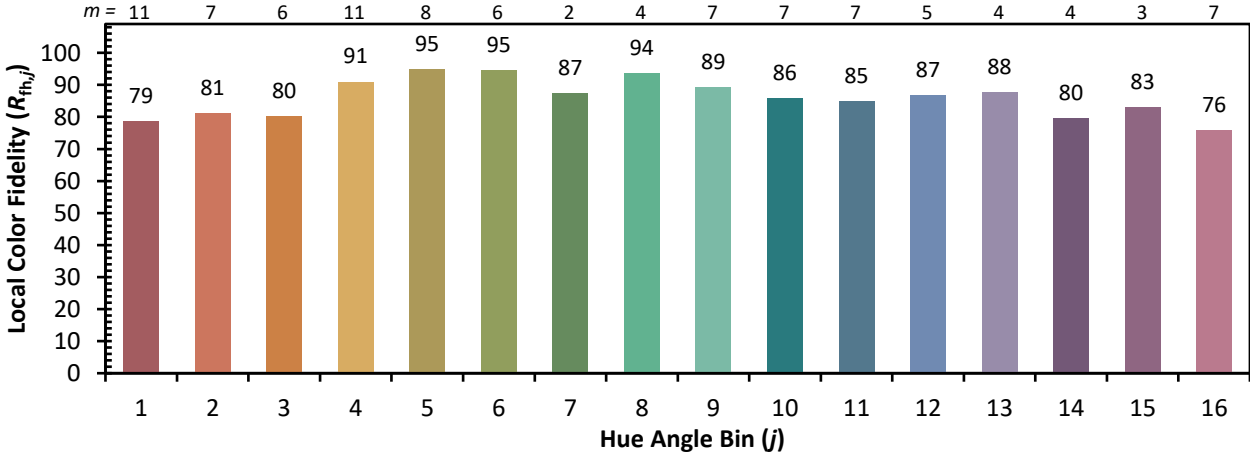


Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 86	CES51 = 95	CES76 = 84
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 90	CES78 = 83
CES04 = 70	CES29 = 89	CES54 = 91	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 91	CES80 = 90
CES06 = 51	CES31 = 91	CES56 = 87	CES81 = 70
CES07 = 42	CES32 = 85	CES57 = 86	CES82 = 96
CES08 = 41	CES33 = 93	CES58 = 87	CES83 = 94
CES09 = 29	CES34 = 94	CES59 = 92	CES84 = 92
CES10 = 76	CES35 = 97	CES60 = 94	CES85 = 77
CES11 = 59	CES36 = 90	CES61 = 90	CES86 = 66
CES12 = 65	CES37 = 97	CES62 = 94	CES87 = 84
CES13 = 43	CES38 = 97	CES63 = 88	CES88 = 86
CES14 = 74	CES39 = 98	CES64 = 84	CES89 = 75
CES15 = 72	CES40 = 95	CES65 = 80	CES90 = 88
CES16 = 47	CES41 = 97	CES66 = 83	CES91 = 81
CES17 = 50	CES42 = 99	CES67 = 82	CES92 = 64
CES18 = 56	CES43 = 93	CES68 = 84	CES93 = 79
CES19 = 72	CES44 = 99	CES69 = 89	CES94 = 60
CES20 = 67	CES45 = 94	CES70 = 82	CES95 = 74
CES21 = 87	CES46 = 90	CES71 = 81	CES96 = 83
CES22 = 79	CES47 = 93	CES72 = 93	CES97 = 89
CES23 = 92	CES48 = 83	CES73 = 77	CES98 = 84
CES24 = 91	CES49 = 92	CES74 = 92	CES99 = 75
CES25 = 72	CES50 = 95	CES75 = 83	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)