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: P871391

Luminaire Tested: **EMM2-HSN-SA1A-840-U-T5W**

Issue Date: 09/05/2024

Report Generated By 670245763

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P871391
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	09/05/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-SA1A-840-U-T5W
Description:	EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 40W 80CRI 4000K FIXTURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC
Light Source:	(10) 4000K CCT, 80 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	4860 lumens
Efficiency:	N/A
Efficacy:	148.2 lumens/watt
Luminous Opening:	Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G1

Input Watts (W):	32.8
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	9.76%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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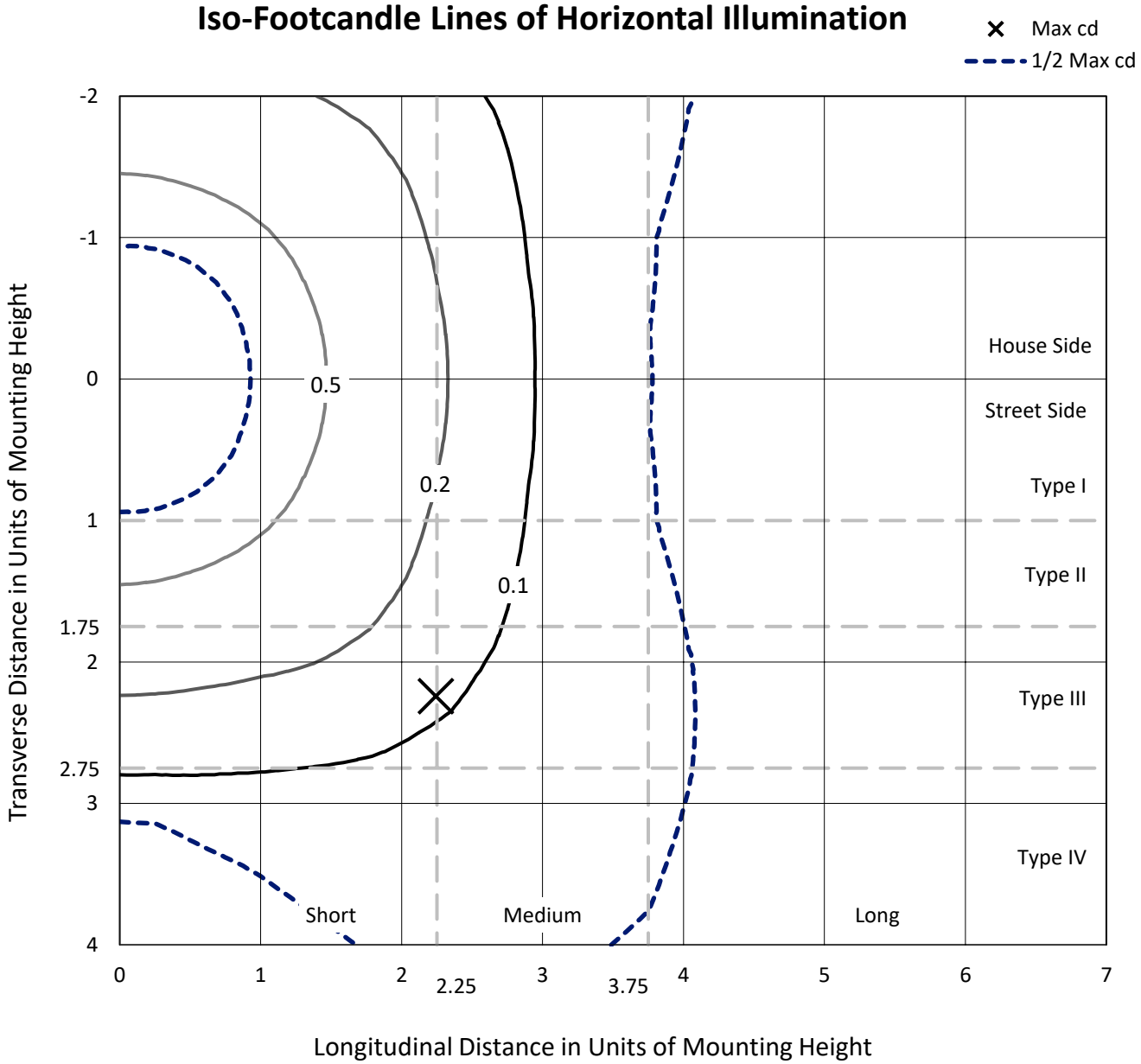
Scaled Data Report

REPORT NUMBER: P871391
CATALOG NUMBER: EMM2-HSN-SA1A-840-U-T5W

Iso-Footcandle Lines of Horizontal Illumination



Based on 20 foot mounting height. Maximum calculated value = 0.9 fc
Type V - Short - N/A

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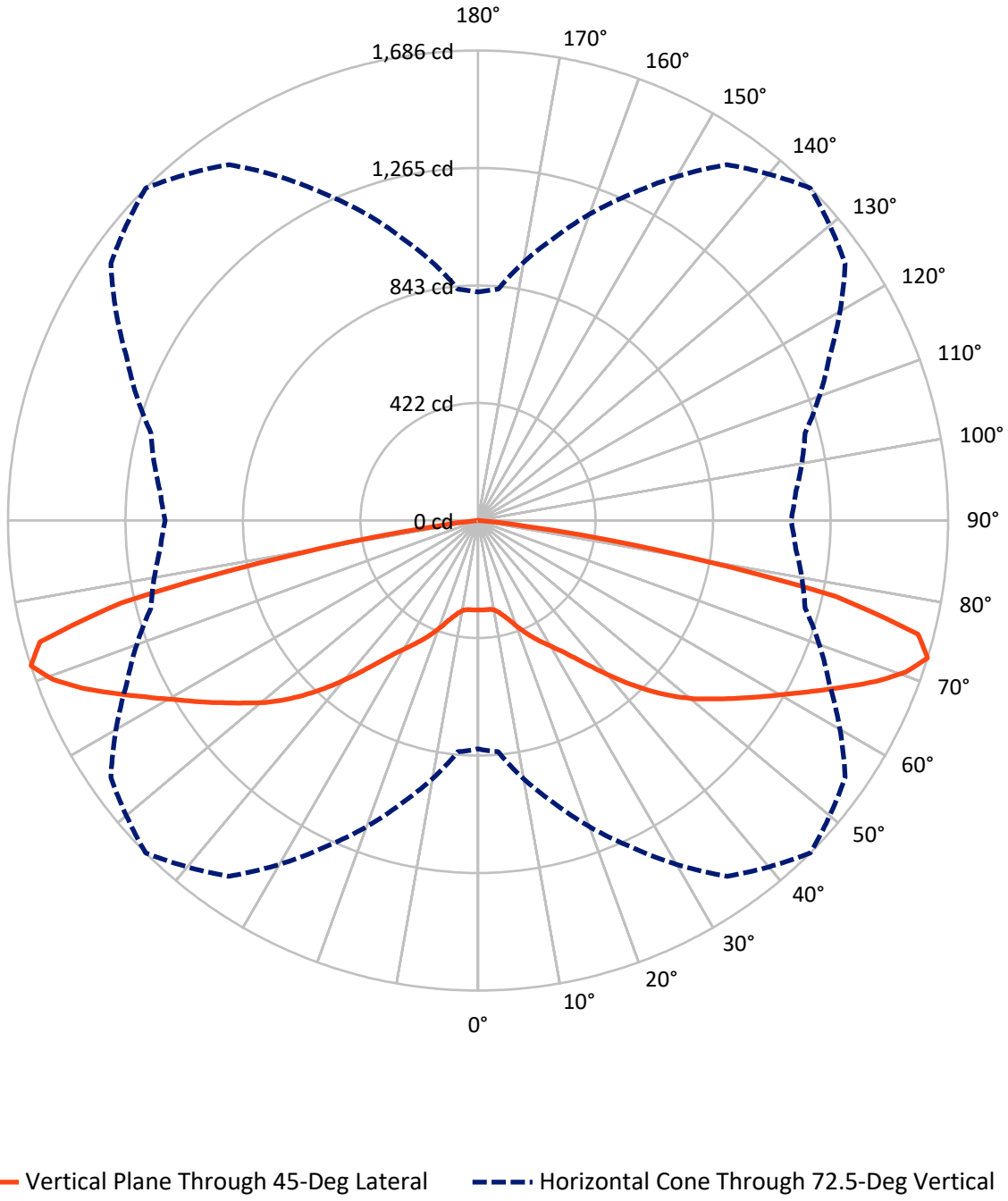
Luminous Intensity Polar Plot



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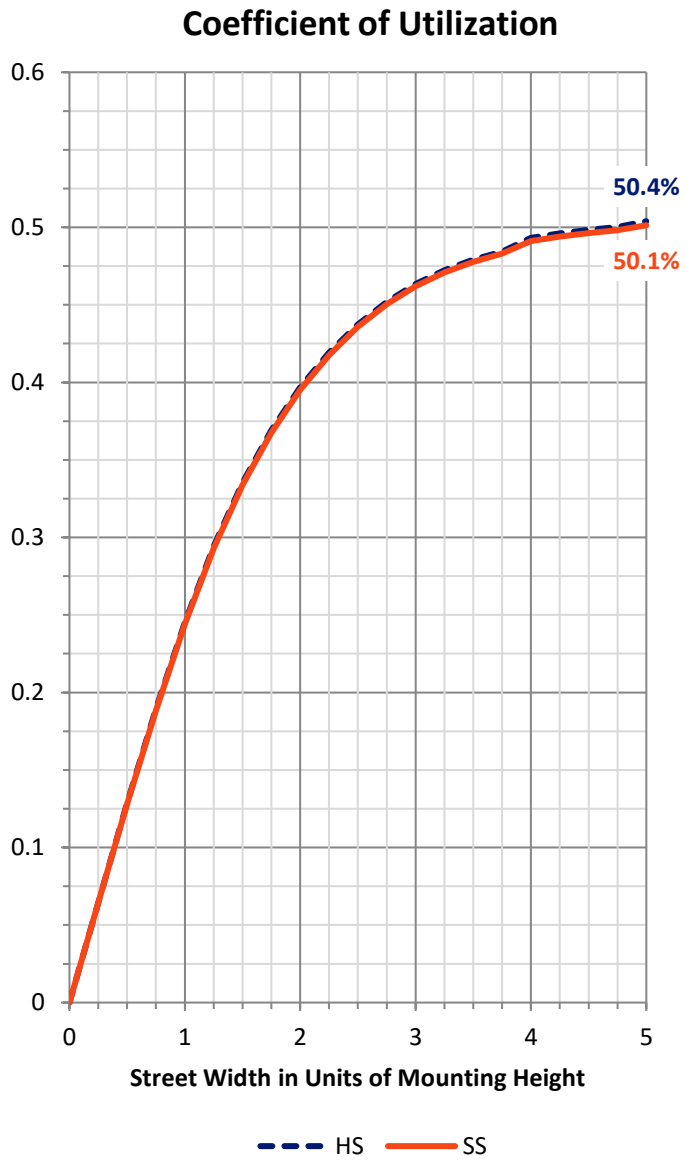
REPORT NUMBER: P871391
CATALOG NUMBER: EMM2-HSN-SA1A-840-U-T5W

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2430.0	0.0	2430.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	2430.0	0.0	2430.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	4860.0	0.0	4860.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	30.7	0.6
10°-20°	102.6	2.1
20°-30°	211.8	4.4
30°-40°	389.8	8.0
40°-50°	685.4	14.1
50°-60°	994.1	20.5
60°-70°	1295.9	26.7
70°-80°	1077.2	22.2
80°-90°	72.3	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°	4860.0	100.0
0°-180°	4860.0	100.0



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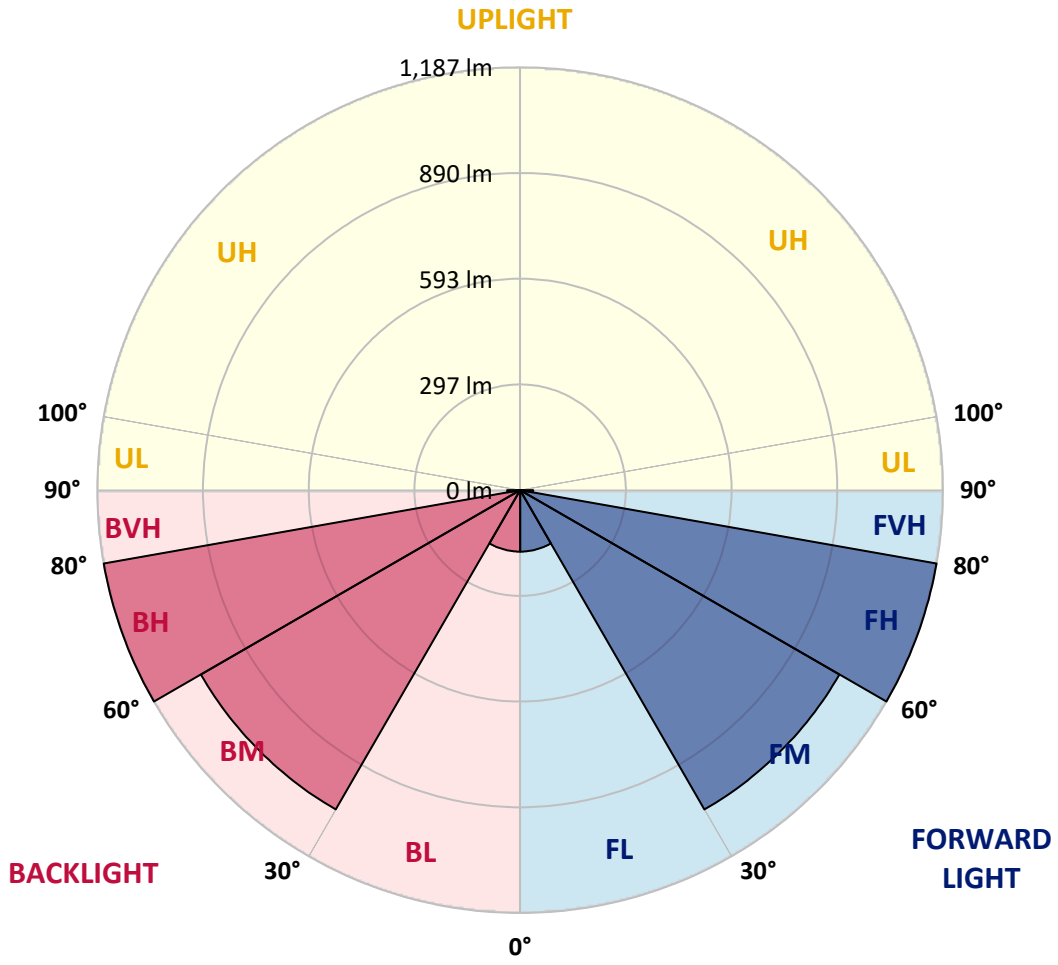
Scaled Data Report

REPORT NUMBER: P871391
CATALOG NUMBER: EMM2-HSN-SA1A-840-U-T5W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	172.6	3.6			
FM	(30°-60°)	1034.7	21.3			
FH	(60°-80°)	1186.6	24.4			G1/1800
FVH	(80°-90°)	36.2	0.7			G1/100
BL	(0°-30°)	172.6	3.6	B1/500		
BM	(30°-60°)	1034.7	21.3	B2/2500		
BH	(60°-80°)	1186.6	24.4	B3/2500		G1/1800
BVH	(80°-90°)	36.2	0.7			G1/100
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G1
Type V Short



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Scaled Data Report

REPORT NUMBER: P871391
CATALOG NUMBER: EMM2-HSN-SA1A-840-U-T5W

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	320.8	320.8	320.8	320.8	320.8	*320.8*	320.8	320.8	320.8	320.8	320.8
2.5°	319.8	320.3	320.3	320.3	320.8	*321.3*	321.8	322.4	323.4	323.9	323.9
5°	321.3	320.8	320.3	321.3	321.3	*321.3*	321.8	322.4	322.4	322.4	322.9
7.5°	319.8	320.3	319.8	319.8	321.3	*321.8*	321.3	320.8	320.8	321.3	321.3
10°	325.4	324.9	324.4	324.4	325.9	*326.4*	325.9	325.4	325.4	326.4	326.4
12.5°	338.0	339.0	336.0	336.0	338.0	*339.0*	337.5	337.0	337.5	338.5	338.5
15°	357.6	357.1	355.1	353.1	355.1	*356.6*	354.6	353.6	354.1	356.6	354.6
17.5°	379.3	379.8	377.8	375.7	377.3	*379.3*	376.2	373.7	374.2	375.2	374.2
20°	403.4	402.9	402.4	402.4	405.5	*408.0*	403.4	397.4	395.9	394.9	394.9
22.5°	421.1	422.6	423.1	427.6	434.7	*437.2*	431.1	423.1	417.0	414.0	412.0
25°	448.8	447.3	446.3	451.3	461.9	*466.4*	458.8	447.8	441.7	441.2	442.7
27.5°	474.0	474.0	476.0	481.0	491.1	*495.6*	489.1	478.0	475.0	475.0	473.5
30°	506.7	505.2	507.2	515.8	523.3	*526.3*	520.8	513.2	510.7	510.7	508.2
32.5°	545.0	545.5	548.5	554.0	561.6	*562.1*	560.1	556.6	555.1	553.5	556.1
35°	603.4	603.4	602.4	606.4	608.4	*609.4*	610.5	608.9	608.9	608.9	606.9
37.5°	675.9	671.9	671.4	667.9	665.4	*667.9*	672.4	677.4	681.5	679.0	677.9
40°	748.0	745.9	739.9	734.4	732.3	*733.4*	738.9	749.5	754.0	754.0	758.0
42.5°	825.5	821.5	813.9	807.4	801.9	*803.4*	808.4	821.5	831.6	836.1	834.1
45°	895.0	891.5	884.0	877.9	873.9	*873.4*	879.9	888.5	902.1	906.1	909.1
47.5°	954.5	951.9	945.4	939.4	940.9	*941.4*	943.4	950.9	962.0	967.6	967.1
50°	1002.8	1000.8	994.8	997.3	1001.3	*1005.3*	1002.8	1007.9	1014.9	1017.4	1019.4
52.5°	1047.1	1044.1	1040.1	1044.6	1055.2	*1063.3*	1064.8	1061.2	1063.3	1064.8	1063.3
55°	1091.0	1087.4	1086.4	1094.5	1110.6	*1125.7*	1124.2	1114.1	1111.6	1108.6	1107.1
57.5°	1126.7	1124.2	1128.2	1141.8	1173.1	*1193.2*	1186.7	1163.5	1153.4	1146.4	1144.4
60°	1149.4	1148.9	1158.0	1189.7	1237.0	*1265.2*	1254.7	1214.9	1192.2	1185.7	1182.6
62.5°	1161.5	1162.0	1178.1	1234.5	1310.1	*1348.3*	1329.7	1268.8	1233.5	1227.0	1228.0
65°	1172.6	1171.0	1192.2	1272.3	1389.1	*1441.0*	1415.8	1333.7	1282.4	1269.3	1269.3
67.5°	1180.6	1182.1	1213.9	1310.1	1466.2	*1540.2*	1503.5	1402.7	1334.7	1315.1	1312.6
70°	1078.9	1093.5	1192.7	1335.2	1527.1	*1627.9*	1579.5	1445.0	1336.8	1280.9	1275.3
72.5°	*819.5*	*833.1*	*1047.6*	*1290.4*	*1558.4*	*1686.3*	*1607.7*	*1391.2*	*1214.9*	*1143.9*	*1122.7*
75°	540.4	550.0	780.7	1127.2	1471.7	*1630.9*	1464.2	1198.2	956.5	864.3	869.9
77.5°	240.8	271.5	497.6	879.4	1212.4	*1312.6*	1116.7	817.5	584.3	494.6	485.0
80°	100.7	110.3	187.9	468.9	702.6	*672.4*	475.5	274.0	174.3	135.5	131.0
82.5°	29.2	30.2	37.3	81.1	143.0	*168.2*	101.2	51.4	48.9	38.8	35.8
85°	2.0	2.0	3.0	5.0	7.1	*11.6*	13.1	15.1	17.1	14.6	14.6
87.5°	1.0	1.0	1.0	1.5	1.5	*2.0*	1.5	1.5	1.5	1.5	1.5
90°	0.0	0.0	0.0	0.0	0.0	*0.0*	0.0	0.0	0.0	0.0	0.0

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LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-8

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-40-840-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-40-840-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

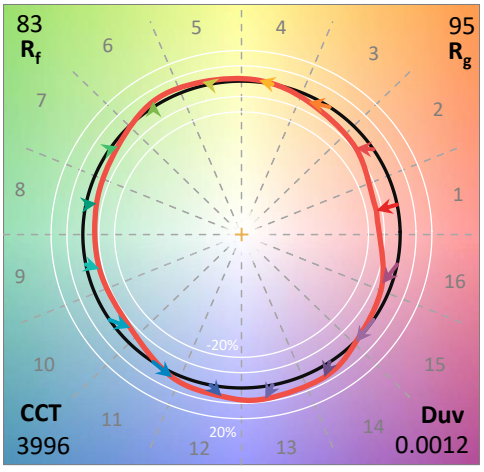
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-157-8
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	09/05/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Streetworks
Catalog Number:	**MEM2-HTN-SA-40-840-U-5WQ**
Description:	Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K):	3996
CIE u':	0.2245
CIE v':	0.5031
Duv:	0.0012
CIE x:	0.3815
CIE y:	0.3799
CIE z:	0.2386
Peak Wavelength (nm):	449
Dominant Wavelength (nm):	578
Purity:	28.49233
Rf:	82.6
Rg:	95.1

CRI (Ra):	80.6				
R1:	78.1	R9:	-5.8		
R2:	87.1	R10:	70.3		
R3:	94.5	R11:	78.7		
R4:	79.7	R12:	60.5		
R5:	78.7	R13:	80.2		
R6:	82.7	R14:	97.2		
R7:	84.3	R15:	70.6		
R8:	59.5				



Test Conditions

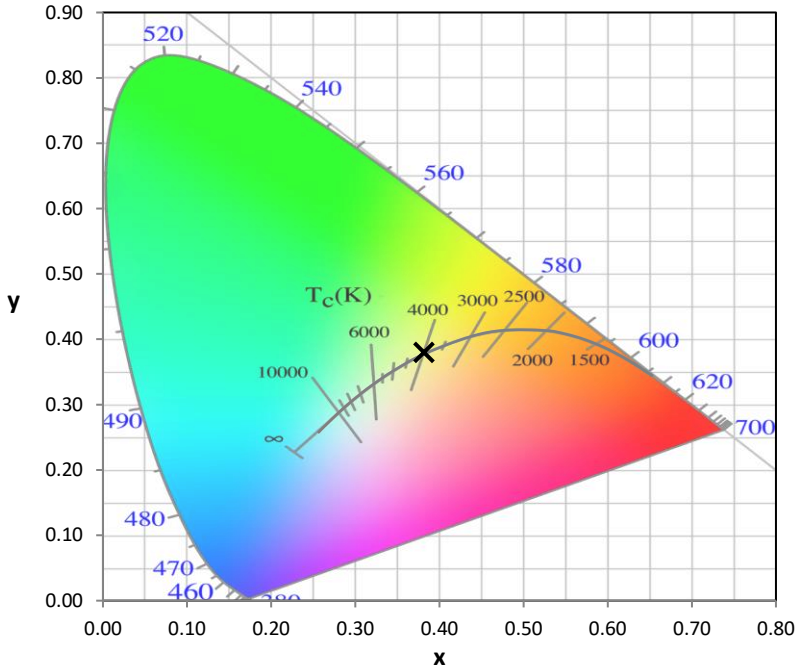
Stabilization Time:	29M
Operation Time:	1H 29M
Sphere Temperature (°C):	24.3

REPORT NUMBER: SP1-2407-157-8

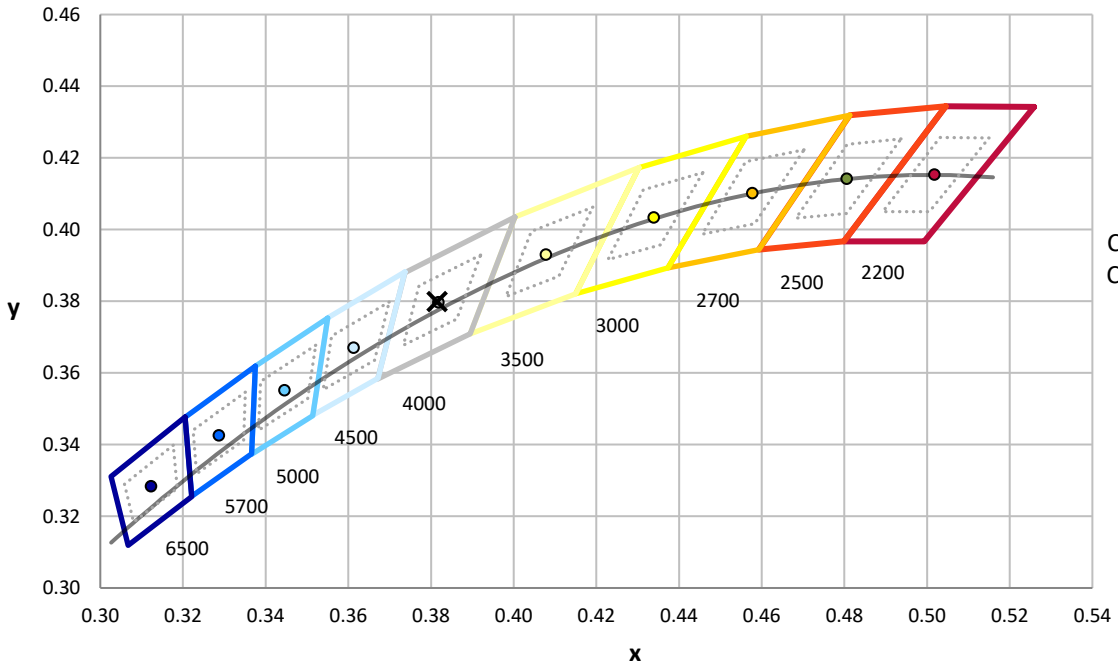
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-157-8

CIE 1931 Chromaticity Diagram



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

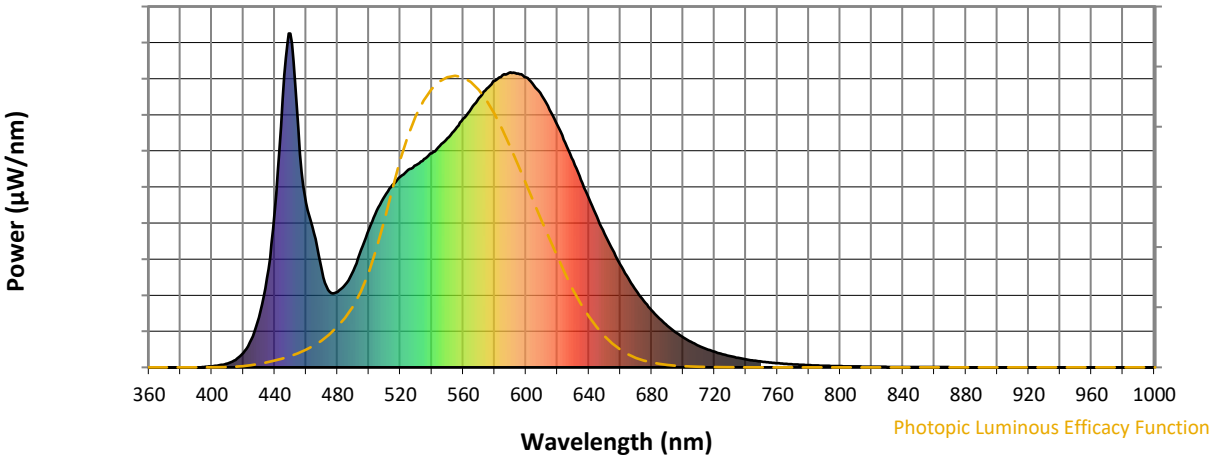


CCT = 3996K
CIE x = 0.3815
CIE y = 0.3799
Duv = 0.0012

Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-8

Photopic Flux vs. Wavelength

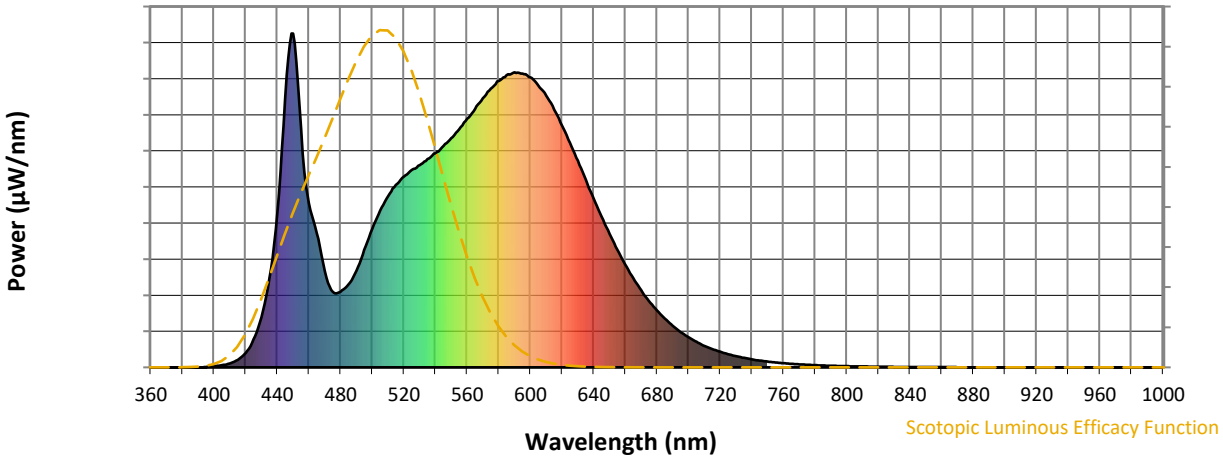


Photopic Lumens: NR

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	289	NR	620	725	NR	750	17	NR	880	0	NR
365	0	NR	495	351	NR	625	673	NR	755	15	NR	885	0	NR
370	0	NR	500	414	NR	630	619	NR	760	13	NR	890	0	NR
375	0	NR	505	470	NR	635	562	NR	765	11	NR	895	0	NR
380	0	NR	510	513	NR	640	506	NR	770	9	NR	900	0	NR
385	0	NR	515	546	NR	645	452	NR	775	8	NR	905	0	NR
390	0	NR	520	571	NR	650	400	NR	780	7	NR	910	0	NR
395	1	NR	525	592	NR	655	352	NR	785	6	NR	915	0	NR
400	3	NR	530	606	NR	660	307	NR	790	5	NR	920	0	NR
405	6	NR	535	624	NR	665	267	NR	795	4	NR	925	0	NR
410	12	NR	540	642	NR	670	231	NR	800	4	NR	930	0	NR
415	22	NR	545	663	NR	675	199	NR	805	3	NR	935	0	NR
420	44	NR	550	686	NR	680	171	NR	810	3	NR	940	0	NR
425	83	NR	555	713	NR	685	146	NR	815	2	NR	945	0	NR
430	150	NR	560	745	NR	690	125	NR	820	2	NR	950	0	NR
435	267	NR	565	774	NR	695	106	NR	825	2	NR	955	0	NR
440	466	NR	570	806	NR	700	90	NR	830	1	NR	960	0	NR
445	804	NR	575	835	NR	705	76	NR	835	1	NR	965	0	NR
450	1000	NR	580	858	NR	710	65	NR	840	1	NR	970	0	NR
455	715	NR	585	875	NR	715	55	NR	845	1	NR	975	0	NR
460	492	NR	590	884	NR	720	47	NR	850	1	NR	980	0	NR
465	402	NR	595	880	NR	725	40	NR	855	1	NR	985	0	NR
470	288	NR	600	868	NR	730	34	NR	860	1	NR	990	0	NR
475	226	NR	605	844	NR	735	28	NR	865	1	NR	995	0	NR
480	227	NR	610	814	NR	740	24	NR	870	0	NR	1000	0	NR
485	248	NR	615	771	NR	745	20	NR	875	0	NR			

REPORT NUMBER: SP1-2407-157-8

Scotopic Flux vs. Wavelength

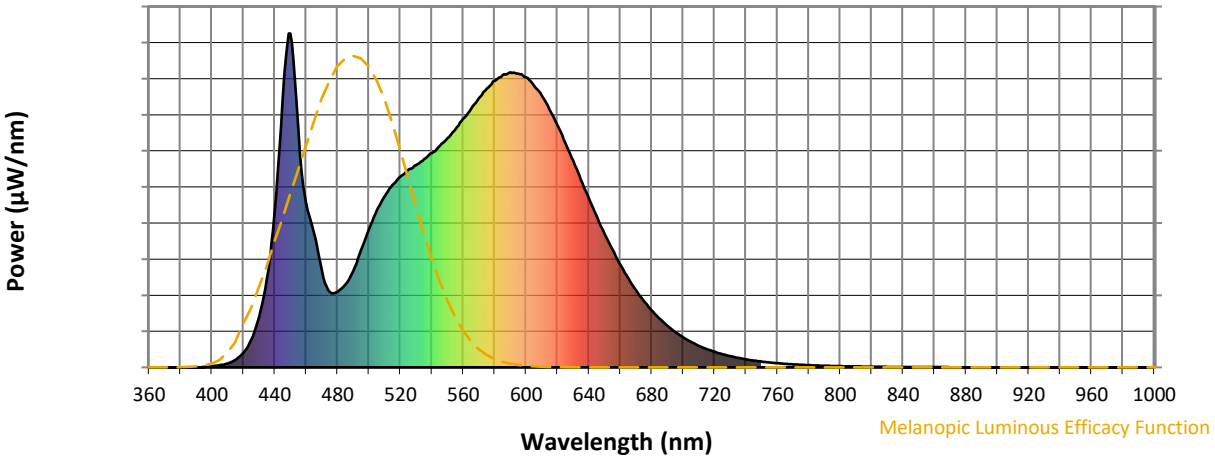


Scotopic Lumens: NR **S/P: 1.66**

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	289	NR	620	725	NR	750	17	NR	880	0	NR
365	0	NR	495	351	NR	625	673	NR	755	15	NR	885	0	NR
370	0	NR	500	414	NR	630	619	NR	760	13	NR	890	0	NR
375	0	NR	505	470	NR	635	562	NR	765	11	NR	895	0	NR
380	0	NR	510	513	NR	640	506	NR	770	9	NR	900	0	NR
385	0	NR	515	546	NR	645	452	NR	775	8	NR	905	0	NR
390	0	NR	520	571	NR	650	400	NR	780	7	NR	910	0	NR
395	1	NR	525	592	NR	655	352	NR	785	6	NR	915	0	NR
400	3	NR	530	606	NR	660	307	NR	790	5	NR	920	0	NR
405	6	NR	535	624	NR	665	267	NR	795	4	NR	925	0	NR
410	12	NR	540	642	NR	670	231	NR	800	4	NR	930	0	NR
415	22	NR	545	663	NR	675	199	NR	805	3	NR	935	0	NR
420	44	NR	550	686	NR	680	171	NR	810	3	NR	940	0	NR
425	83	NR	555	713	NR	685	146	NR	815	2	NR	945	0	NR
430	150	NR	560	745	NR	690	125	NR	820	2	NR	950	0	NR
435	267	NR	565	774	NR	695	106	NR	825	2	NR	955	0	NR
440	466	NR	570	806	NR	700	90	NR	830	1	NR	960	0	NR
445	804	NR	575	835	NR	705	76	NR	835	1	NR	965	0	NR
450	1000	NR	580	858	NR	710	65	NR	840	1	NR	970	0	NR
455	715	NR	585	875	NR	715	55	NR	845	1	NR	975	0	NR
460	492	NR	590	884	NR	720	47	NR	850	1	NR	980	0	NR
465	402	NR	595	880	NR	725	40	NR	855	1	NR	985	0	NR
470	288	NR	600	868	NR	730	34	NR	860	1	NR	990	0	NR
475	226	NR	605	844	NR	735	28	NR	865	1	NR	995	0	NR
480	227	NR	610	814	NR	740	24	NR	870	0	NR	1000	0	NR
485	248	NR	615	771	NR	745	20	NR	875	0	NR			

REPORT NUMBER: SP1-2407-157-8

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 3.37**

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	289	NR	620	725	NR	750	17	NR	880	0	NR
365	0	NR	495	351	NR	625	673	NR	755	15	NR	885	0	NR
370	0	NR	500	414	NR	630	619	NR	760	13	NR	890	0	NR
375	0	NR	505	470	NR	635	562	NR	765	11	NR	895	0	NR
380	0	NR	510	513	NR	640	506	NR	770	9	NR	900	0	NR
385	0	NR	515	546	NR	645	452	NR	775	8	NR	905	0	NR
390	0	NR	520	571	NR	650	400	NR	780	7	NR	910	0	NR
395	1	NR	525	592	NR	655	352	NR	785	6	NR	915	0	NR
400	3	NR	530	606	NR	660	307	NR	790	5	NR	920	0	NR
405	6	NR	535	624	NR	665	267	NR	795	4	NR	925	0	NR
410	12	NR	540	642	NR	670	231	NR	800	4	NR	930	0	NR
415	22	NR	545	663	NR	675	199	NR	805	3	NR	935	0	NR
420	44	NR	550	686	NR	680	171	NR	810	3	NR	940	0	NR
425	83	NR	555	713	NR	685	146	NR	815	2	NR	945	0	NR
430	150	NR	560	745	NR	690	125	NR	820	2	NR	950	0	NR
435	267	NR	565	774	NR	695	106	NR	825	2	NR	955	0	NR
440	466	NR	570	806	NR	700	90	NR	830	1	NR	960	0	NR
445	804	NR	575	835	NR	705	76	NR	835	1	NR	965	0	NR
450	1000	NR	580	858	NR	710	65	NR	840	1	NR	970	0	NR
455	715	NR	585	875	NR	715	55	NR	845	1	NR	975	0	NR
460	492	NR	590	884	NR	720	47	NR	850	1	NR	980	0	NR
465	402	NR	595	880	NR	725	40	NR	855	1	NR	985	0	NR
470	288	NR	600	868	NR	730	34	NR	860	1	NR	990	0	NR
475	226	NR	605	844	NR	735	28	NR	865	1	NR	995	0	NR
480	227	NR	610	814	NR	740	24	NR	870	0	NR	1000	0	NR
485	248	NR	615	771	NR	745	20	NR	875	0	NR			

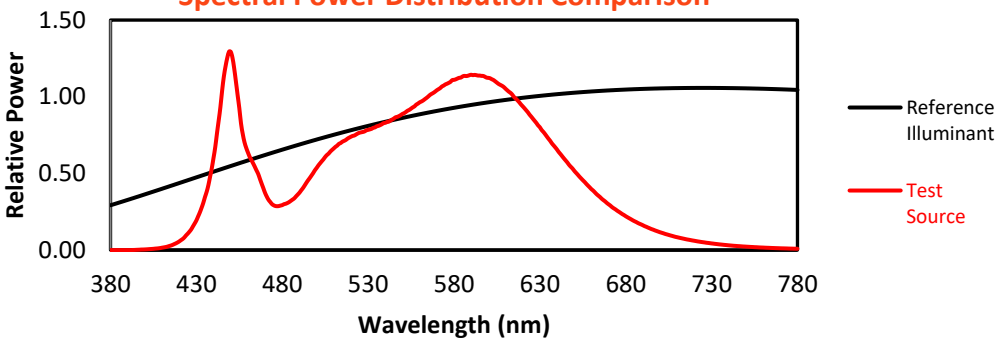
REPORT NUMBER: SP1-2407-157-8

TM-30-18

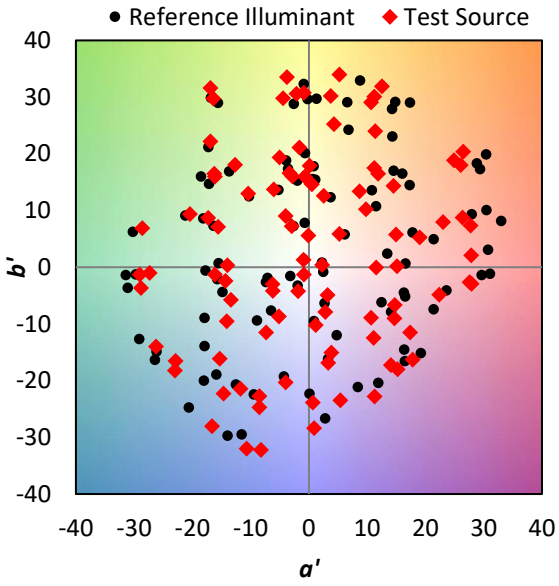
Summary

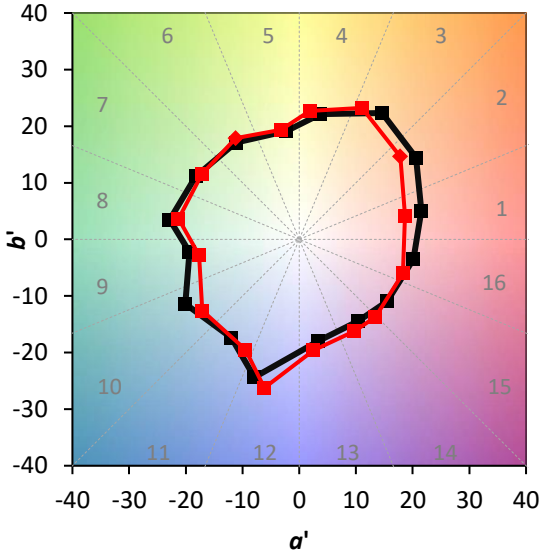
R_f = 82.6
R_g = 95.1
CIE R_a = 80.6
R_9 = -5.8

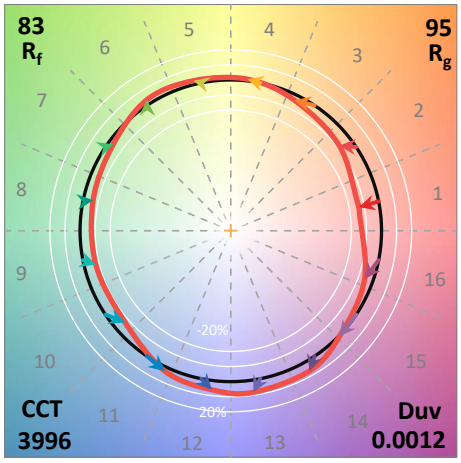
Spectral Power Distribution Comparison

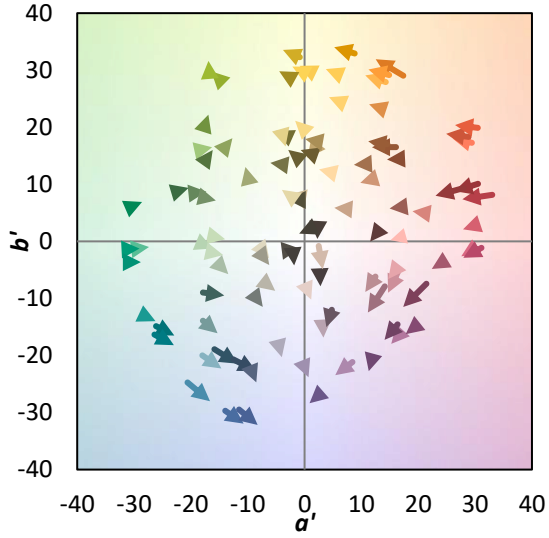


Color Vector Graphics







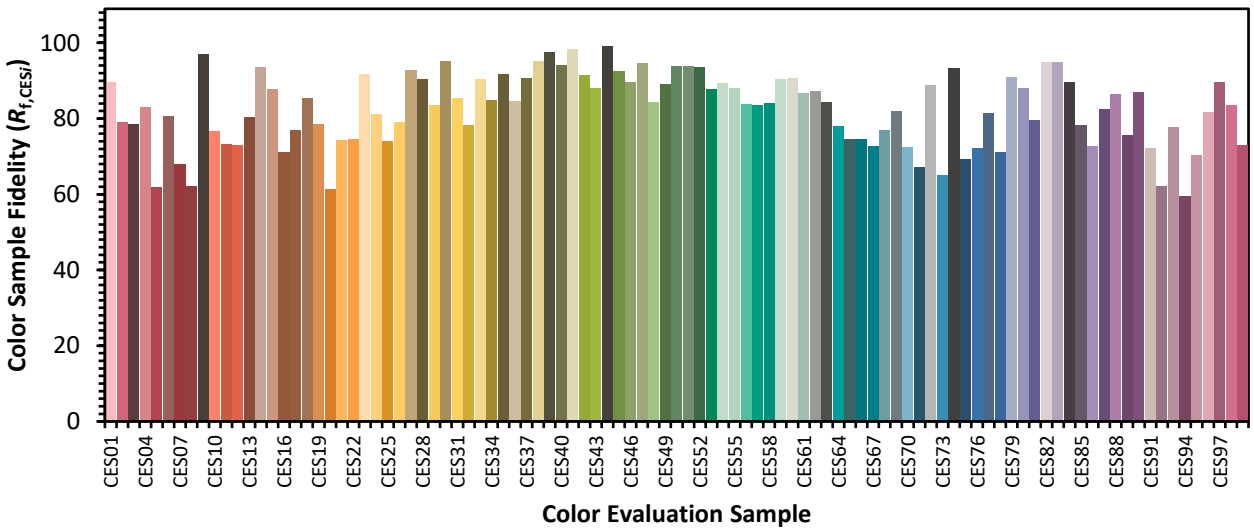


REPORT NUMBER: SP1-2407-157-8

TM-30-18

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

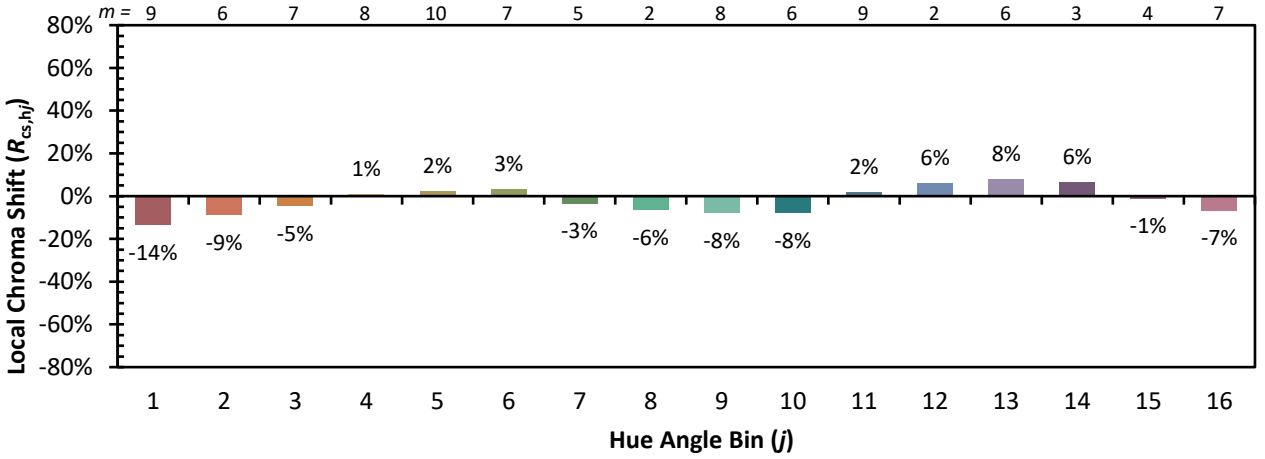
CES01 = 85	CES26 = 79	CES51 = 94	CES76 = 72
CES02 = 61	CES27 = 93	CES52 = 94	CES77 = 82
CES03 = 31	CES28 = 90	CES53 = 88	CES78 = 71
CES04 = 69	CES29 = 83	CES54 = 89	CES79 = 91
CES05 = 48	CES30 = 95	CES55 = 88	CES80 = 88
CES06 = 50	CES31 = 86	CES56 = 84	CES81 = 80
CES07 = 40	CES32 = 78	CES57 = 84	CES82 = 95
CES08 = 39	CES33 = 90	CES58 = 84	CES83 = 95
CES09 = 29	CES34 = 85	CES59 = 90	CES84 = 90
CES10 = 74	CES35 = 92	CES60 = 91	CES85 = 78
CES11 = 57	CES36 = 85	CES61 = 87	CES86 = 73
CES12 = 63	CES37 = 91	CES62 = 87	CES87 = 83
CES13 = 42	CES38 = 95	CES63 = 84	CES88 = 86
CES14 = 74	CES39 = 98	CES64 = 78	CES89 = 76
CES15 = 71	CES40 = 94	CES65 = 75	CES90 = 87
CES16 = 46	CES41 = 98	CES66 = 75	CES91 = 72
CES17 = 49	CES42 = 92	CES67 = 73	CES92 = 62
CES18 = 56	CES43 = 88	CES68 = 77	CES93 = 78
CES19 = 71	CES44 = 99	CES69 = 82	CES94 = 60
CES20 = 65	CES45 = 93	CES70 = 72	CES95 = 70
CES21 = 86	CES46 = 90	CES71 = 67	CES96 = 82
CES22 = 78	CES47 = 95	CES72 = 89	CES97 = 90
CES23 = 91	CES48 = 84	CES73 = 65	CES98 = 84
CES24 = 90	CES49 = 89	CES74 = 93	CES99 = 73
CES25 = 71	CES50 = 94	CES75 = 69	

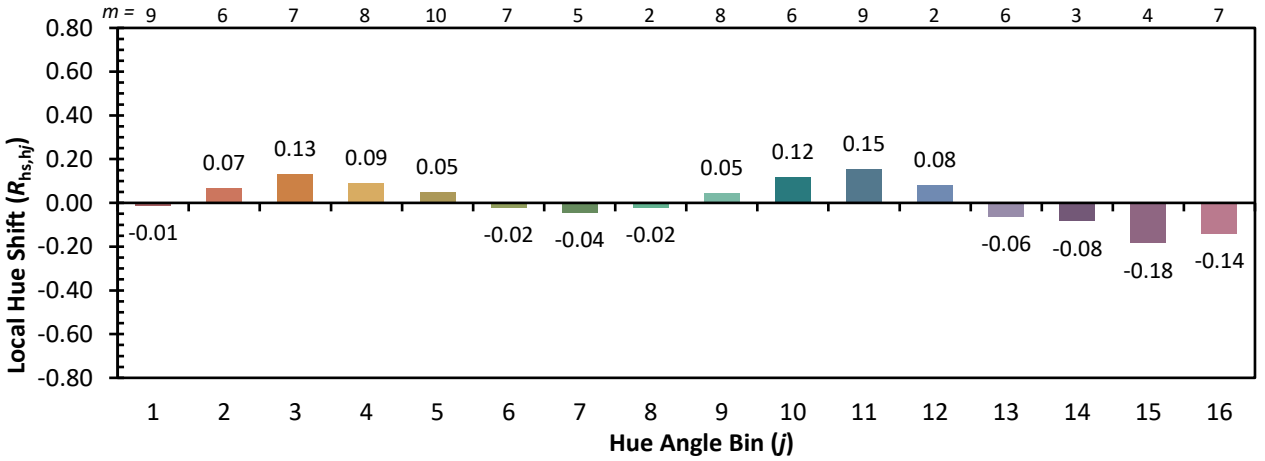


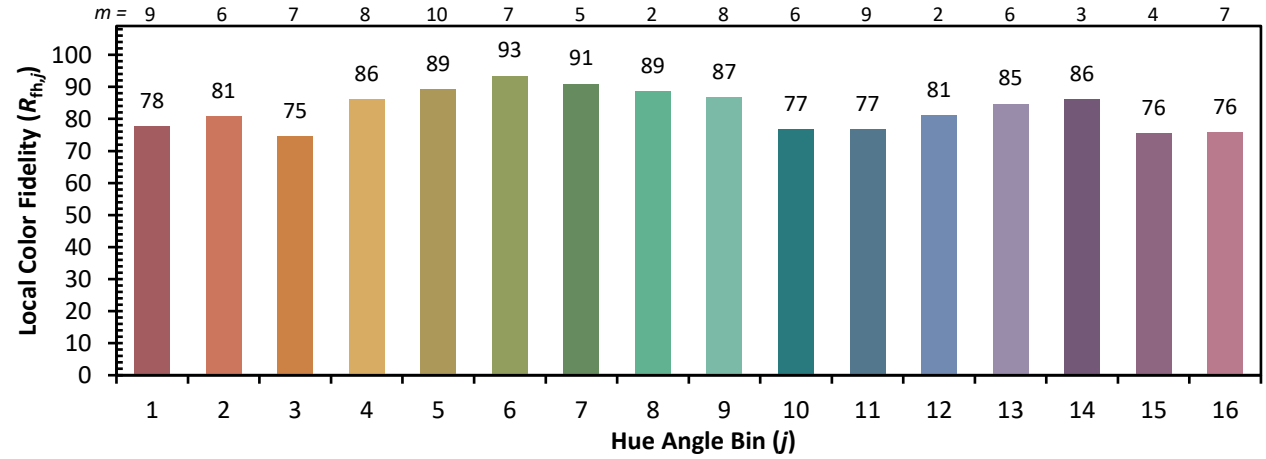
REPORT NUMBER: SP1-2407-157-8

TM-30-18

Color Rendition by Hue-Angle Bin



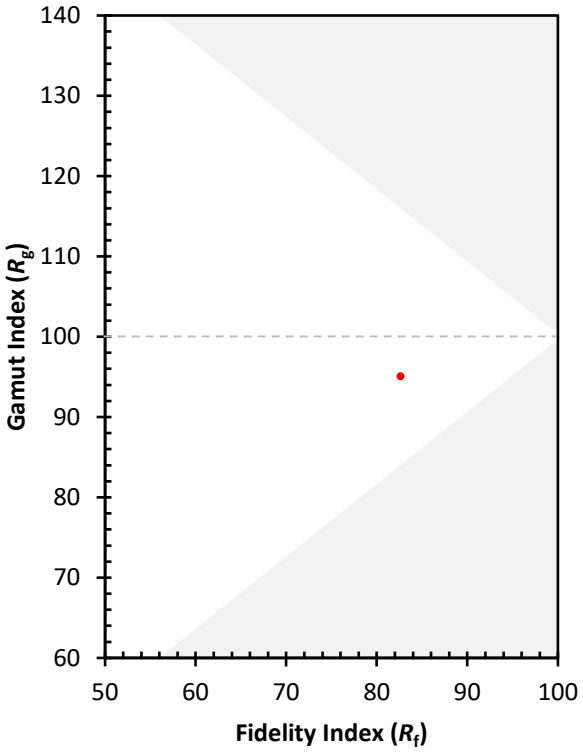


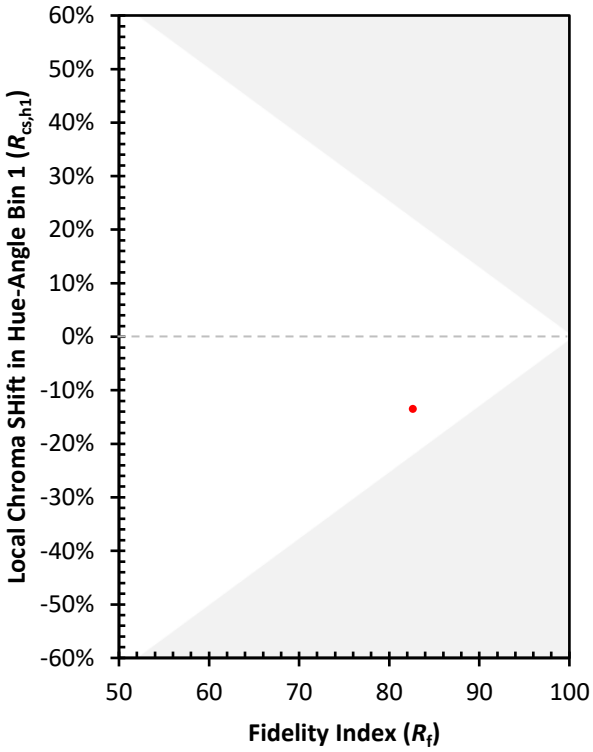


REPORT NUMBER: SP1-2407-157-8

TM-30-18

Measure Comparisons





(END OF REPORT)