

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: P869102

Luminaire Tested: **EMM2-HSN-SA3B-740-U-T5R**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P869102
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA3B-740-U-T5R
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 70CRI 4000K
FITXURE w/ TYPE V ROUND DISTRIBUTION OPTIC
Light Source: (30) 4000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

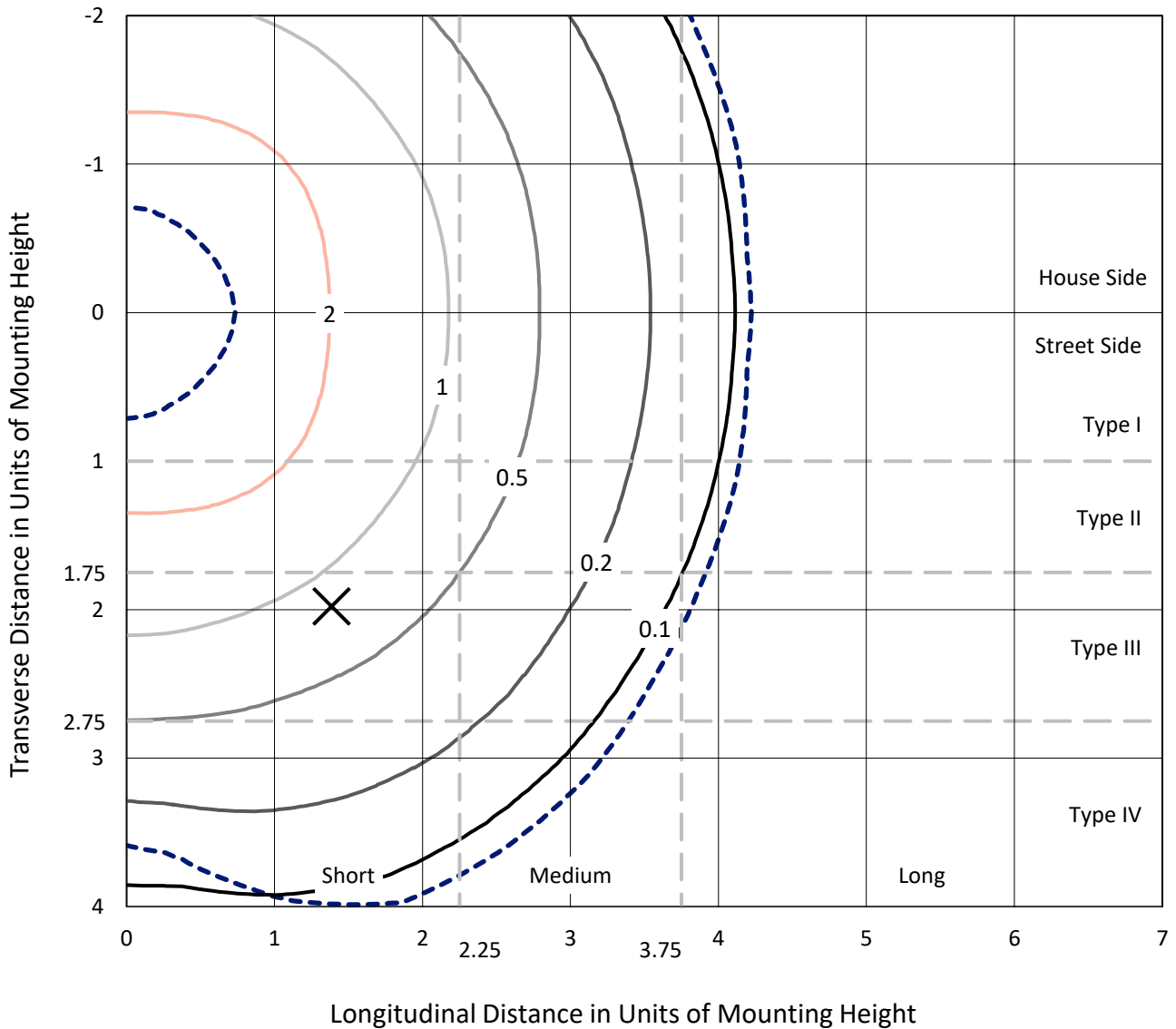
Lumens per Lamp: N/A
Luminaire Lumens: 19540 lumens
Efficiency: N/A
Efficacy: 145.8 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

Input Watts (W): 134
Input Voltage (V): 120
Input Current (A_{in}): 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

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 CATALOG NUMBER: EMM2-HSN-SA3B-740-U-T5R

Iso-Footcandle Lines of Horizontal Illumination

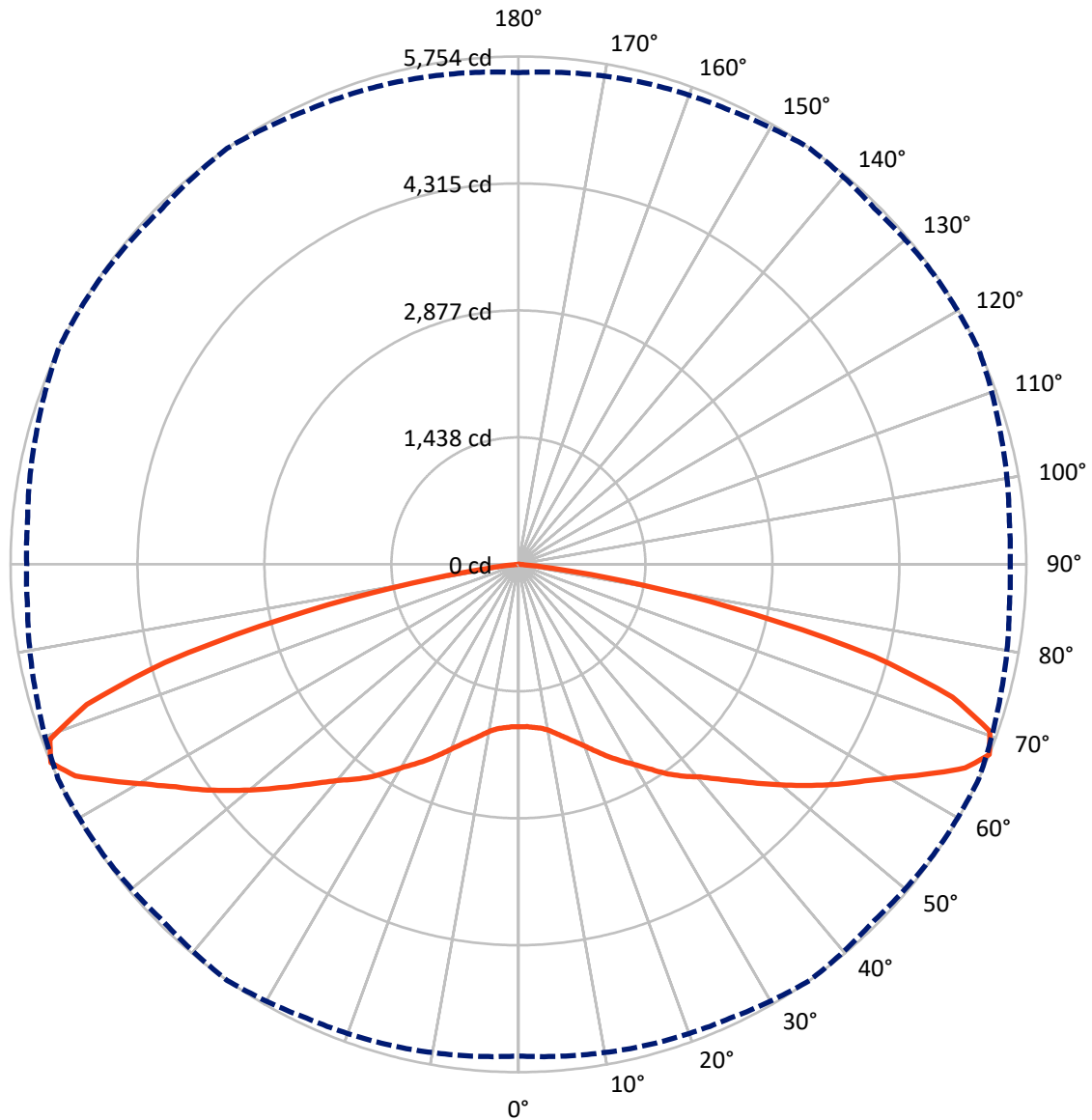
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.6 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



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

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FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	9770.0	0.0	9770.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	9770.0	0.0	9770.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	19540.0	0.0	19540.0
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	179.0	0.9
10°-20°	586.6	3.0
20°-30°	1121.2	5.7
30°-40°	1811.8	9.3
40°-50°	2651.9	13.6
50°-60°	3802.8	19.5
60°-70°	5329.9	27.3
70°-80°	3760.8	19.2
80°-90°	296.1	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°	19540.0	100.0
0°-180°	19540.0	100.0



REPORT NUMBER: P869102

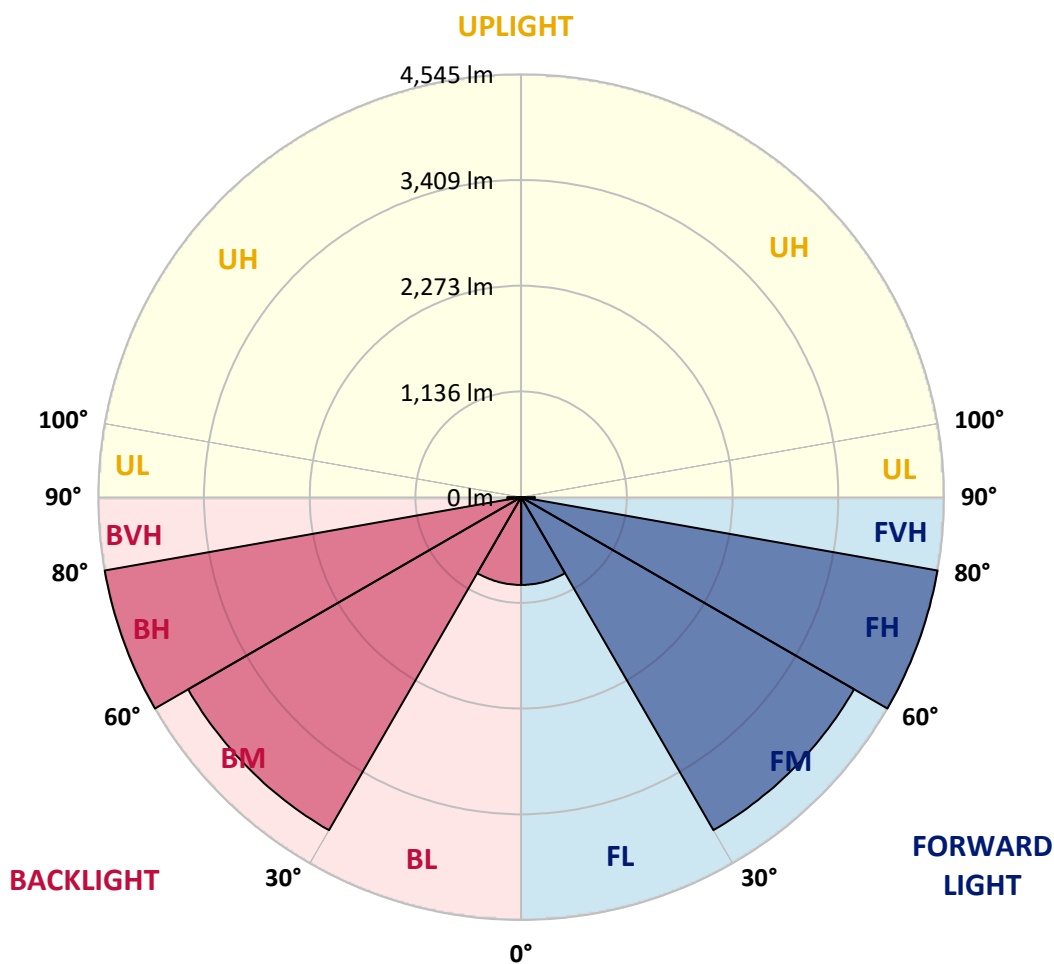
CATALOG NUMBER: EMM2-HSN-SA3B-740-U-T5R

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	943.4	4.8			
FM (30°-60°)	4133.3	21.2			
FH (60°-80°)	4545.3	23.3			G2/5000
FVH (80°-90°)	148.0	0.8			G2/225
BL (0°-30°)	943.4	4.8	B2/1000		
BM (30°-60°)	4133.3	21.2	B3/5000		
BH (60°-80°)	4545.3	23.3	B4/5000		G2/5000
BVH (80°-90°)	148.0	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





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1840.6	1840.6	1840.6	1840.6	1840.6	1840.6	1840.6	1840.6	1840.6	1840.6	1840.6
2.5°	1852.0	1848.2	1844.4	1844.4	1840.6	1844.4	1840.6	1844.4	1840.6	1840.6	1840.6
5°	1863.4	1859.6	1859.6	1859.6	1855.8	1855.8	1855.8	1855.8	1852.0	1848.2	1852.0
7.5°	1874.8	1874.8	1871.0	1878.6	1874.8	1878.6	1878.6	1882.5	1874.8	1871.0	1874.8
10°	1905.3	1905.3	1905.3	1912.9	1912.9	1924.3	1924.3	1928.1	1924.3	1916.7	1916.7
12.5°	1969.9	1966.1	1966.1	1966.1	1973.7	1981.3	1988.9	1988.9	1985.1	1973.7	1973.7
15°	2042.2	2049.8	2042.2	2038.4	2042.2	2049.8	2057.4	2057.4	2053.6	2049.8	2049.8
17.5°	2129.6	2133.4	2125.8	2118.2	2118.2	2129.6	2133.4	2133.4	2129.6	2122.0	2122.0
20°	2205.7	2209.5	2209.5	2205.7	2209.5	2217.1	2220.9	2224.7	2213.3	2201.9	2201.9
22.5°	2270.4	2274.2	2281.8	2297.0	2312.2	2319.8	2316.0	2316.0	2297.0	2285.6	2281.8
25°	2350.2	2361.6	2376.8	2395.8	2422.5	2441.5	2433.9	2418.7	2403.5	2380.6	2376.8
27.5°	2506.1	2506.1	2490.9	2498.5	2528.9	2548.0	2540.4	2528.9	2498.5	2483.3	2479.5
30°	2627.8	2627.8	2627.8	2620.2	2639.2	2662.1	2654.4	2635.4	2620.2	2612.6	2612.6
32.5°	2745.7	2738.1	2749.5	2764.7	2772.3	2779.9	2779.9	2764.7	2738.1	2726.7	2726.7
35°	2856.0	2863.6	2875.0	2897.8	2916.8	2905.4	2886.4	2875.0	2848.4	2825.6	2825.6
37.5°	2962.5	2970.1	2981.5	3015.7	3046.1	3042.3	3019.5	2989.1	2954.9	2935.9	2924.5
40°	3038.5	3042.3	3072.8	3126.0	3167.8	3183.1	3164.0	3122.2	3069.0	3030.9	3034.7
42.5°	3129.8	3137.4	3186.9	3262.9	3323.8	3346.6	3320.0	3262.9	3186.9	3137.4	3137.4
45°	3262.9	3266.7	3331.4	3426.4	3506.3	3544.3	3506.3	3426.4	3327.6	3278.1	3274.3
47.5°	3396.0	3407.4	3479.7	3593.8	3711.7	3757.3	3715.5	3612.8	3494.9	3434.0	3426.4
50°	3548.1	3555.7	3643.2	3799.1	3932.2	3993.1	3939.8	3810.5	3681.2	3605.2	3609.0
52.5°	3696.4	3719.3	3837.2	4000.7	4160.4	4228.9	4152.8	4012.1	3875.2	3802.9	3799.1
55°	3917.0	3943.6	4046.3	4228.9	4396.2	4472.2	4400.0	4244.1	4095.8	4015.9	4000.7
57.5°	4194.6	4209.8	4301.1	4487.5	4628.2	4700.4	4658.6	4514.1	4373.4	4274.5	4255.5
60°	4510.3	4525.5	4597.7	4787.9	4902.0	4955.2	4940.0	4856.3	4761.3	4715.6	4704.2
62.5°	4959.0	4962.8	5000.9	5111.1	5225.2	5248.0	5210.0	5191.0	5221.4	5172.0	5183.4
65°	5472.4	5472.4	5461.0	5476.2	5563.7	5537.1	5510.4	5594.1	5578.9	5495.2	5480.0
67.5°	5571.3	5594.1	5639.7	5674.0	5753.8	5704.4	5738.6	5753.8	5658.8	5582.7	5571.3
70°	4985.6	5012.3	5267.1	5423.0	5666.4	5712.0	5601.7	5544.7	5438.2	5297.5	5259.5
72.5°	3399.8	3532.9	4266.9	4768.9	5141.6	5198.6	5137.8	5065.5	4852.5	4742.3	4666.2
75°	2715.3	2787.5	3441.7	3936.0	4156.6	4152.8	3909.4	3829.6	3662.2	3647.0	3662.2
77.5°	1658.1	1673.3	2316.0	2703.9	2730.5	2715.3	2616.4	2555.6	2578.4	2464.3	2483.3
80°	505.8	551.4	874.7	1319.6	1418.5	1372.9	1353.8	1376.7	1399.5	1433.7	1486.9
82.5°	102.7	129.3	174.9	380.3	433.5	429.7	425.9	471.6	513.4	532.4	646.5
85°	11.4	11.4	15.2	30.4	64.6	102.7	106.5	95.1	144.5	140.7	98.9
87.5°	3.8	3.8	3.8	3.8	3.8	7.6	7.6	7.6	7.6	7.6	7.6
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: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-740-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-5
 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-40-740-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 3915
 CIE u': 0.2262
 CIE v': 0.5044
 Duv: 0.0010
 CIE x: 0.3850
 CIE y: 0.3816
 CIE z: 0.2334
 Peak Wavelength (nm): 449
 Dominant Wavelength (nm): 578
 Purity: 30.05482
 R_f: 73.2
 R_g: 93.9

CRI (Ra):	71.0		
R1:	67.6	R9:	-38.4
R2:	78.3	R10:	48.9
R3:	87.1	R11:	65.3
R4:	69.7	R12:	40.4
R5:	67.4	R13:	69.3
R6:	69.3	R14:	92.6
R7:	79.7	R15:	59.9
R8:	48.7		



Test Conditions

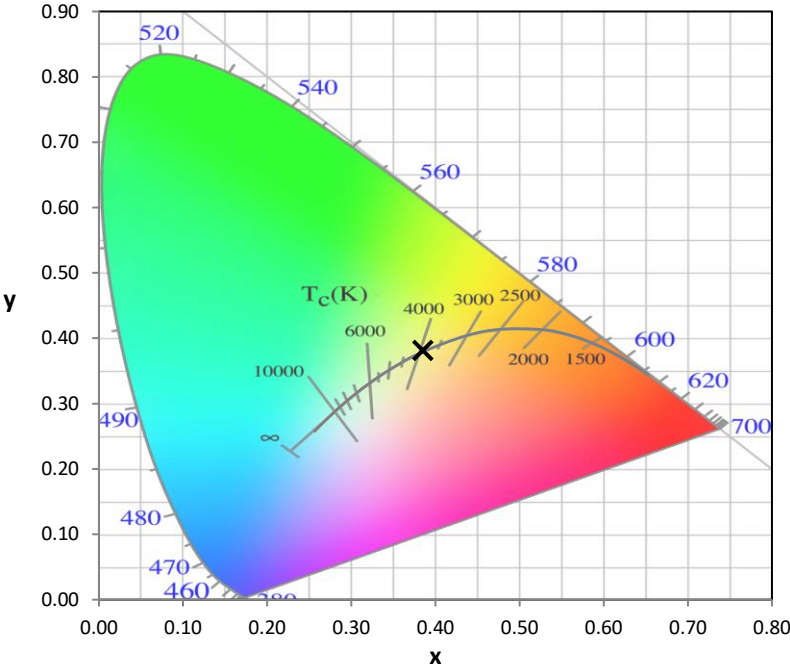
Stabilization Time: 21M
 Operation Time: 1H 21M
 Sphere Temperature (°C): 24.2

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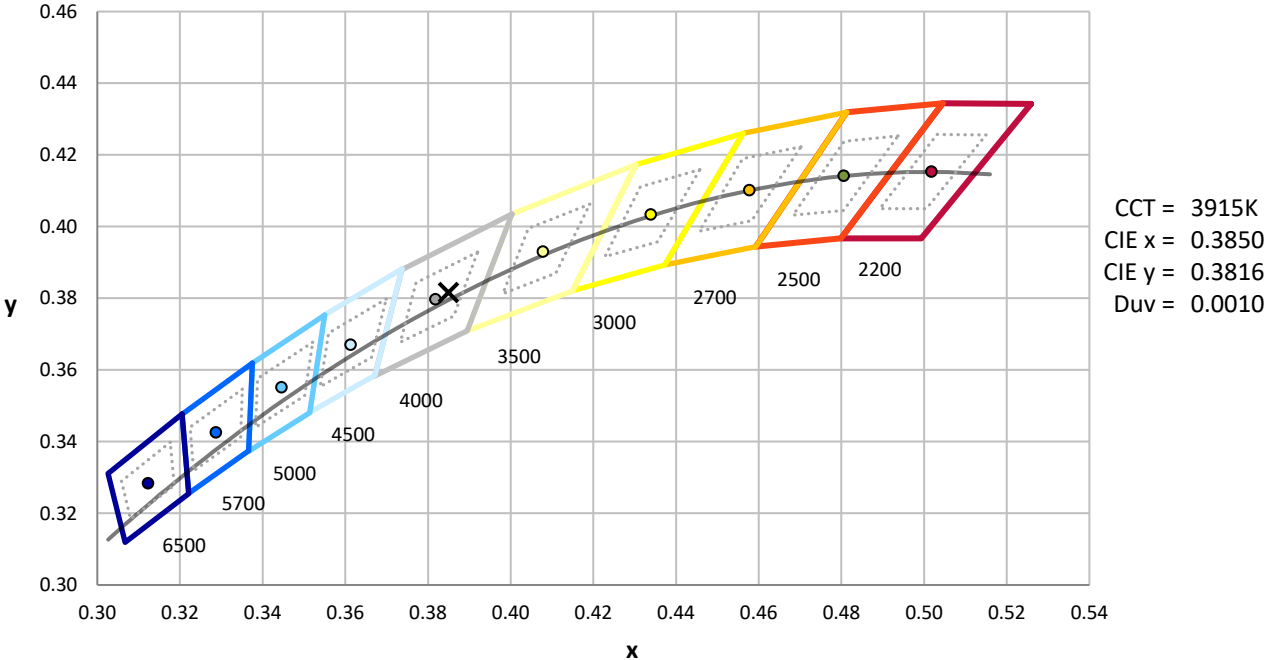
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



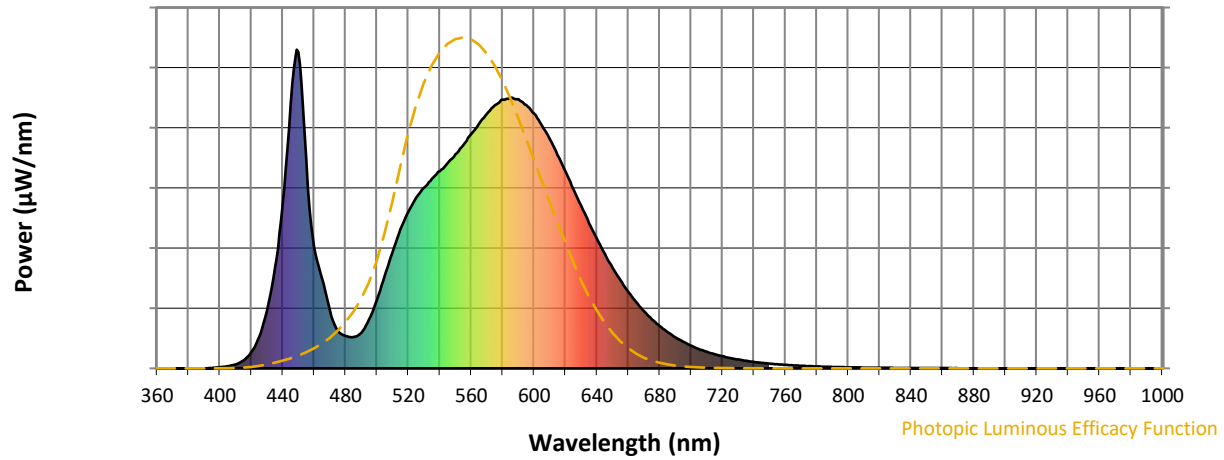
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 4-step quadrangle

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Photopic Flux vs. Wavelength

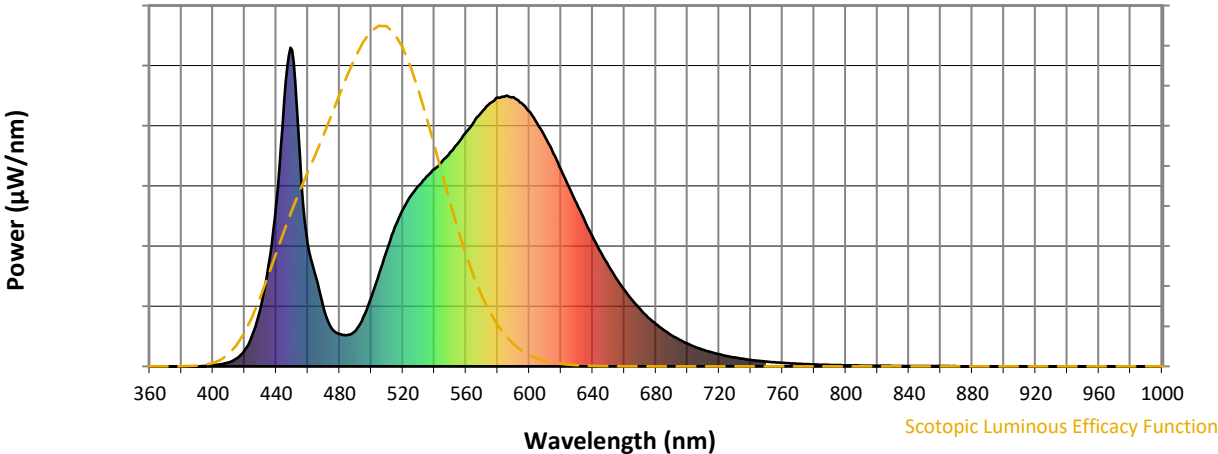


Photopic Lumens: NR

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	112	NR	620	618	NR	750	15	NR	880	0	NR
365	0	NR	495	153	NR	625	563	NR	755	13	NR	885	0	NR
370	0	NR	500	216	NR	630	510	NR	760	11	NR	890	0	NR
375	0	NR	505	291	NR	635	456	NR	765	9	NR	895	0	NR
380	0	NR	510	366	NR	640	407	NR	770	8	NR	900	0	NR
385	0	NR	515	436	NR	645	359	NR	775	7	NR	905	0	NR
390	0	NR	520	492	NR	650	316	NR	780	6	NR	910	0	NR
395	2	NR	525	536	NR	655	277	NR	785	5	NR	915	0	NR
400	4	NR	530	567	NR	660	240	NR	790	4	NR	920	0	NR
405	7	NR	535	596	NR	665	208	NR	795	4	NR	925	0	NR
410	12	NR	540	619	NR	670	179	NR	800	3	NR	930	0	NR
415	25	NR	545	644	NR	675	154	NR	805	3	NR	935	0	NR
420	51	NR	550	671	NR	680	133	NR	810	3	NR	940	0	NR
425	100	NR	555	701	NR	685	114	NR	815	2	NR	945	0	NR
430	180	NR	560	735	NR	690	98	NR	820	2	NR	950	0	NR
435	315	NR	565	768	NR	695	83	NR	825	2	NR	955	0	NR
440	514	NR	570	798	NR	700	71	NR	830	1	NR	960	0	NR
445	828	NR	575	825	NR	705	61	NR	835	1	NR	965	0	NR
450	992	NR	580	843	NR	710	52	NR	840	1	NR	970	0	NR
455	652	NR	585	848	NR	715	44	NR	845	1	NR	975	0	NR
460	382	NR	590	844	NR	720	38	NR	850	1	NR	980	0	NR
465	282	NR	595	826	NR	725	32	NR	855	1	NR	985	0	NR
470	180	NR	600	800	NR	730	28	NR	860	1	NR	990	0	NR
475	119	NR	605	762	NR	735	24	NR	865	1	NR	995	0	NR
480	101	NR	610	719	NR	740	20	NR	870	1	NR	1000	0	NR
485	98	NR	615	669	NR	745	17	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR S/P: 1.49

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	112	NR	620	618	NR	750	15	NR	880	0	NR
365	0	NR	495	153	NR	625	563	NR	755	13	NR	885	0	NR
370	0	NR	500	216	NR	630	510	NR	760	11	NR	890	0	NR
375	0	NR	505	291	NR	635	456	NR	765	9	NR	895	0	NR
380	0	NR	510	366	NR	640	407	NR	770	8	NR	900	0	NR
385	0	NR	515	436	NR	645	359	NR	775	7	NR	905	0	NR
390	0	NR	520	492	NR	650	316	NR	780	6	NR	910	0	NR
395	2	NR	525	536	NR	655	277	NR	785	5	NR	915	0	NR
400	4	NR	530	567	NR	660	240	NR	790	4	NR	920	0	NR
405	7	NR	535	596	NR	665	208	NR	795	4	NR	925	0	NR
410	12	NR	540	619	NR	670	179	NR	800	3	NR	930	0	NR
415	25	NR	545	644	NR	675	154	NR	805	3	NR	935	0	NR
420	51	NR	550	671	NR	680	133	NR	810	3	NR	940	0	NR
425	100	NR	555	701	NR	685	114	NR	815	2	NR	945	0	NR
430	180	NR	560	735	NR	690	98	NR	820	2	NR	950	0	NR
435	315	NR	565	768	NR	695	83	NR	825	2	NR	955	0	NR
440	514	NR	570	798	NR	700	71	NR	830	1	NR	960	0	NR
445	828	NR	575	825	NR	705	61	NR	835	1	NR	965	0	NR
450	992	NR	580	843	NR	710	52	NR	840	1	NR	970	0	NR
455	652	NR	585	848	NR	715	44	NR	845	1	NR	975	0	NR
460	382	NR	590	844	NR	720	38	NR	850	1	NR	980	0	NR
465	282	NR	595	826	NR	725	32	NR	855	1	NR	985	0	NR
470	180	NR	600	800	NR	730	28	NR	860	1	NR	990	0	NR
475	119	NR	605	762	NR	735	24	NR	865	1	NR	995	0	NR
480	101	NR	610	719	NR	740	20	NR	870	1	NR	1000	0	NR
485	98	NR	615	669	NR	745	17	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



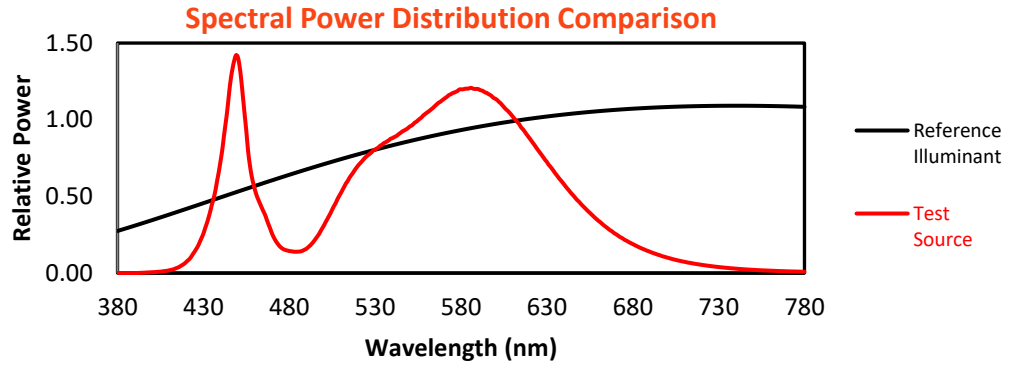
Melanopic Lumens: NR

M/P: 2.88

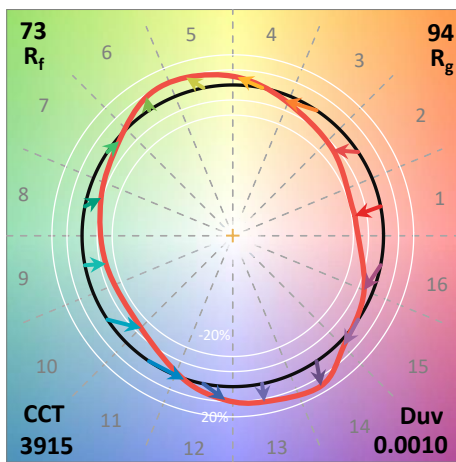
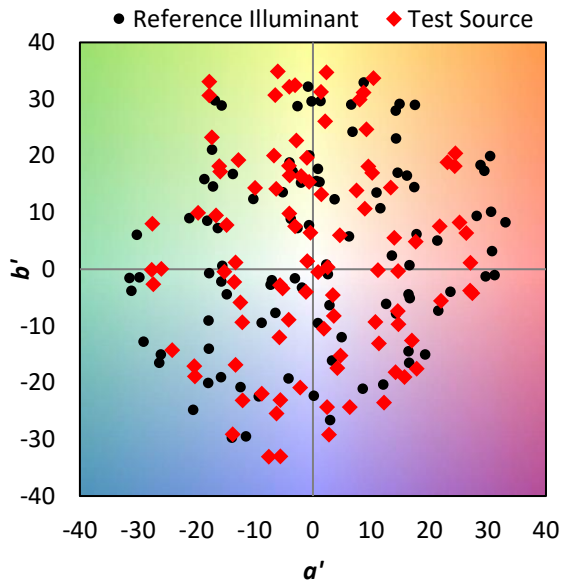
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	112	NR	620	618	NR	750	15	NR	880	0	NR
365	0	NR	495	153	NR	625	563	NR	755	13	NR	885	0	NR
370	0	NR	500	216	NR	630	510	NR	760	11	NR	890	0	NR
375	0	NR	505	291	NR	635	456	NR	765	9	NR	895	0	NR
380	0	NR	510	366	NR	640	407	NR	770	8	NR	900	0	NR
385	0	NR	515	436	NR	645	359	NR	775	7	NR	905	0	NR
390	0	NR	520	492	NR	650	316	NR	780	6	NR	910	0	NR
395	2	NR	525	536	NR	655	277	NR	785	5	NR	915	0	NR
400	4	NR	530	567	NR	660	240	NR	790	4	NR	920	0	NR
405	7	NR	535	596	NR	665	208	NR	795	4	NR	925	0	NR
410	12	NR	540	619	NR	670	179	NR	800	3	NR	930	0	NR
415	25	NR	545	644	NR	675	154	NR	805	3	NR	935	0	NR
420	51	NR	550	671	NR	680	133	NR	810	3	NR	940	0	NR
425	100	NR	555	701	NR	685	114	NR	815	2	NR	945	0	NR
430	180	NR	560	735	NR	690	98	NR	820	2	NR	950	0	NR
435	315	NR	565	768	NR	695	83	NR	825	2	NR	955	0	NR
440	514	NR	570	798	NR	700	71	NR	830	1	NR	960	0	NR
445	828	NR	575	825	NR	705	61	NR	835	1	NR	965	0	NR
450	992	NR	580	843	NR	710	52	NR	840	1	NR	970	0	NR
455	652	NR	585	848	NR	715	44	NR	845	1	NR	975	0	NR
460	382	NR	590	844	NR	720	38	NR	850	1	NR	980	0	NR
465	282	NR	595	826	NR	725	32	NR	855	1	NR	985	0	NR
470	180	NR	600	800	NR	730	28	NR	860	1	NR	990	0	NR
475	119	NR	605	762	NR	735	24	NR	865	1	NR	995	0	NR
480	101	NR	610	719	NR	740	20	NR	870	1	NR	1000	0	NR
485	98	NR	615	669	NR	745	17	NR	875	0	NR			

Summary

$R_f = 73.2$
 $R_g = 93.9$
 CIE $R_a = 71.0$
 $R_g = -38.4$

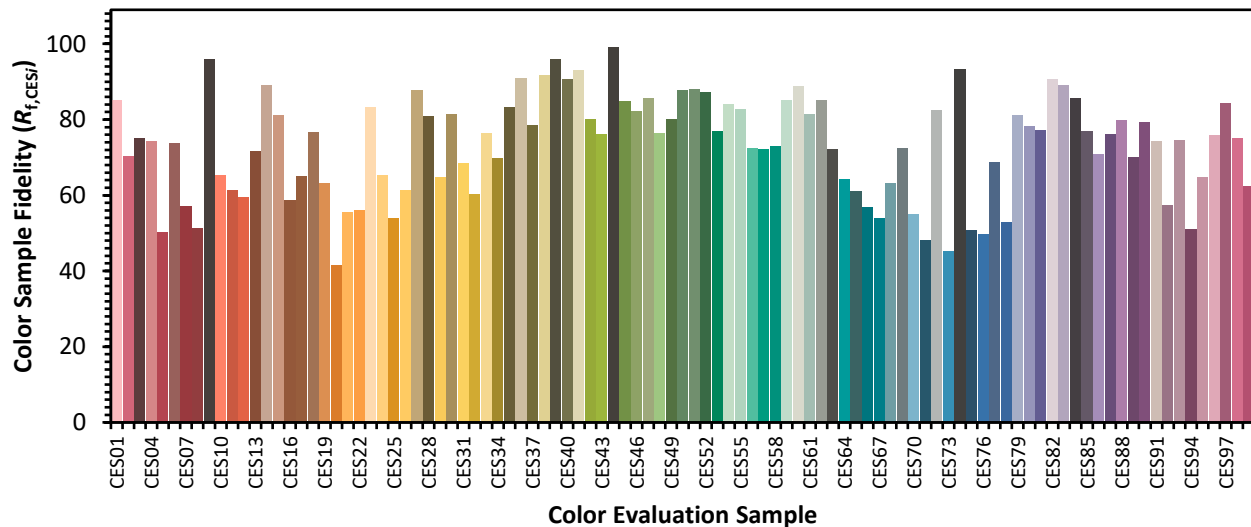


Color Vector Graphics

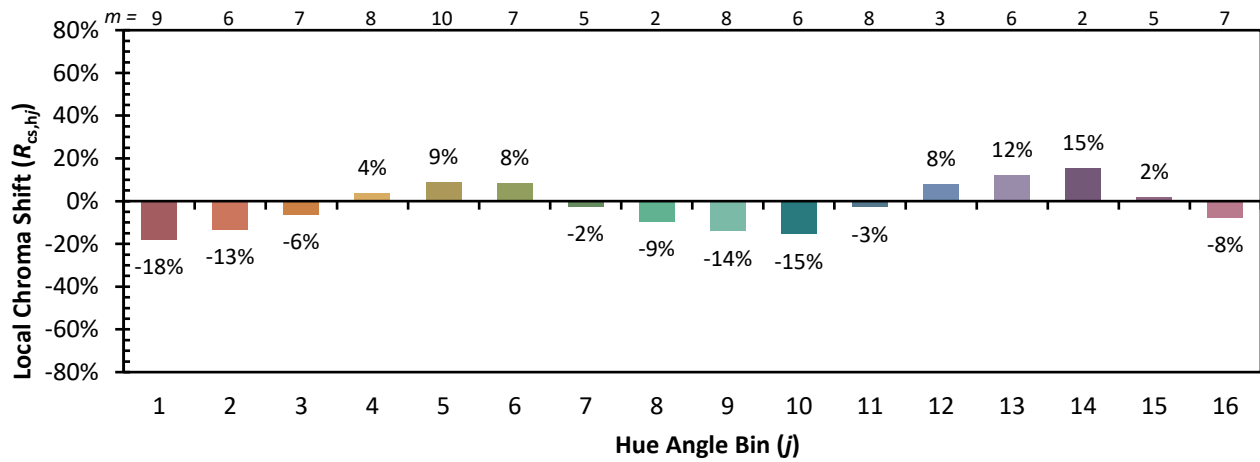


Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 85	CES26 = 61	CES51 = 88	CES76 = 50
CES02 = 61	CES27 = 88	CES52 = 87	CES77 = 69
CES03 = 30	CES28 = 81	CES53 = 77	CES78 = 53
CES04 = 70	CES29 = 65	CES54 = 84	CES79 = 81
CES05 = 47	CES30 = 81	CES55 = 83	CES80 = 78
CES06 = 50	CES31 = 69	CES56 = 73	CES81 = 77
CES07 = 40	CES32 = 60	CES57 = 72	CES82 = 91
CES08 = 39	CES33 = 76	CES58 = 73	CES83 = 89
CES09 = 29	CES34 = 70	CES59 = 85	CES84 = 86
CES10 = 74	CES35 = 83	CES60 = 89	CES85 = 77
CES11 = 57	CES36 = 91	CES61 = 81	CES86 = 71
CES12 = 63	CES37 = 79	CES62 = 85	CES87 = 76
CES13 = 42	CES38 = 92	CES63 = 72	CES88 = 80
CES14 = 74	CES39 = 96	CES64 = 64	CES89 = 70
CES15 = 71	CES40 = 91	CES65 = 61	CES90 = 79
CES16 = 46	CES41 = 93	CES66 = 57	CES91 = 74
CES17 = 49	CES42 = 80	CES67 = 54	CES92 = 57
CES18 = 56	CES43 = 76	CES68 = 63	CES93 = 74
CES19 = 72	CES44 = 99	CES69 = 73	CES94 = 51
CES20 = 65	CES45 = 85	CES70 = 55	CES95 = 65
CES21 = 86	CES46 = 82	CES71 = 48	CES96 = 76
CES22 = 78	CES47 = 86	CES72 = 83	CES97 = 84
CES23 = 92	CES48 = 77	CES73 = 45	CES98 = 75
CES24 = 91	CES49 = 80	CES74 = 93	CES99 = 62
CES25 = 72	CES50 = 88	CES75 = 51	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)