

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: P880213

Luminaire Tested: **EMM2-HSN-VA6-830-U-RW**

Issue Date: 10/01/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P880213  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 10/01/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-VA6-830-U-RW  
Description: EPIC MODERN SHORT HOUSING 6W 80CRI 3000K VISUAL COMFORT FIXTURE w/  
RECTANGULAR WIDE DISTRIBUTION OPTIC  
Light Source: (1) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

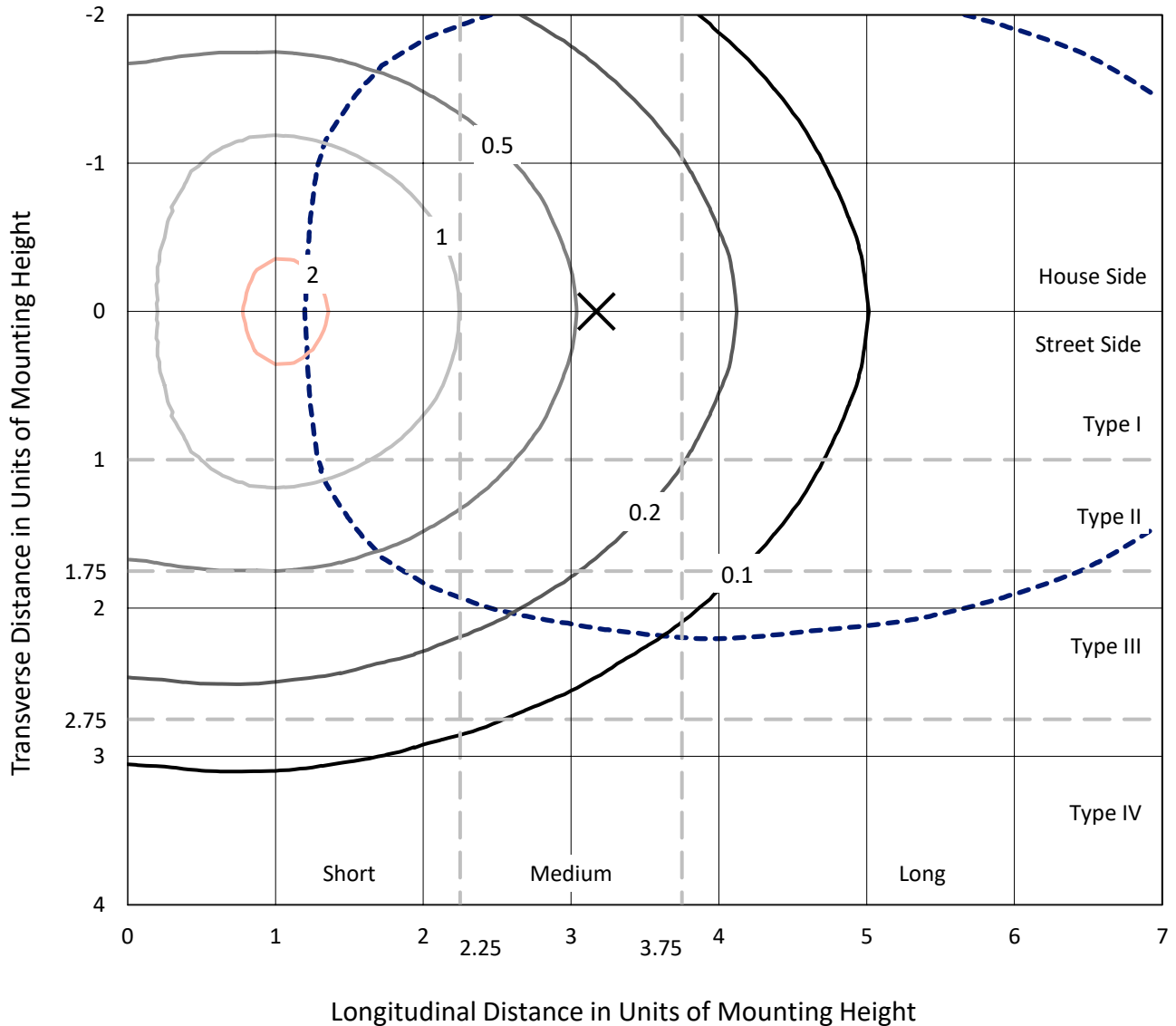
Lumens per Lamp: N/A  
Luminaire Lumens: 6947.2 lumens  
Efficiency: N/A  
Efficacy: 65.5 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B3 - U0 - G3

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: P880213  
 CATALOG NUMBER: EMM2-HSN-VA6-830-U-RW

### Iso-Footcandle Lines of Horizontal Illumination

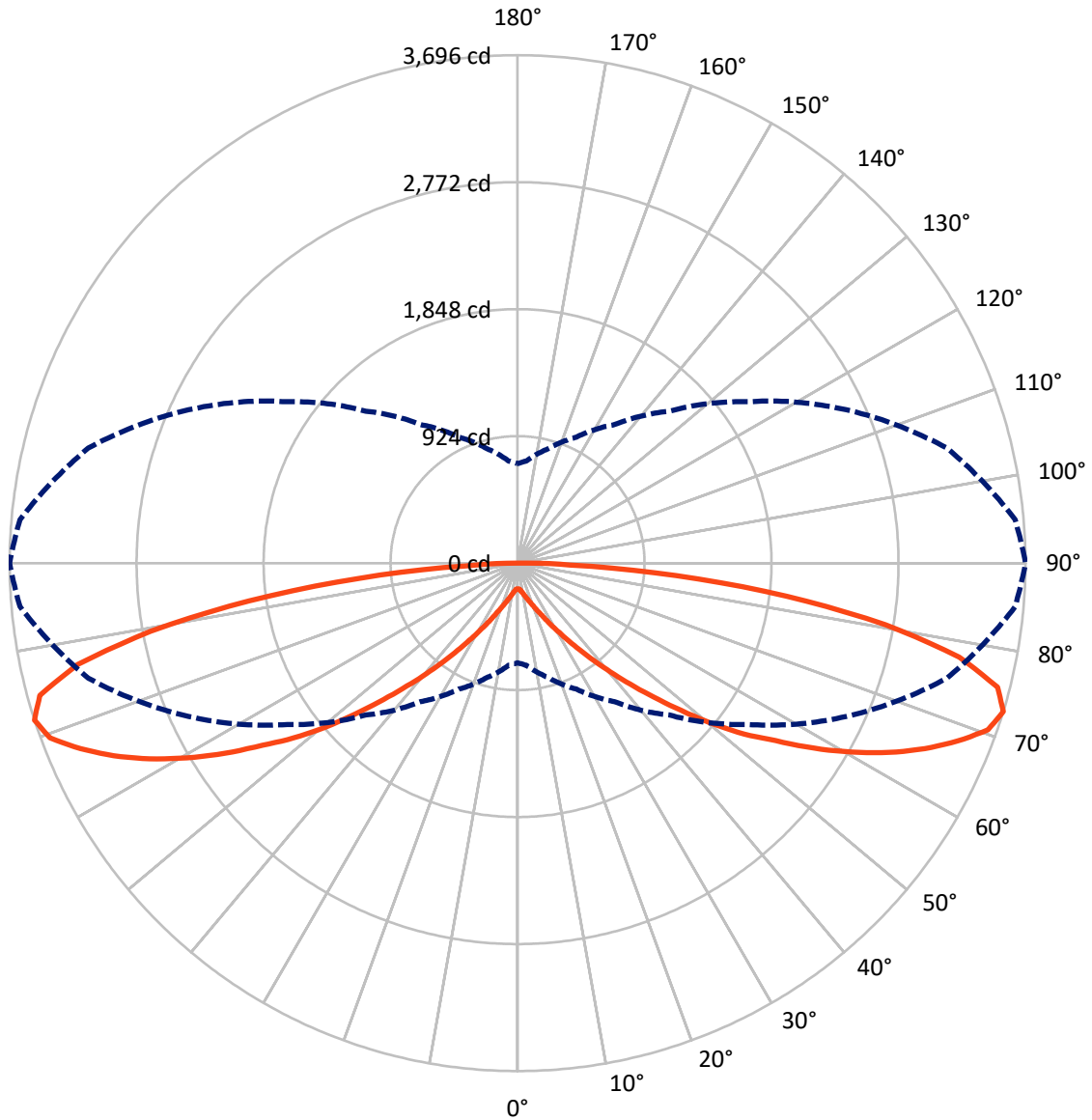
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 2.2 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 90-Deg Lateral      - - - Horizontal Cone Through 72.5-Deg Vertical

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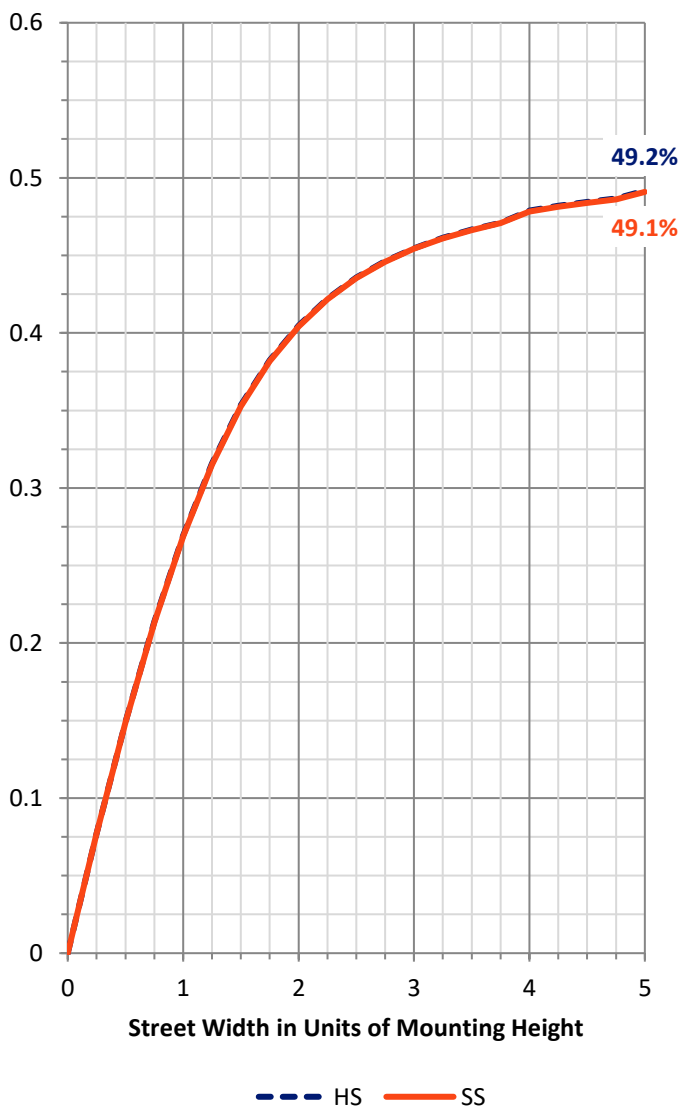
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	3473.6	0.0	3473.6
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	3473.6	0.0	3473.6
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	6947.2	0.0	6947.2
	% Fixture	100.0	0.0	100.0

**Coefficient of Utilization**

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	19.1	0.3
10°-20°	71.2	1.0
20°-30°	164.3	2.4
30°-40°	352.0	5.1
40°-50°	726.9	10.5
50°-60°	1335.2	19.2
60°-70°	1903.8	27.4
70°-80°	1770.9	25.5
80°-90°	603.8	8.7
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°	6947.2	100.0
0°-180°	6947.2	100.0



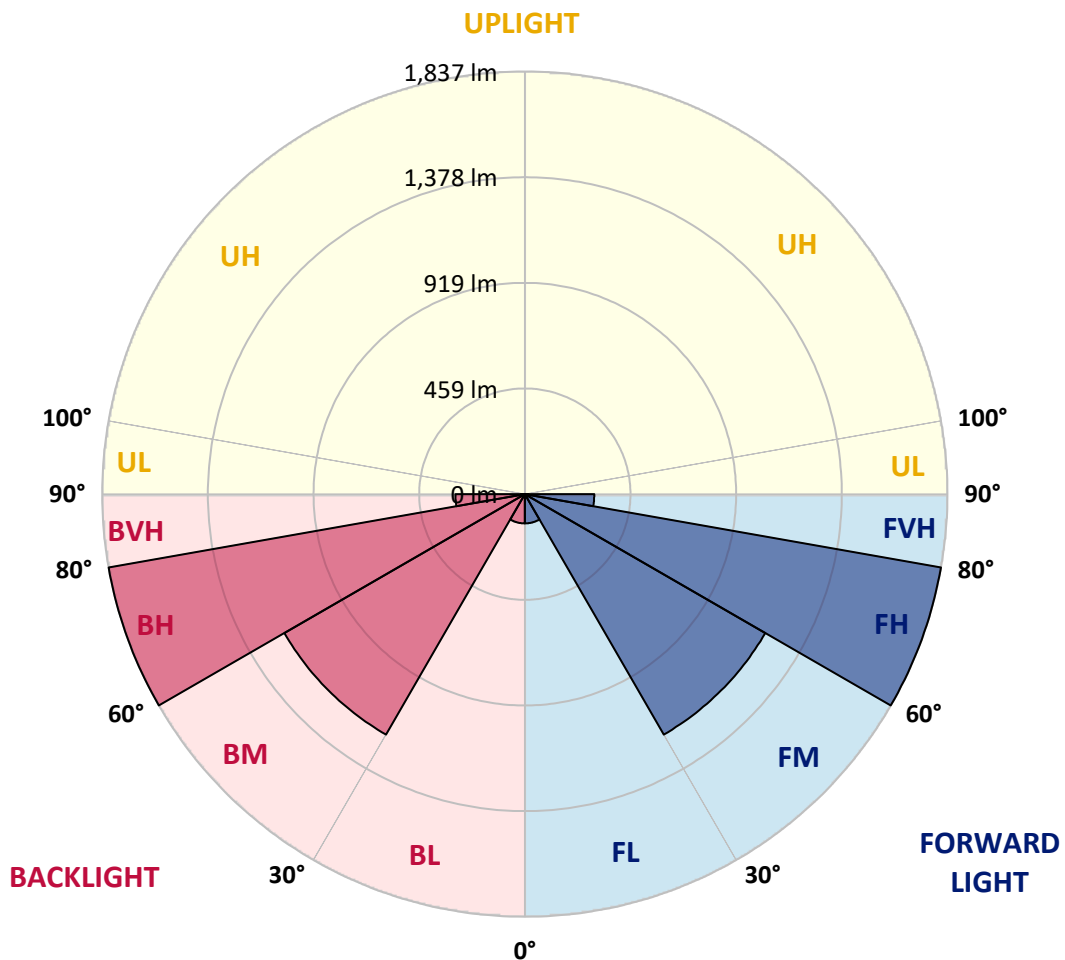
REPORT NUMBER: P880213  
 CATALOG NUMBER: EMM2-HSN-VA6-830-U-RW

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	127.3	1.8			
FM (30°-60°)	1207.1	17.4			
FH (60°-80°)	1837.3	26.4			G2/5000
FVH (80°-90°)	301.9	4.3			G3/500
BL (0°-30°)	127.3	1.8	B1/500		
BM (30°-60°)	1207.1	17.4	B2/2500		
BH (60°-80°)	1837.3	26.4	B3/2500		G3/2500
BVH (80°-90°)	301.9	4.3			G3/500
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

**BUG Rating: B3-U0-G3**

Type III Short





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CATALOG NUMBER: EMM2-HSN-VA6-830-U-RW

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	187.0	187.0	187.0	187.0	187.0	187.0	187.0	187.0	187.0	187.0	187.0
2.5°	187.9	187.9	187.9	187.9	188.7	188.7	188.7	188.7	188.7	188.7	188.7
5°	190.5	190.5	190.5	191.4	193.2	194.0	194.9	194.9	195.8	195.8	195.8
7.5°	194.9	194.9	195.8	198.4	200.2	202.9	205.5	206.4	209.0	209.0	209.0
10°	201.1	201.1	202.9	205.5	209.9	215.2	219.6	223.1	224.9	225.8	226.7
12.5°	209.0	209.0	211.7	216.1	223.1	229.3	236.4	240.8	245.2	247.0	247.0
15°	218.7	218.7	222.3	228.4	236.4	245.2	254.9	262.8	269.0	271.6	272.5
17.5°	228.4	229.3	233.7	241.7	252.2	263.7	276.1	286.6	296.3	299.9	301.6
20°	240.8	240.8	246.1	256.7	269.9	285.8	302.5	316.6	329.0	336.0	336.9
22.5°	254.9	255.8	261.1	274.3	291.1	311.3	333.4	352.8	370.4	379.3	378.4
25°	269.0	269.9	277.8	293.7	314.9	343.1	371.3	396.9	420.7	431.3	431.3
27.5°	285.8	286.6	296.3	314.9	343.1	378.4	415.4	452.5	476.3	492.1	497.4
30°	306.0	306.9	318.4	342.2	374.8	418.9	468.3	516.0	547.7	570.6	571.5
32.5°	328.1	329.9	344.0	371.3	413.6	469.2	531.0	590.0	634.1	663.2	662.4
35°	358.1	359.8	379.3	410.1	461.3	527.4	602.4	682.7	733.8	767.3	770.8
37.5°	389.0	392.5	414.5	455.1	516.8	596.2	690.6	780.6	856.4	887.3	896.1
40°	425.1	428.6	456.0	505.4	576.8	678.2	794.7	904.9	992.2	1034.6	1040.7
42.5°	466.6	472.7	504.5	561.8	651.8	769.1	904.9	1040.7	1151.0	1206.5	1203.0
45°	525.7	531.0	571.5	635.9	737.3	872.3	1037.2	1207.4	1326.5	1390.9	1390.0
47.5°	582.1	589.2	637.7	718.8	836.1	993.1	1187.1	1381.2	1517.9	1589.3	1601.7
50°	640.3	650.0	711.8	802.6	942.0	1134.2	1352.1	1560.2	1726.0	1814.2	1835.4
52.5°	739.1	747.9	813.2	908.4	1057.5	1270.0	1520.5	1754.3	1937.7	2031.2	2065.6
55°	806.1	820.2	903.1	1022.2	1191.6	1416.5	1691.6	1961.5	2168.8	2260.5	2279.9
57.5°	828.2	843.2	942.8	1090.1	1300.0	1570.8	1870.7	2160.0	2384.9	2509.2	2540.1
60°	829.1	847.6	955.2	1114.8	1353.0	1679.3	2030.3	2373.4	2628.3	2765.0	2791.5
62.5°	857.3	878.4	993.1	1142.2	1379.4	1729.6	2138.8	2554.2	2866.4	3004.9	3034.0
65°	889.0	913.7	1035.4	1201.3	1439.4	1783.4	2207.6	2684.7	3080.7	3242.2	3256.3
67.5°	856.4	877.6	1005.5	1177.4	1425.3	1793.9	2256.1	2765.9	3209.5	3443.2	3454.7
70°	802.6	824.6	946.4	1103.4	1346.8	1713.7	2200.5	2765.9	3285.4	3579.1	3632.0
72.5°	724.1	746.2	861.7	1011.6	1230.4	1562.9	2046.2	2638.9	3233.3	3633.7	3695.5
75°	628.0	648.3	755.0	891.7	1083.1	1383.8	1822.2	2397.2	3030.5	3532.3	3606.4
77.5°	523.9	542.4	633.3	743.5	905.8	1173.0	1548.8	2069.1	2675.9	3190.1	3286.2
80°	411.9	430.4	500.1	586.5	717.0	921.7	1233.0	1664.3	2189.1	2619.5	2713.8
82.5°	308.7	317.5	366.9	429.5	513.3	665.0	894.3	1230.4	1622.8	1931.5	1973.9
85°	194.0	202.0	235.5	278.7	329.0	408.4	551.2	753.2	980.8	1154.5	1157.2
87.5°	60.0	69.7	80.3	105.8	120.8	145.5	174.6	246.1	323.7	408.4	383.7
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**

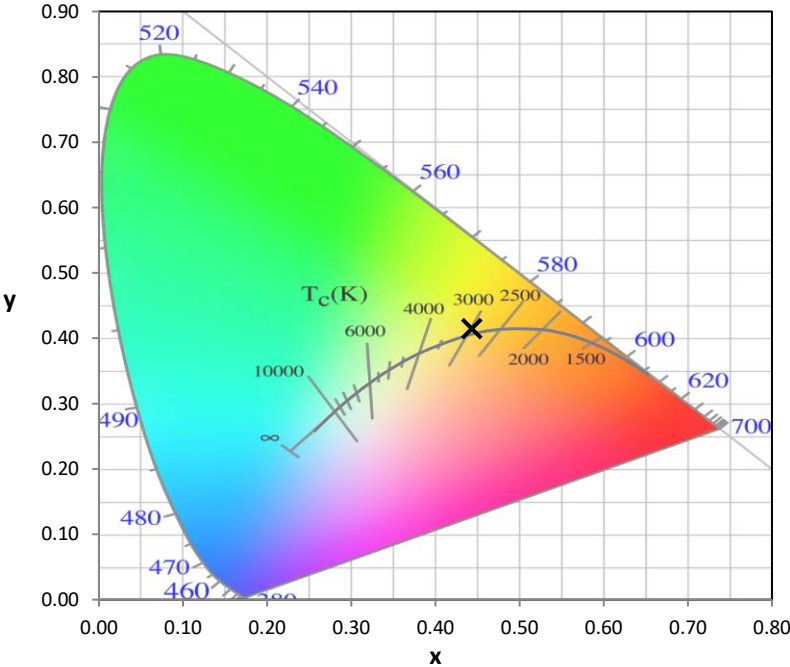
Stabilization Time: 29M  
 Operation Time: 1H 29M  
 Sphere Temperature (°C): 25.2

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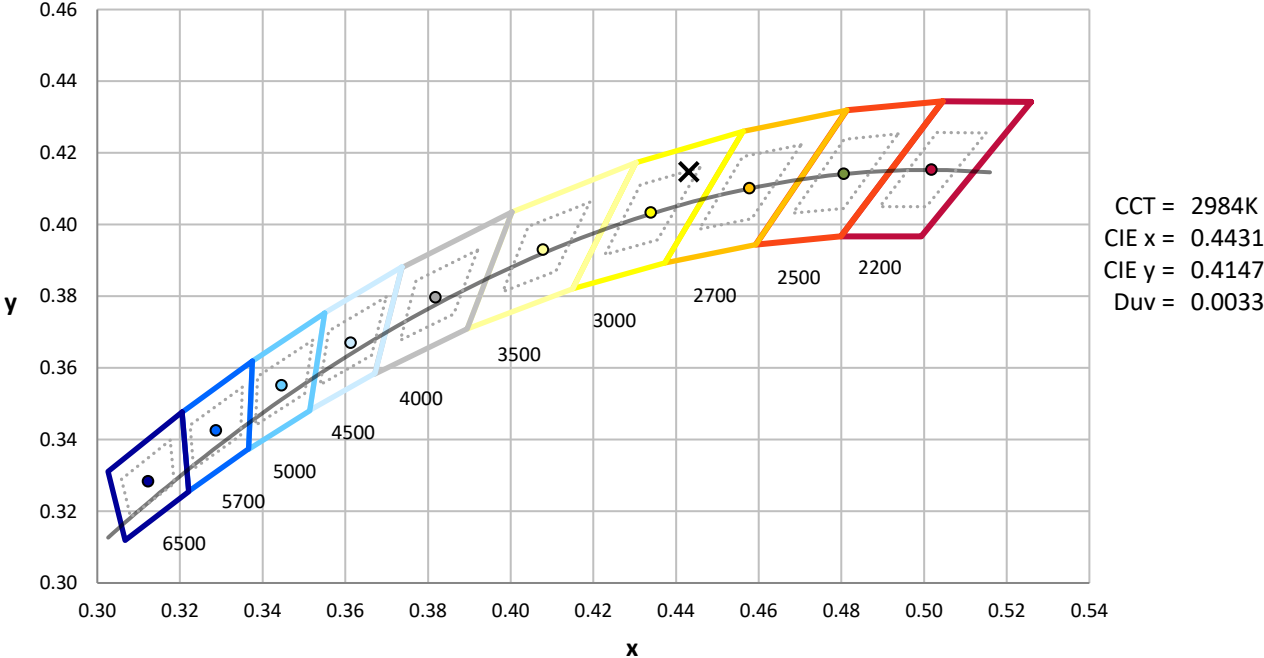
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

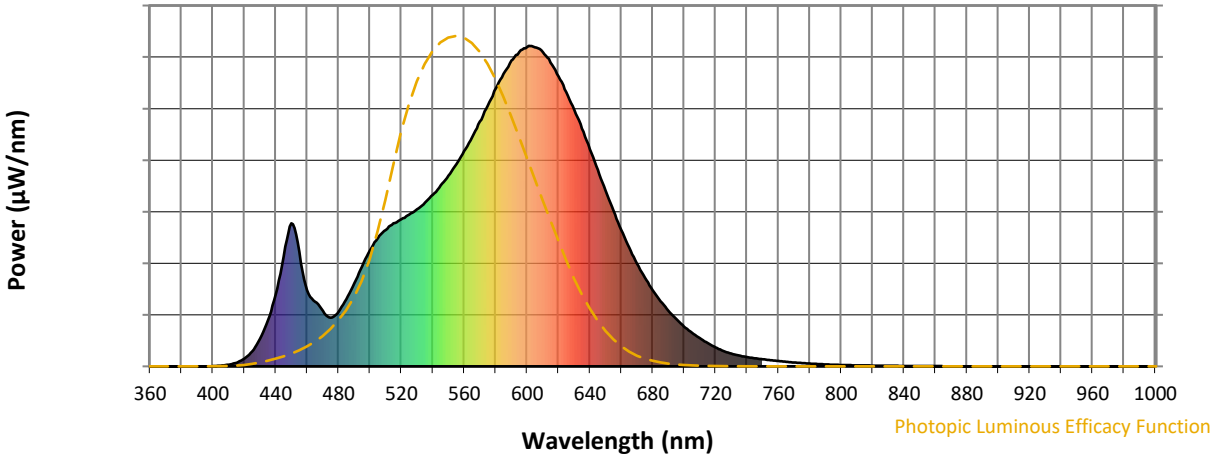


CCT = 2984K  
 CIE x = 0.4431  
 CIE y = 0.4147  
 Duv = 0.0033

Point lies inside the ANSI 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

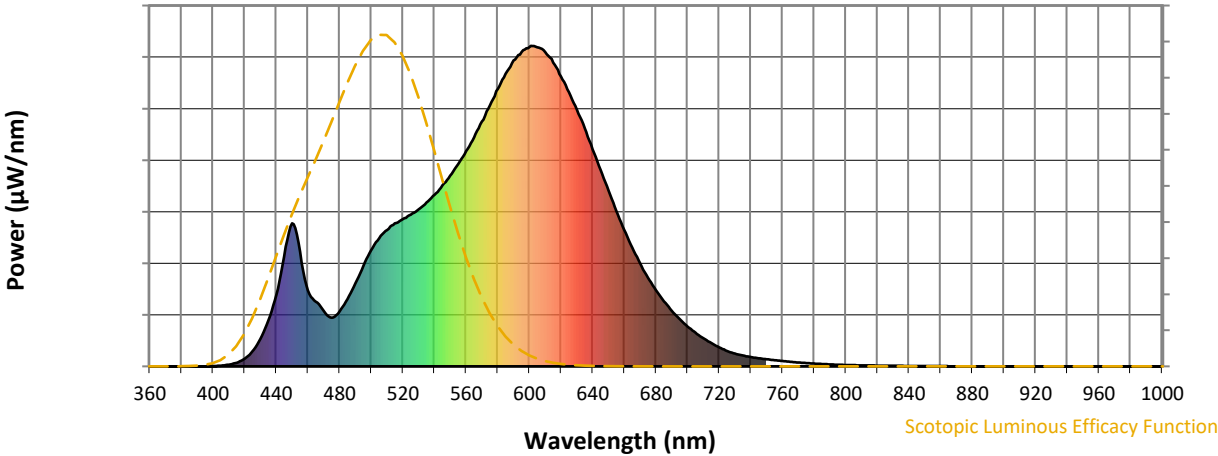


**Photopic Lumens: NR**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /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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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.32

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /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**



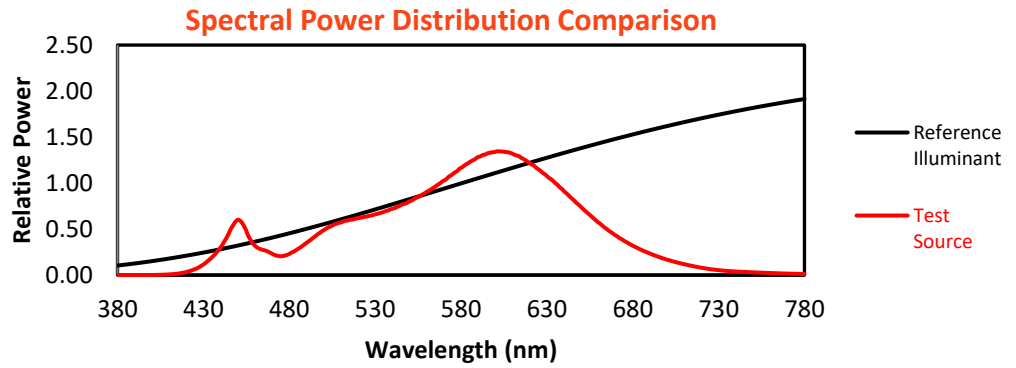
**Melanopic Lumens: NR**

**M/P: 2.51**

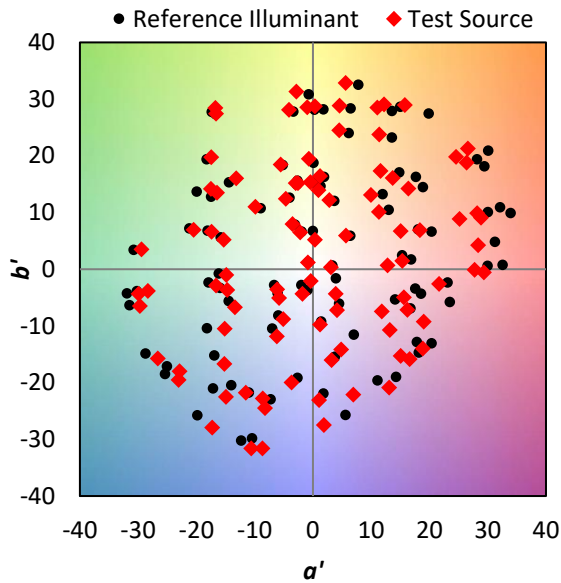
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	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**

$R_f = 85.8$   
 $R_g = 94.1$   
 $CIE R_a = 81.8$   
 $R_9 = -1.1$



**Color Vector Graphics**



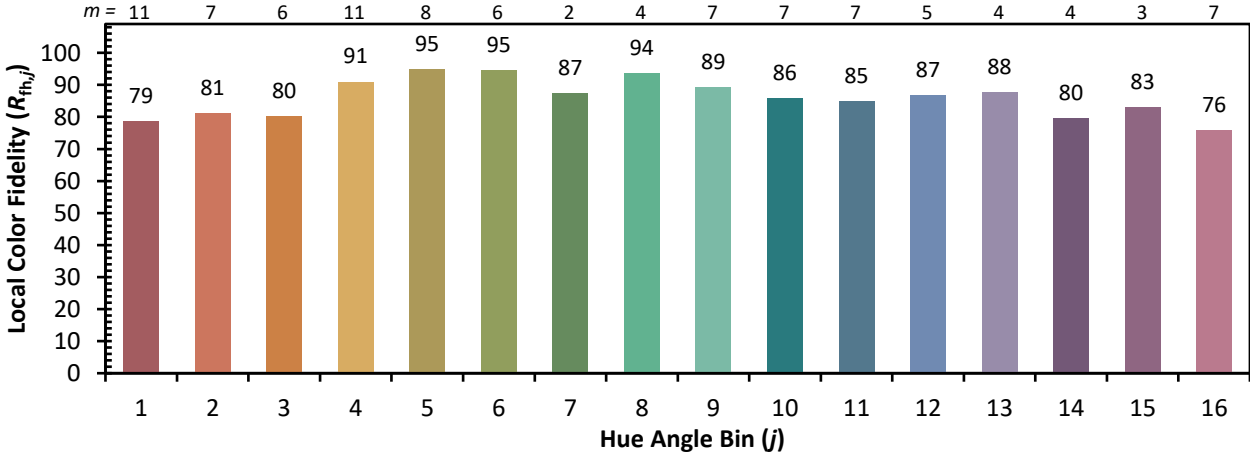
Individual Sample Fidelity Index ( $R_{f,i}$ )

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)