

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: P869095

Luminaire Tested: **EMM2-HSN-SA3B-730-U-T5R**

Issue Date: 08/22/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P869095  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/22/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-SA3B-730-U-T5R  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 70CRI 3000K  
FIXTURE w/ TYPE V ROUND DISTRIBUTION OPTIC  
Light Source: (30) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

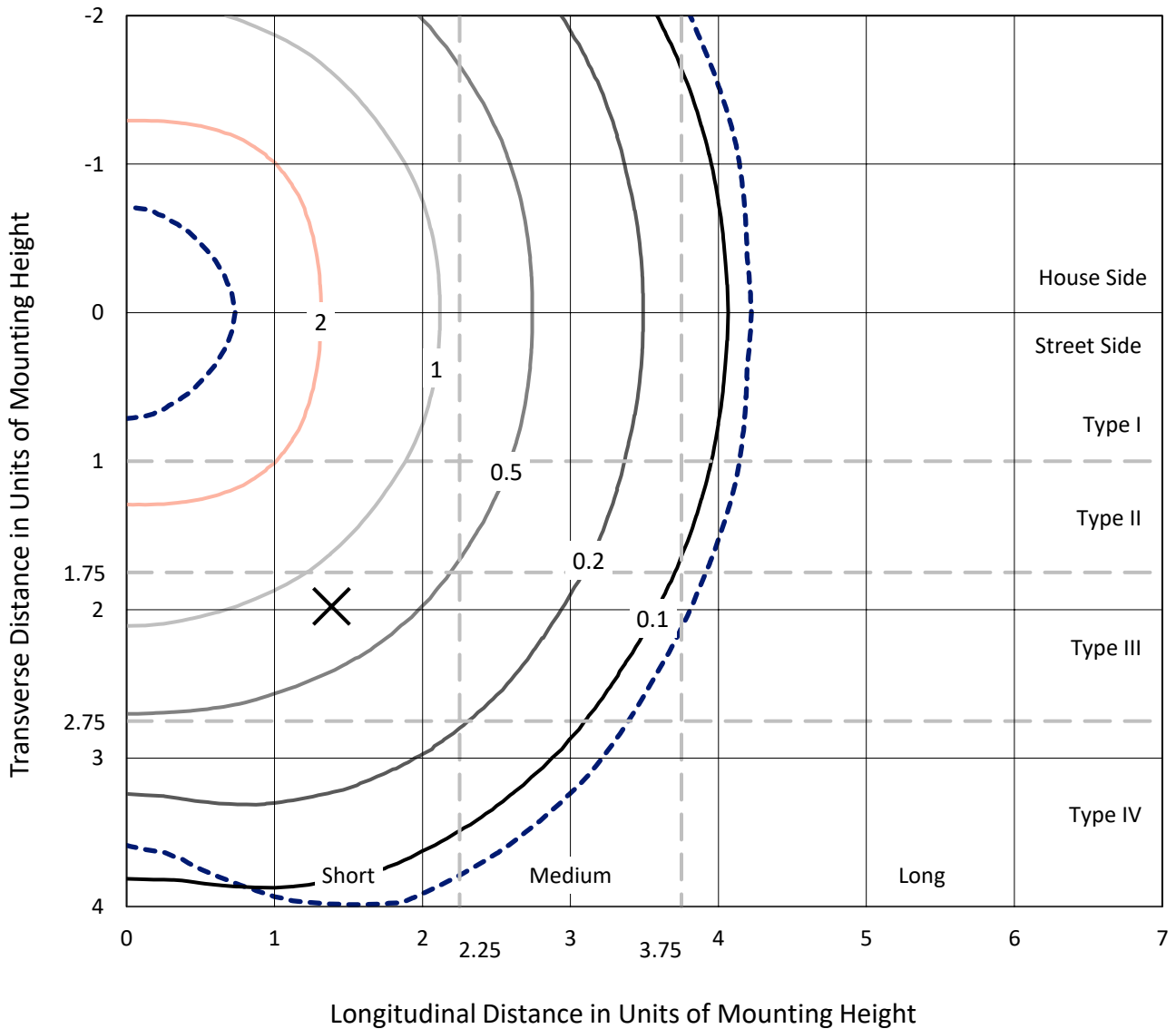
Lumens per Lamp: N/A  
Luminaire Lumens: 18428.2 lumens  
Efficiency: N/A  
Efficacy: 137.5 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B4 - U0 - G2

Input Watts (W): 134  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 6.70%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P869095  
 CATALOG NUMBER: EMM2-HSN-SA3B-730-U-T5R

### Iso-Footcandle Lines of Horizontal Illumination

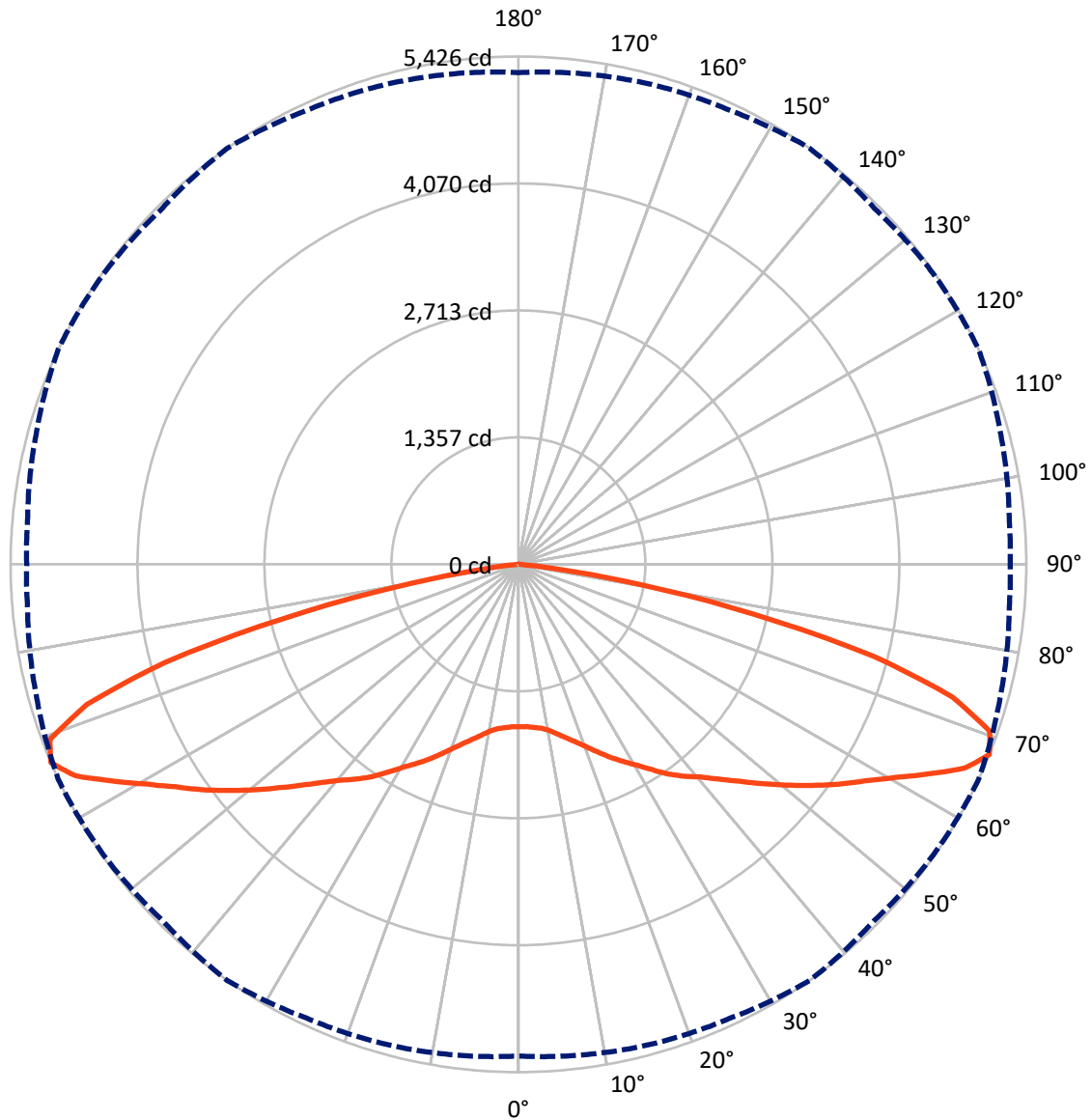
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.4 fc  
 Type V - Short - N/A

REPORT NUMBER: P869095  
CATALOG NUMBER: EMM2-HSN-SA3B-730-U-T5R

### Luminous Intensity Polar Plot



— Vertical Plane Through 35-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P869095  
 CATALOG NUMBER: EMM2-HSN-SA3B-730-U-T5R

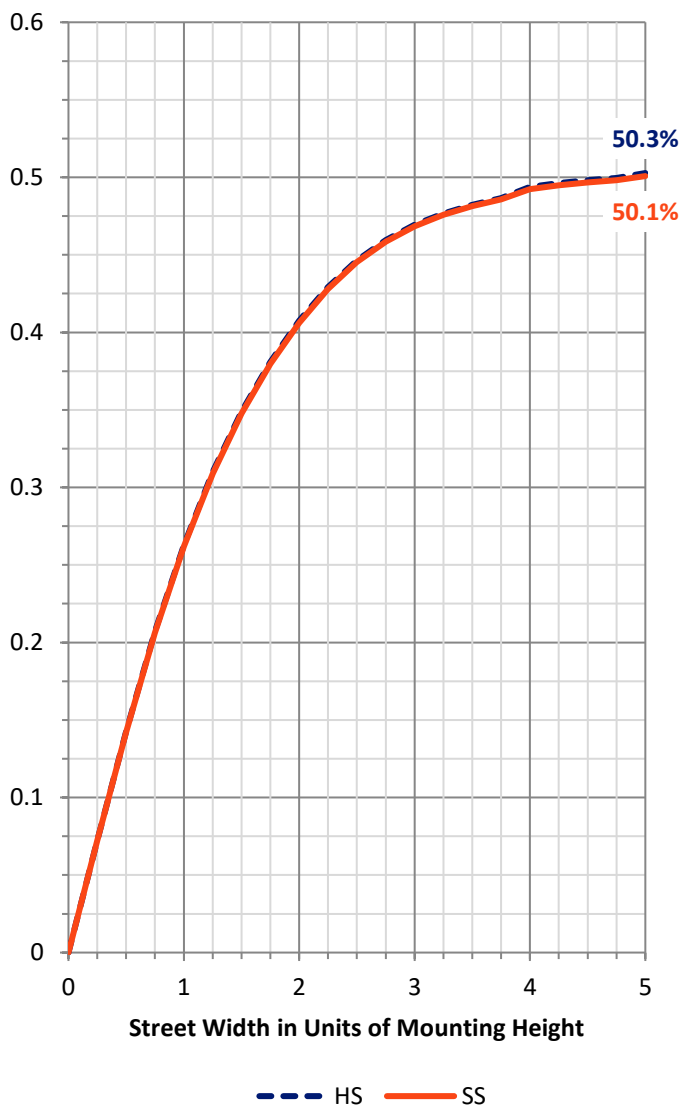
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	9214.1	0.0	9214.1
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	9214.1	0.0	9214.1
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	18428.2	0.0	18428.2
	% Fixture	100.0	0.0	100.0

**Coefficient of Utilization**

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	168.8	0.9
10°-20°	553.2	3.0
20°-30°	1057.4	5.7
30°-40°	1708.7	9.3
40°-50°	2501.0	13.6
50°-60°	3586.4	19.5
60°-70°	5026.6	27.3
70°-80°	3546.8	19.2
80°-90°	279.2	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°	18428.2	100.0
0°-180°	18428.2	100.0



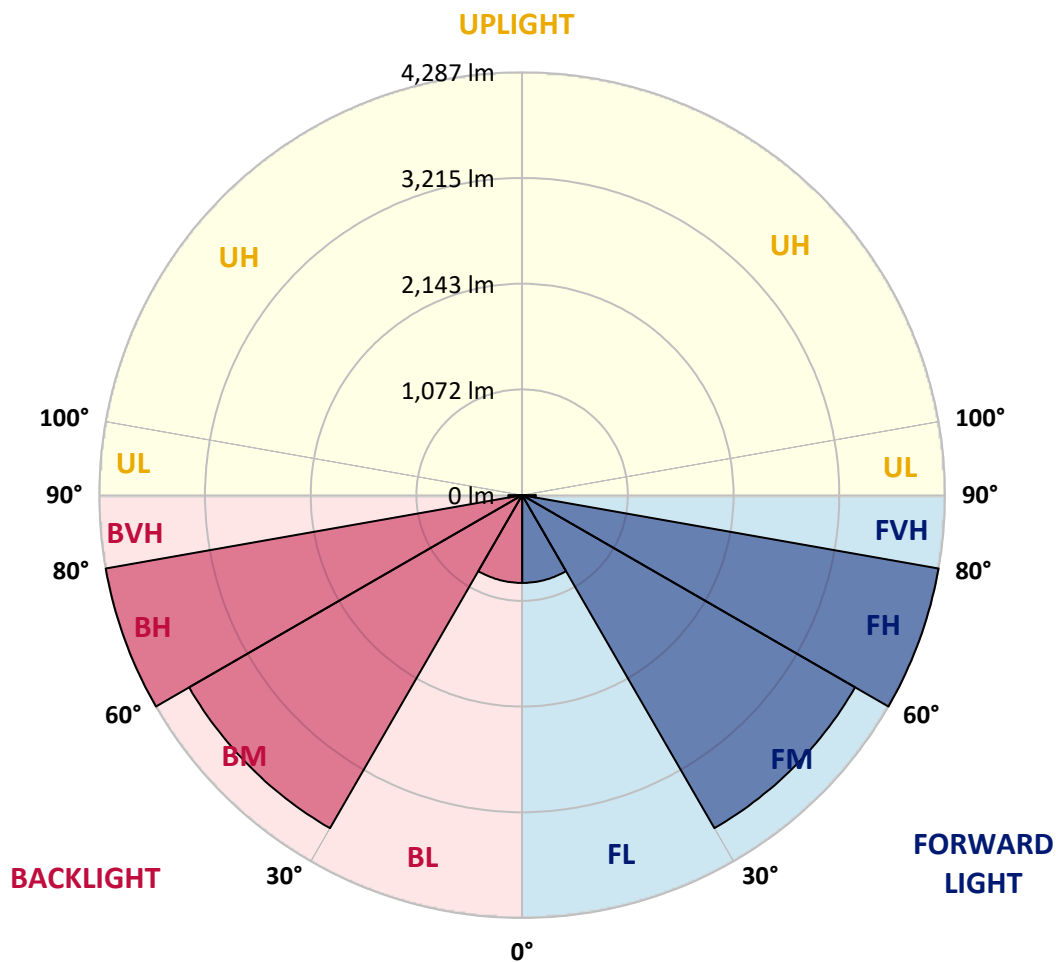
REPORT NUMBER: P869095  
 CATALOG NUMBER: EMM2-HSN-SA3B-730-U-T5R

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

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	889.7	4.8			
FM (30°-60°)	3898.1	21.2			
FH (60°-80°)	4286.7	23.3			G2/5000
FVH (80°-90°)	139.6	0.8			G2/225
BL (0°-30°)	889.7	4.8	B2/1000		
BM (30°-60°)	3898.1	21.2	B3/5000		
BH (60°-80°)	4286.7	23.3	B4/5000		G2/5000
BVH (80°-90°)	139.6	0.8			G2/225
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: P869095

CATALOG NUMBER: EMM2-HSN-SA3B-730-U-T5R

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9	1735.9
2.5°	1746.6	1743.1	1739.5	1739.5	1735.9	1739.5	1735.9	1739.5	1735.9	1735.9	1735.9
5°	1757.4	1753.8	1753.8	1753.8	1750.2	1750.2	1750.2	1750.2	1746.6	1743.1	1746.6
7.5°	1768.2	1768.2	1764.6	1771.8	1768.2	1771.8	1771.8	1775.3	1768.2	1764.6	1768.2
10°	1796.9	1796.9	1796.9	1804.0	1804.0	1814.8	1814.8	1818.4	1814.8	1807.6	1807.6
12.5°	1857.8	1854.2	1854.2	1854.2	1861.4	1868.6	1875.8	1875.8	1872.2	1861.4	1861.4
15°	1926.0	1933.1	1926.0	1922.4	1926.0	1933.1	1940.3	1940.3	1936.7	1933.1	1933.1
17.5°	2008.5	2012.1	2004.9	1997.7	1997.7	2008.5	2012.1	2012.1	2008.5	2001.3	2001.3
20°	2080.2	2083.8	2083.8	2080.2	2083.8	2091.0	2094.5	2098.1	2087.4	2076.6	2076.6
22.5°	2141.2	2144.8	2151.9	2166.3	2180.6	2187.8	2184.2	2184.2	2166.3	2155.5	2151.9
25°	2216.5	2227.2	2241.6	2259.5	2284.6	2302.6	2295.4	2281.0	2266.7	2245.2	2241.6
27.5°	2363.5	2363.5	2349.2	2356.4	2385.1	2403.0	2395.8	2385.1	2356.4	2342.0	2338.4
30°	2478.3	2478.3	2478.3	2471.1	2489.1	2510.6	2503.4	2485.5	2471.1	2464.0	2464.0
32.5°	2589.5	2582.3	2593.1	2607.4	2614.6	2621.8	2621.8	2607.4	2582.3	2571.6	2571.6
35°	2693.5	2700.7	2711.4	2732.9	2750.9	2740.1	2722.2	2711.4	2686.3	2664.8	2664.8
37.5°	2793.9	2801.1	2811.9	2844.1	2872.8	2869.2	2847.7	2819.0	2786.7	2768.8	2758.1
40°	2865.6	2869.2	2897.9	2948.1	2987.6	3001.9	2984.0	2944.6	2894.3	2858.5	2862.1
42.5°	2951.7	2958.9	3005.5	3077.3	3134.6	3156.2	3131.1	3077.3	3005.5	2958.9	2958.9
45°	3077.3	3080.8	3141.8	3231.5	3306.8	3342.7	3306.8	3231.5	3138.2	3091.6	3088.0
47.5°	3202.8	3213.5	3281.7	3389.3	3500.5	3543.5	3504.1	3407.2	3296.0	3238.7	3231.5
50°	3346.2	3353.4	3435.9	3583.0	3708.5	3765.9	3715.7	3593.7	3471.8	3400.0	3403.6
52.5°	3486.1	3507.6	3618.8	3773.0	3923.7	3988.2	3916.5	3783.8	3654.7	3586.5	3583.0
55°	3694.1	3719.2	3816.1	3988.2	4146.0	4217.8	4149.6	4002.6	3862.7	3787.4	3773.0
57.5°	3956.0	3970.3	4056.4	4232.1	4364.8	4433.0	4393.5	4257.2	4124.5	4031.3	4013.3
60°	4253.6	4268.0	4336.1	4515.5	4623.1	4673.3	4658.9	4580.0	4490.4	4447.3	4436.6
62.5°	4676.9	4680.4	4716.3	4820.3	4927.9	4949.4	4913.6	4895.6	4924.3	4877.7	4888.5
65°	5161.0	5161.0	5150.3	5164.6	5247.1	5222.0	5196.9	5275.8	5261.5	5182.6	5168.2
67.5°	5254.3	5275.8	5318.8	5351.1	5426.4	5379.8	5412.1	5426.4	5336.8	5265.0	5254.3
70°	4702.0	4727.1	4967.4	5114.4	5344.0	5387.0	5283.0	5229.2	5128.8	4996.1	4960.2
72.5°	3206.4	3331.9	4024.1	4497.5	4849.0	4902.8	4845.4	4777.3	4576.4	4472.4	4400.7
75°	2560.8	2628.9	3245.8	3712.1	3920.1	3916.5	3687.0	3611.7	3453.8	3439.5	3453.8
77.5°	1563.7	1578.1	2184.2	2550.0	2575.1	2560.8	2467.5	2410.2	2431.7	2324.1	2342.0
80°	477.0	520.0	824.9	1244.5	1337.8	1294.7	1276.8	1298.3	1319.8	1352.1	1402.3
82.5°	96.8	121.9	165.0	358.7	408.9	405.3	401.7	444.7	484.2	502.1	609.7
85°	10.8	10.8	14.3	28.7	61.0	96.8	100.4	89.7	136.3	132.7	93.3
87.5°	3.6	3.6	3.6	3.6	3.6	7.2	7.2	7.2	7.2	7.2	7.2
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: SP1-2407-157-4

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-730-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-730-U-5WQ-2



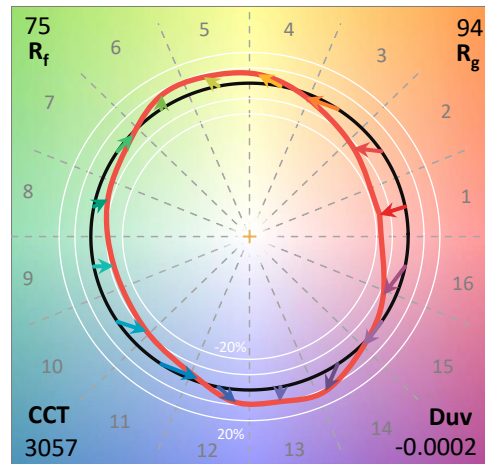
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-4  
 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-40-730-U-5WQ-2**  
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

**Spectral Parameters**

CCT (K): 3057  
 CIE u': 0.2487  
 CIE v': 0.5199  
 Duv: -0.0002  
 CIE x: 0.4326  
 CIE y: 0.4020  
 CIE z: 0.1654  
 Peak Wavelength (nm): 593  
 Dominant Wavelength (nm): 582  
 Purity: 50.50735  
 Rf: 74.6  
 Rg: 94

CRI (Ra):	71.7		
R1:	68.1	R9:	-34.8
R2:	82.0	R10:	58.5
R3:	93.5	R11:	62.5
R4:	67.5	R12:	47.5
R5:	67.2	R13:	70.7
R6:	74.9	R14:	96.4
R7:	77.4	R15:	60.0
R8:	43.1		



**Test Conditions**

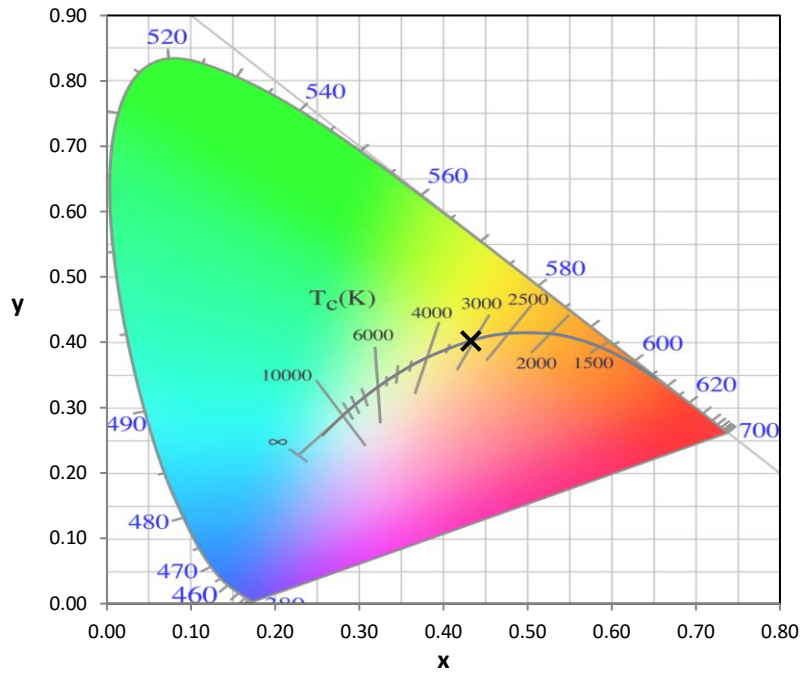
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-4

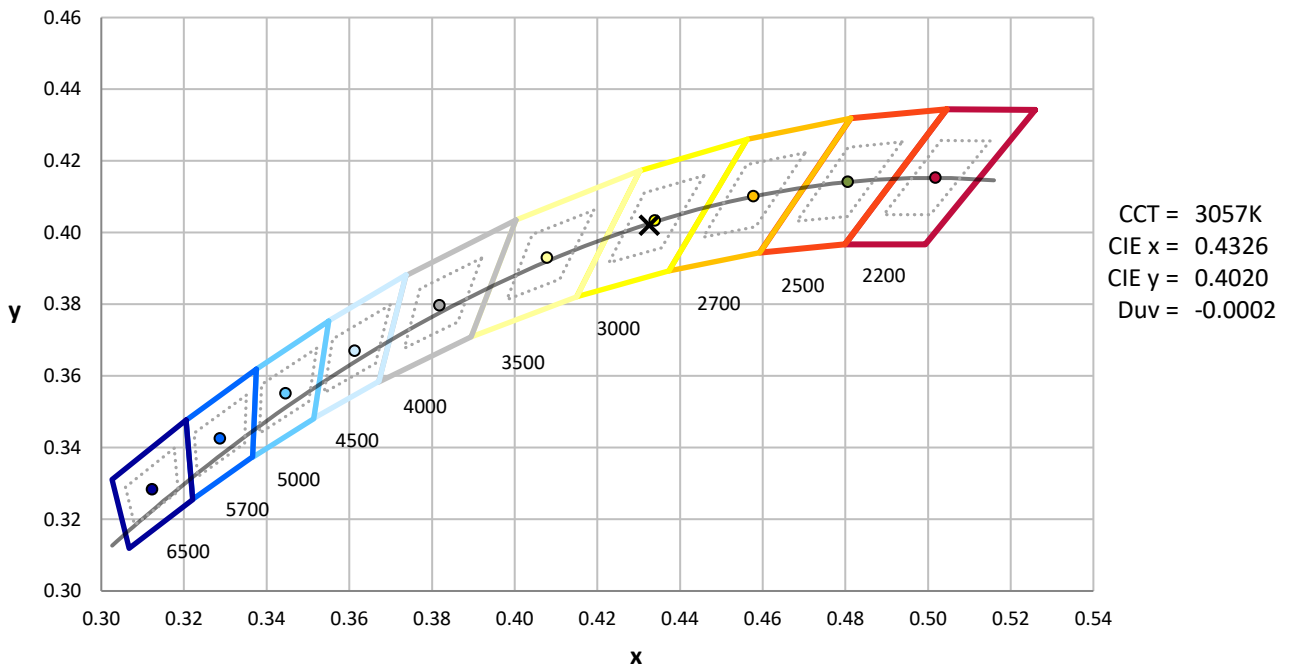
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

REPORT NUMBER: SP1-2407-157-4

**CIE 1931 Chromaticity Diagram**



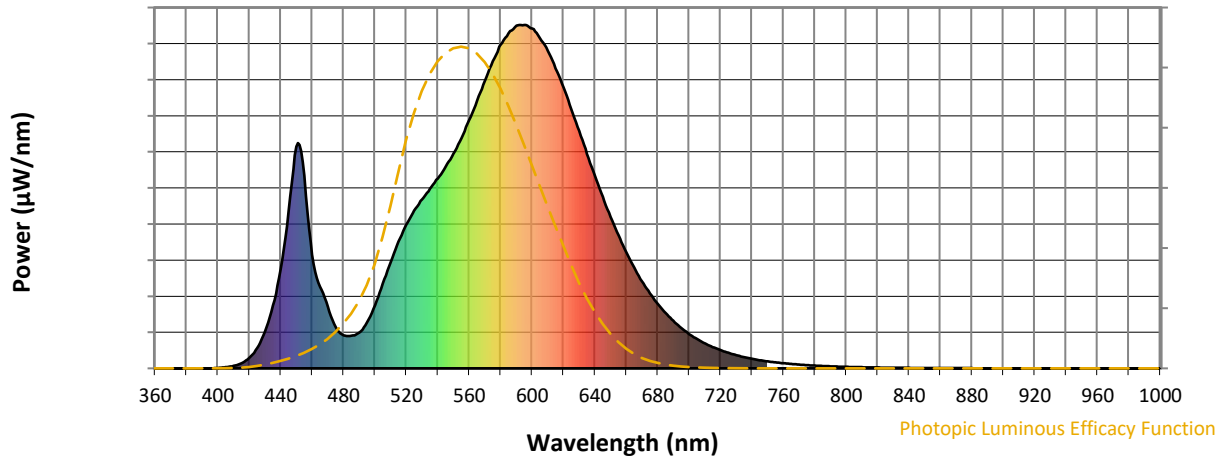
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-4

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	104	NR	620	818	NR	750	20	NR	880	1	NR
365	0	NR	495	135	NR	625	755	NR	755	17	NR	885	0	NR
370	0	NR	500	184	NR	630	691	NR	760	15	NR	890	0	NR
375	0	NR	505	247	NR	635	625	NR	765	13	NR	895	0	NR
380	0	NR	510	309	NR	640	561	NR	770	11	NR	900	0	NR
385	0	NR	515	369	NR	645	499	NR	775	9	NR	905	0	NR
390	0	NR	520	419	NR	650	441	NR	780	8	NR	910	0	NR
395	0	NR	525	460	NR	655	388	NR	785	7	NR	915	0	NR
400	1	NR	530	492	NR	660	338	NR	790	6	NR	920	0	NR
405	3	NR	535	524	NR	665	294	NR	795	5	NR	925	0	NR
410	7	NR	540	553	NR	670	253	NR	800	4	NR	930	0	NR
415	15	NR	545	588	NR	675	218	NR	805	4	NR	935	0	NR
420	31	NR	550	625	NR	680	188	NR	810	3	NR	940	0	NR
425	60	NR	555	670	NR	685	161	NR	815	3	NR	945	0	NR
430	107	NR	560	723	NR	690	139	NR	820	3	NR	950	0	NR
435	183	NR	565	780	NR	695	118	NR	825	2	NR	955	0	NR
440	289	NR	570	837	NR	700	100	NR	830	2	NR	960	0	NR
445	460	NR	575	894	NR	705	85	NR	835	2	NR	965	0	NR
450	646	NR	580	942	NR	710	73	NR	840	1	NR	970	0	NR
455	561	NR	585	976	NR	715	62	NR	845	1	NR	975	0	NR
460	331	NR	590	998	NR	720	53	NR	850	1	NR	980	0	NR
465	238	NR	595	1000	NR	725	45	NR	855	1	NR	985	0	NR
470	178	NR	600	990	NR	730	39	NR	860	1	NR	990	0	NR
475	120	NR	605	962	NR	735	33	NR	865	1	NR	995	0	NR
480	96	NR	610	925	NR	740	28	NR	870	1	NR	1000	0	NR
485	95	NR	615	873	NR	745	24	NR	875	1	NR			

REPORT NUMBER: SP1-2407-157-4

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.23**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	104	NR	620	818	NR	750	20	NR	880	1	NR
365	0	NR	495	135	NR	625	755	NR	755	17	NR	885	0	NR
370	0	NR	500	184	NR	630	691	NR	760	15	NR	890	0	NR
375	0	NR	505	247	NR	635	625	NR	765	13	NR	895	0	NR
380	0	NR	510	309	NR	640	561	NR	770	11	NR	900	0	NR
385	0	NR	515	369	NR	645	499	NR	775	9	NR	905	0	NR
390	0	NR	520	419	NR	650	441	NR	780	8	NR	910	0	NR
395	0	NR	525	460	NR	655	388	NR	785	7	NR	915	0	NR
400	1	NR	530	492	NR	660	338	NR	790	6	NR	920	0	NR
405	3	NR	535	524	NR	665	294	NR	795	5	NR	925	0	NR
410	7	NR	540	553	NR	670	253	NR	800	4	NR	930	0	NR
415	15	NR	545	588	NR	675	218	NR	805	4	NR	935	0	NR
420	31	NR	550	625	NR	680	188	NR	810	3	NR	940	0	NR
425	60	NR	555	670	NR	685	161	NR	815	3	NR	945	0	NR
430	107	NR	560	723	NR	690	139	NR	820	3	NR	950	0	NR
435	183	NR	565	780	NR	695	118	NR	825	2	NR	955	0	NR
440	289	NR	570	837	NR	700	100	NR	830	2	NR	960	0	NR
445	460	NR	575	894	NR	705	85	NR	835	2	NR	965	0	NR
450	646	NR	580	942	NR	710	73	NR	840	1	NR	970	0	NR
455	561	NR	585	976	NR	715	62	NR	845	1	NR	975	0	NR
460	331	NR	590	998	NR	720	53	NR	850	1	NR	980	0	NR
465	238	NR	595	1000	NR	725	45	NR	855	1	NR	985	0	NR
470	178	NR	600	990	NR	730	39	NR	860	1	NR	990	0	NR
475	120	NR	605	962	NR	735	33	NR	865	1	NR	995	0	NR
480	96	NR	610	925	NR	740	28	NR	870	1	NR	1000	0	NR
485	95	NR	615	873	NR	745	24	NR	875	1	NR			

REPORT NUMBER: SP1-2407-157-4

**Melanopic Flux vs. Wavelength**



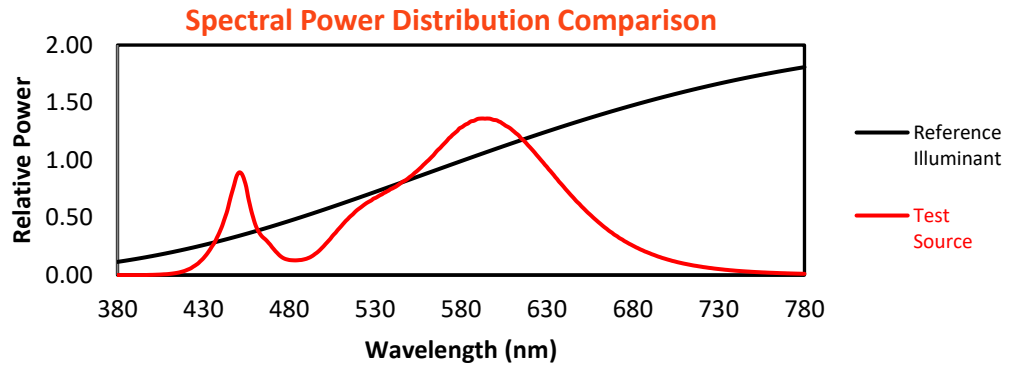
**Melanopic Lumens: NR**

**M/P: 2.27**

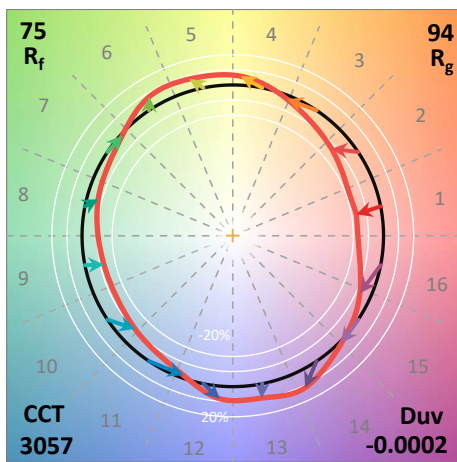
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	104	NR	620	818	NR	750	20	NR	880	1	NR
365	0	NR	495	135	NR	625	755	NR	755	17	NR	885	0	NR
370	0	NR	500	184	NR	630	691	NR	760	15	NR	890	0	NR
375	0	NR	505	247	NR	635	625	NR	765	13	NR	895	0	NR
380	0	NR	510	309	NR	640	561	NR	770	11	NR	900	0	NR
385	0	NR	515	369	NR	645	499	NR	775	9	NR	905	0	NR
390	0	NR	520	419	NR	650	441	NR	780	8	NR	910	0	NR
395	0	NR	525	460	NR	655	388	NR	785	7	NR	915	0	NR
400	1	NR	530	492	NR	660	338	NR	790	6	NR	920	0	NR
405	3	NR	535	524	NR	665	294	NR	795	5	NR	925	0	NR
410	7	NR	540	553	NR	670	253	NR	800	4	NR	930	0	NR
415	15	NR	545	588	NR	675	218	NR	805	4	NR	935	0	NR
420	31	NR	550	625	NR	680	188	NR	810	3	NR	940	0	NR
425	60	NR	555	670	NR	685	161	NR	815	3	NR	945	0	NR
430	107	NR	560	723	NR	690	139	NR	820	3	NR	950	0	NR
435	183	NR	565	780	NR	695	118	NR	825	2	NR	955	0	NR
440	289	NR	570	837	NR	700	100	NR	830	2	NR	960	0	NR
445	460	NR	575	894	NR	705	85	NR	835	2	NR	965	0	NR
450	646	NR	580	942	NR	710	73	NR	840	1	NR	970	0	NR
455	561	NR	585	976	NR	715	62	NR	845	1	NR	975	0	NR
460	331	NR	590	998	NR	720	53	NR	850	1	NR	980	0	NR
465	238	NR	595	1000	NR	725	45	NR	855	1	NR	985	0	NR
470	178	NR	600	990	NR	730	39	NR	860	1	NR	990	0	NR
475	120	NR	605	962	NR	735	33	NR	865	1	NR	995	0	NR
480	96	NR	610	925	NR	740	28	NR	870	1	NR	1000	0	NR
485	95	NR	615	873	NR	745	24	NR	875	1	NR			

**Summary**

$R_f = 74.6$   
 $R_g = 94$   
 $CIE R_a = 71.7$   
 $R_9 = -34.8$

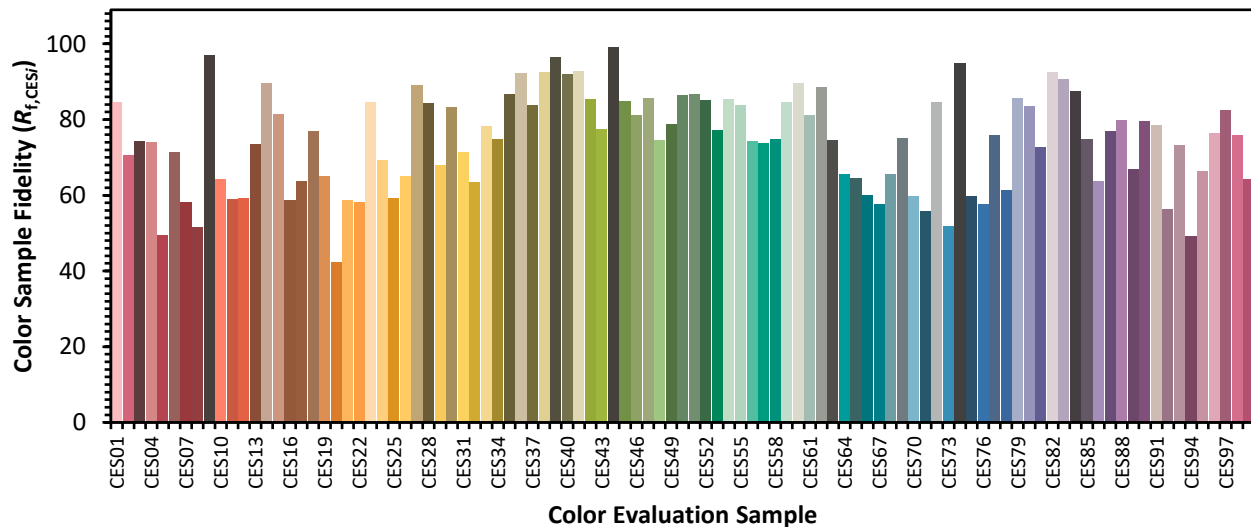


**Color Vector Graphics**



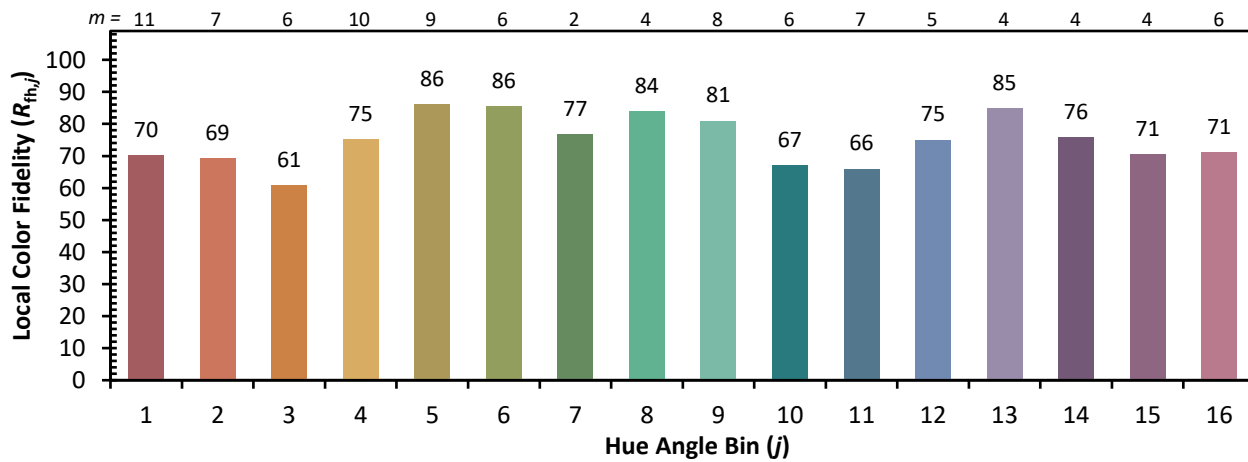
Individual Sample Fidelity Index ( $R_{f,i}$ )

CES01 = 86	CES26 = 65	CES51 = 87	CES76 = 58
CES02 = 62	CES27 = 89	CES52 = 85	CES77 = 76
CES03 = 31	CES28 = 84	CES53 = 77	CES78 = 61
CES04 = 71	CES29 = 68	CES54 = 85	CES79 = 86
CES05 = 49	CES30 = 83	CES55 = 84	CES80 = 83
CES06 = 51	CES31 = 71	CES56 = 74	CES81 = 73
CES07 = 41	CES32 = 64	CES57 = 74	CES82 = 93
CES08 = 40	CES33 = 78	CES58 = 75	CES83 = 91
CES09 = 29	CES34 = 75	CES59 = 85	CES84 = 88
CES10 = 76	CES35 = 87	CES60 = 90	CES85 = 75
CES11 = 59	CES36 = 92	CES61 = 81	CES86 = 64
CES12 = 65	CES37 = 84	CES62 = 89	CES87 = 77
CES13 = 43	CES38 = 92	CES63 = 75	CES88 = 80
CES14 = 74	CES39 = 96	CES64 = 65	CES89 = 67
CES15 = 71	CES40 = 92	CES65 = 64	CES90 = 80
CES16 = 47	CES41 = 93	CES66 = 60	CES91 = 78
CES17 = 50	CES42 = 86	CES67 = 58	CES92 = 56
CES18 = 56	CES43 = 77	CES68 = 66	CES93 = 73
CES19 = 73	CES44 = 99	CES69 = 75	CES94 = 49
CES20 = 66	CES45 = 85	CES70 = 60	CES95 = 66
CES21 = 87	CES46 = 81	CES71 = 56	CES96 = 76
CES22 = 79	CES47 = 86	CES72 = 85	CES97 = 82
CES23 = 92	CES48 = 75	CES73 = 52	CES98 = 76
CES24 = 91	CES49 = 79	CES74 = 95	CES99 = 64
CES25 = 73	CES50 = 86	CES75 = 60	





Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)